

Perfectionism and Burnout within Intercollegiate Sport: A Person-Oriented Approach

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This study investigates the functional nature of perfectionism in sport through a person-oriented comparison of healthy and unhealthy perfectionist athletes' levels of burnout. A sample of 117 intercollegiate varsity student-athletes (M age = 21.28 years, $SD = 2.05$) completed measures that assessed multidimensional sport-based perfectionism and athlete burnout indices (i.e., reduced accomplishment, sport devaluation, and emotional/physical exhaustion). Cluster analysis revealed that the sample could be represented by four theoretically meaningful clusters: *Parent-Oriented Unhealthy Perfectionists*, *Doubt-Oriented Unhealthy Perfectionists*, *Healthy Perfectionists*, and *Non-Perfectionists*. Intercluster comparisons revealed that healthy perfectionists reported (a) lower levels on all athlete burnout indices in comparison with both doubt-oriented unhealthy perfectionists and nonperfectionists and (b) lower levels of emotional/physical exhaustion in comparison with parent-oriented unhealthy perfectionists (all $ps < .05$). The degree to which findings fit within perfectionism/burnout theory and can serve as an example for research with enhanced relevancy to applied sport psychology contexts is discussed.

Sport contexts in which success is based upon the achievement of near-perfect (or error-free) performance have been identified as conducive to athletes' endorsement of perfectionist tendencies (Flett & Hewitt, 2005; Hardy, Jones, & Gould, 1996; Hall, 2006). The functional nature of such tendencies, however, represents one of the most controversial issues within the sport psychology perfectionism literature (Flett & Hewitt, 2005; Hall, 2006). Applied sport psychologists have speculated that there is a link between perfectionism and elite performance in sport (Hardy et al., 1996; Zinsser, Bunker, & Williams, 2006). Gould, Dieffenbach, and Moffet (2002) provided support for this contention by identifying a specific perfectionism profile among 10 U.S. Olympic Gold Medalists. In contrast, Flett and Hewitt (2005) and Hall (2006) presented sport-based research findings that highlight the dysfunctional and debilitating nature of perfectionism and provided "real-world" support for these findings by documenting the tragic outcomes (e.g., depression, eating disorders, and suicide) that have befallen some high performance perfectionist

athletes. While controversial (see Greenspon, 2008), some general psychology researchers (e.g., Parker, 1997; Rice & Merzadeh, 2000; Stoeber, Harris, & Moon, 2007) have addressed similar contrasts by distinguishing between two unique groups of perfectionists: dysfunctional/maladaptive/unhealthy perfectionists and adaptive/healthy perfectionists. The overarching purpose of the current study is to investigate the utility of making such a distinction within sport-based perfectionism research.

Stoeber and Otto (2006) reviewed the extant general psychology perfectionism research and presented a common conceptual framework that summarized the conceptual and analytical approaches adopted across this body of literature. The framework indicated that groups of unhealthy and healthy perfectionists tend to be distinguished by different patterns of endorsement across two overarching perfectionism dimensions: *perfectionistic strivings* and *perfectionistic concerns*. According to this framework, both unhealthy and healthy perfectionists are characterized by high levels of perfectionistic strivings. That is, both unhealthy and healthy perfectionists strive for very high and/or flawless standards of performance (Blatt, 1995) and tend to be organized and systematic in efforts to attain those standards (Hamachek, 1978). Stoeber and Otto's common conceptual framework asserts that unhealthy perfectionists couple their perfectionistic strivings with high levels of perfectionistic concerns. These levels of perfectionistic concerns represent (a) beliefs that any personal mistakes committed during the pursuit of perfection represent complete failure (Blatt, 1995), (b) perceptions that lofty performance standards are imposed by significant others who are also overly critical of efforts to achieve these standards (Hewitt & Flett, 1991), and (c) chronic dissatisfaction and uncertainty about the quality of personal achievement efforts (Burns, 1980). Because perfect performance is so rarely achieved, Hamachek (1978) suggested that unhealthy perfectionists develop a deep-seated fear of failure which leads them to feel "anxious, confused, and emotionally drained" in achievement settings (p. 28).

Stoeber and Otto's (2006) common conceptual framework defines healthy perfectionists as individuals who couple high levels of perfectionistic strivings with low levels of perfectionistic concerns. That is, healthy perfectionists understand that it is inevitable that some mistakes will be committed in efforts to reach their lofty goals (Hamachek, 1978). Consequently, healthy perfectionists do not fear the possibility of mistakes or doubt the quality of their performances to the same degree as unhealthy perfectionists. While healthy perfectionists desire approval from significant others, they view this approval as "an additional good feeling" (Hamachek, 1978, p. 27) on top of the satisfaction and enjoyment experienced as a result of their performance efforts. As a result, falling short of perfect performance has less of a negative impact upon healthy perfectionists' self-worth (as compared with unhealthy perfectionists: Lundh, 2004) and allows them to feel "excited, clear about what needs to be done, and emotionally charged" in achievement settings (Hamachek, 1978, p. 28).

The utility of distinguishing between unhealthy and healthy perfectionism can be evaluated by investigating whether individuals identified as unhealthy and healthy perfectionists display theoretically meaningful differences in cognition, affect, and behavior. One primary difference between these two types of perfectionists is the degree to which they chronically appraise achievement contexts as being threatening in nature (Hamachek, 1978; Lundh, 2004). As a result, unhealthy and healthy perfectionists should also differ in the degree to which they experi-

ence the consequences of chronic threat perception. Within the domain of sport, one such consequence is athlete burnout (see Cresswell & Eklund, 2006; Eklund & Cresswell, 2007).

Smith (1986) defined athlete burnout as an enduring negative condition characterized by psychological, emotional, and/or physical withdrawal from a previously enjoyable sport. Within Smith's conceptualization, the condition occurs as a result of chronic appraisals of demand overload (i.e., consistent perceptions that achievement demands exceed personal resources, skills, and abilities). The impact of such appraisals is exacerbated when individuals also perceive low levels of social support, a lack of choice over demand engagement, and multiple competing pressures emanating from different areas of their life (Coakley, 1992; Gould, Tuffey, Udry, & Loehr, 1996; Smith, 1986). Even within such contexts, athletes may be unwilling to remove themselves from the perceived demands inherent to their sport—and, thus, perpetuate their burnout experience—if their self-worth is founded upon involvement and achievement in that sport (Coakley, 1992; Cresswell & Eklund, 2006). Three salient, enduring, and negative symptoms have been identified as comprising the athlete burnout syndrome: emotional and physical exhaustion due to involvement in a primary sport, a reduced sense of accomplishment in that sport, and a devaluation of the benefits produced through participation in the sport (Raedeke, 1997; Raedeke & Smith, 2001).

Consideration of theorists' descriptions of unhealthy and healthy perfectionism (e.g., Hamachek, 1978; Lundh, 2004) within Smith's (1986) cognitive-affective model of athlete burnout reveals that unhealthy perfectionists and healthy perfectionists should display different vulnerabilities to athlete burnout. Unhealthy perfectionist athletes should be especially susceptible to burnout because they demand a level of personal performance (i.e., flawless performance) that is rarely, if ever, achieved (Hamachek, 1978). As a result, unhealthy perfectionists continuously feel that their efforts to reach achievement standards are inefficient and inadequate (Burns, 1980). Such feelings are exacerbated by perceptions that significant others impose these performance standards, but do not support subsequent efforts to achieve them (Hewitt & Flett, 1991). In addition, because unhealthy perfectionists' self-concepts are defined through performance, they enter into an "endless cycle of self-perpetuating" (Hamachek, 1978, p. 30) efforts to achieve perfection. As a result, unhealthy perfectionists are continuously faced with the same sense of overload that initiates the athlete burnout process (Smith, 1986) and often experience one of the syndrome's defining symptoms (i.e., emotional and physical exhaustion; Raedeke & Smith, 2001) when in achievement contexts (Hamachek, 1978).

Healthy perfectionists, in contrast to unhealthy perfectionists, may be protected from the experience of athlete burnout because of three characteristics integral to their achievement orientation. First, healthy perfectionists' performance expectations—while lofty—are more realistic and rational than those set by unhealthy perfectionists (Hamachek, 1978). Second, healthy perfectionists do not share unhealthy perfectionists' dependence on, and sensitivity to, socially-based criticism; implying that healthy perfectionists maintain high levels of self-acceptance even when their performances do not meet others' expectations (Lundh, 2004). Third, healthy perfectionists' sense of self-worth is not solely founded upon achievement. That is, healthy perfectionists feel that "even when the performance isn't quite alright the me that was involved in it still is" (Hamachek, 1978, p. 30). As a result,

healthy perfectionists are more likely to perceive a sense of challenge—as opposed to threat—in achievement contexts. Within Smith's (1986) model, such an achievement orientation makes the experience of athlete burnout unlikely.

A number of recent studies have empirically examined the relationship between perfectionism and burnout among athletes who compete within high performance contexts (e.g., Appleton, Hall, & Hill, 2009; Chen, Kee, Chen, & Tsai, 2008; Chen, Kee, & Tsai, 2009; Hill, Hall, & Appleton, 2010; Hill, Hall, Appleton, & Kozub, 2008; Hill, Hall, Appleton, & Murray, 2010; Lemyre, Hall, & Roberts, 2008). This body of research has generally focused on illuminating how individual perfectionism facets relate to athlete burnout, repeatedly indicating that facets of perfectionistic concerns positively correlate with athlete burnout symptoms. For instance, the Socially Prescribed Perfectionism subscale in Hewitt and Flett's *Multidimensional Perfectionism Scale* (Hewitt-MPS: 1991), the Concern Over Mistakes subscale in Frost, Marten, Lahart, and Rosenblate's *Multidimensional Perfectionism Scale* (Frost-MPS: 1990), and the Concern About Mistakes subscale in Anshel and Eom's sport-based multidimensional perfectionism instrument (Anshel-MPS; 2003) have been found to significantly and positively correlate (r s from .20 to .34) with athlete burnout symptoms (see Appleton et al., 2009; Chen et al., 2008; Hill et al., 2008; Hill et al., 2010; Lemyre et al., 2008). According to Stoeber and Otto's (2006) common conceptual framework, the primary difference between unhealthy and healthy perfectionists' achievement orientations relates to the perfectionistic concerns dimension of perfectionism. While unhealthy perfectionists endorse high levels of perfectionistic concerns, healthy perfectionists are characterized by low levels of perfectionistic concerns. Therefore, findings indicating that facets of perfectionistic concerns positively correlate with burnout symptoms within samples of competitive athletes provide some support for the contention that unhealthy perfectionist athletes are more likely to experience burnout than healthy perfectionist athletes.

Sport-based research on the perfectionism-burnout relationship has also often found that facets of perfectionistic strivings negatively correlate with athlete burnout symptoms. For example, the Self-Oriented Perfectionism subscale of the Hewitt-MPS and the Personal Standards subscales of both the Frost-MPS and the Anshel-MPS have each been found to significantly and negatively correlate (r s from -.17 to -.35) with individual dimensions—or general indices—of athlete burnout (see Appleton et al., 2009; Chen et al., 2008; Hill et al., 2008; Lemyre et al., 2008). Stoeber and Otto's (2006) common conceptual framework indicates that a defining characteristic of both unhealthy and healthy perfectionism is the tendency to endorse high levels of perfectionistic strivings. If facets of perfectionistic strivings negatively relate to burnout (as indicated by the previously cited research) and if both unhealthy and healthy perfectionism are characterized by high levels of perfectionistic strivings, then both unhealthy and healthy perfectionist athletes should tend to experience low levels of burnout. Such predictions are not in-line with the presently proposed theory-based differences between unhealthy and healthy perfectionist athletes' susceptibility to burnout, nor do they fit with more traditional depictions of perfectionism as a solely dysfunctional and debilitating achievement orientation in sport (for a related discussion, see Lundh, Saboonchi, & Wångby, 2008).

The documented discrepancy between the present theory-based proposals regarding unhealthy/healthy perfectionist athletes' burnout susceptibility and past

empirical findings produced from the perfectionism–athlete burnout literature could be due to the variable-oriented nature of this body of research (see Bergmann, Magnusson, & El Khouri, 2003; Magnusson, 1998). That is, within the extant literature the perfectionism–athlete burnout relationship tends to be examined by (a) focusing analyses on only one of the multiple facets/dimensions that serve to define perfectionism and (b) correlating that single facet/dimension with athlete burnout indices in isolation from interactions with perfectionism's other defining features. Within both the general psychology (Lundh et al., 2008) and sport psychology literature (Dunn, Causgrove Dunn et al., 2006; Dunn, Gotwals, Causgrove Dunn, & Syrotuik, 2006; Gotwals, Dunn, & Wayment, 2003), authors have contended that such variable-oriented research provides limited insight into the controversy surrounding the functional nature of perfectionism because the trait is considered to be multidimensional in nature and, thus, no single dimension can be solely relied upon to fully represent healthy or unhealthy perfectionists' achievement orientations (as conceptualized within Stoeber & Otto's, 2006 common conceptual framework).

The functional nature of perfectionism may be more suitably evaluated by adopting a person-oriented approach (see Bergmann et al., 2003; Magnusson, 1998). One defining feature of this approach is a focus on patterns of, and interactions between, individual features that collectively define multidimensional constructs. Researchers (Dunn, Causgrove Dunn et al., 2006; Gotwals et al., 2003; Lundh et al., 2008) have contended that adopting such an approach would allow for adequate representation of unhealthy and healthy perfectionism given that both orientations are defined by unique interactive patterns across perfectionistic strivings and perfectionistic concerns (see Stoeber & Otto, 2006). A second defining feature of the person-oriented approach is a focus on individuals as opposed to variables (Bergmann et al., 2003; Magnusson, 1998). This focus is appropriate within the current study because, to paraphrase Bergman et al. (2003, p. 26), it is athletes—not variables—who get burned out.

Adoption of a person-oriented approach necessitates the use of statistical techniques that (a) take into account patterns of scores across multiple variables and (b) operate at the level of the individual (Bergmann et al., 2003; Magnusson, 1998). Cluster analysis represents such a technique and has been widely used within the general psychology literature to identify—and determine differences between—groups of individuals labeled by Stoeber and Otto (2006) as unhealthy/healthy perfectionists based upon the groups' collective profiles across multiple perfectionism facets. However, the technique has rarely been used in sport psychology perfectionism research (for exceptions, see Vallance, Dunn, & Causgrove Dunn, 2006; Lemyre et al., 2008). Most pertinent to the current study, Lemyre et al. used a cluster analytic protocol to (a) identify groups with unique achievement motivation profiles (defined, in part, by facets of perfectionistic strivings and perfectionistic concerns) among 141 high performance winter sport adult athletes and (b) determine whether these groups differed in the self-reported experience of athlete burnout symptoms. Lemyre et al. indicated that a two cluster solution best represented their data with one cluster characterized by relatively high levels across both perfectionistic strivings and perfectionistic concerns and a second cluster characterized by relatively low levels across the two perfectionism dimensions. Follow-up contrasts revealed that the first cluster reported significantly higher levels of athlete burnout symptoms than the second cluster (all $ps < .05$).

Lemyre et al.'s (2008) results support generally agreed-upon contentions that unhealthy perfectionism is debilitating within sport contexts. That is, Lemyre et al. identified a group of athletes whose achievement orientation fits Stoeber and Otto's (2006) definition of unhealthy perfectionism (i.e., as represented in their common conceptual framework: high levels across both perfectionistic strivings and perfectionistic concerns) and indicated that this group experienced relatively high levels of an adverse and debilitating condition (i.e., burnout; see Eklund & Cresswell, 2007). However, Lemyre et al.'s findings do not address the more controversial contention that healthy perfectionism is ultimately adaptive within sport because the researchers' chosen cluster solution did not contain a group of athletes that could be described as healthy perfectionists (as defined by Stoeber & Otto's [2006] common conceptual framework: athletes with high levels of perfectionistic strivings coupled with low levels of perfectionistic concerns). Therefore, the purpose of this study was to investigate the utility of distinguishing between healthy and unhealthy perfectionism in sport by conducting a person-oriented examination of healthy and unhealthy perfectionist athletes' experience of burnout. Given the paucity of person-oriented research within the sport psychology perfectionism literature, the first step in this investigation was to explore whether the approach could be used to identify unique groups of healthy and unhealthy perfectionist athletes. The second step in this investigation was to compare these groups' levels of burnout symptoms. Support for the utility of distinguishing between healthy and unhealthy perfectionism would be produced if healthy perfectionist athletes reported lower levels of burnout symptoms in comparison with unhealthy perfectionist athletes.

This study was conducted within Canadian intercollegiate varsity sport because (a) this context emphasizes the achievement of high standards of athletic performance and (b) intercollegiate varsity athletes are faced with numerous demands emanating from a variety of life domains (e.g., sport, school, social/personal relations) as a result of being "student-athletes" at the university level. Both factors have been identified as being conducive to the endorsement of perfectionist tendencies (Flett & Hewitt, 2005; Stoeber & Stoeber, 2009) and the development of athlete burnout (Gustafsson, Hassmén, Kenttä, & Johansson, 2008; Gould et al., 1996). Accordingly, studies conducted within similar contexts have advanced understanding of (a) the functional nature of perfectionism (see Dunn, Causgrove Dunn, & Syrotuik, 2002; Gotwals, Dunn, Causgrove Dunn, & Gamache, 2010) and (b) the assessment and prediction of athlete burnout (Raedeke & Smith, 2001; Lemyre, Treasure, & Roberts, 2006).

Method

Participants

Participants were 117 Canadian intercollegiate varsity student-athletes (48 females and 69 males). The student-athletes ranged in age from 18.00 to 26.83 years (M age = 21.28 years, SD = 2.05) and competed in either an individual sport (wrestling or track and field; n = 48) or a team sport (hockey, basketball, or volleyball; n = 69). Participants had competed on their current team for an average of 2.30 years (SD = 1.25) and were pursuing undergraduate academic degrees.

Measures

Participants completed a demographic questionnaire and two self-report instruments designed to respectively assess perfectionist tendencies and athlete burnout. The demographic questionnaire asked participants to indicate their age, the sport they competed in, degree of postsecondary education, and intercollegiate athletic experience.

Perfectionism. Recent evidence suggests that the functional nature of athletes' perfectionist tendencies can be more validly represented by sport-based (as opposed to global) perfectionism instruments (Gotwals et al., 2010). As a result, Gotwals and Dunn's *Sport Multidimensional Perfectionism Scale-2* (Sport-MPS-2; 2009) was used to assess athletes' levels of perfectionism. The 42-item instrument is based on Frost et al.'s (1990) global perfectionism conceptualization and is a revised version of Dunn et al.'s (2002) original *Sport Multidimensional Perfectionism Scale*. The Sport-MPS-2 contains two subscales that represent facets of perfectionistic strivings—*Personal Standards* (PS: "I have extremely high goals for myself in my sport") and *Organization* (ORG: "I follow pre-planned steps to prepare myself for competition")—and four subscales that represent facets of perfectionistic concerns—*Concern Over Mistakes* (COM: "If I fail in competition, I feel like a failure as a person"), *Perceived Parental Pressure* (PPP: "Only outstanding performance during competition is good enough in my family"), *Perceived Coach Pressure* (PCP: "I feel like my coach criticizes me for doing things less than perfectly in competition"), and *Doubts About Actions* (DAA: "I usually feel unsure about the adequacy of my pre-competition practices"). Respondents rate the extent to which they agree with each item using a 5-point scale (1 = *strongly disagree*; 5 = *strongly agree*). Higher subscale mean item scores reflect higher levels of each respective perfectionism facet. Gotwals and colleagues (Gotwals & Dunn, 2009; Gotwals et al., 2010) have indicated that, within the context of Canadian intercollegiate sport, the Sport-MPS-2 demonstrates adequate internal consistency (i.e., subscale level as $\geq .70$), has a stable factor structure, and has theoretically meaningful relationships with external constructs (e.g., global self-esteem and competitive trait anxiety).

Burnout. Athletes' burnout symptom levels were assessed by Raedeke and Smith's *Athlete Burnout Questionnaire* (ABQ; 2001). The ABQ is a frequently used measure of burnout within sport contexts (Eklund & Cresswell, 2007) and contains three 5-item subscales designed to assess three major symptoms of athlete burnout—*Reduced Accomplishment* ("I am not achieving much in my sport"), *Emotional/Physical Exhaustion* ("I feel 'wiped out' from my sport"), and *Sport Devaluation* ("I'm not into my sport like I used to be"). Respondents use a 5-point scale to indicate the degree to which they agree with each item (1 = *strongly disagree*; 5 = *strongly agree*). After reversal of responses to appropriate items, higher subscale mean item scores indicate that respondents are currently experiencing higher levels of the respective burnout symptom. A substantial amount of reliability and validity evidence has been produced in support of the ABQ as a measure of burnout symptoms across a variety of sport contexts (for a review, see Eklund & Cresswell, 2007), including intercollegiate varsity sport. Specifically, Raedeke and Smith (2001) found that ABQ data produced from 208 male and female intercollegiate varsity athletes (a) demonstrated adequate levels of reliability (internal consistency

and test-retest), (b) supported the instruments' proposed factor structure, and (c) related in theoretically meaningful manners to a variety of sport-based constructs.

Procedure

After receiving research ethics approval, the author met with the athletes on each team within the first 1–2 months of each team's respective 4–6 month long competitive season¹. These team meetings were scheduled in collaboration with each team's head coach, were conducted in classroom settings, and (with the exception of the hockey team) took place at least 24 hr before or after competition.² At these meetings the author described the study and obtained signed informed consent from each willing athlete. Participants then completed a questionnaire packet containing the demographic questionnaire, the Sport-MPS-2, and the ABQ (coaches were not present during questionnaire completion). While this questionnaire packet always presented the demographic questionnaire first, the presentation order of the Sport-MPS-2 and ABQ was counterbalanced.

Results

Preliminary Data Screening

Initial screening of the data (using procedures recommended by Tabachnick & Fidell, 2007) did not reveal the presence of any univariate or multivariate outliers. Examination of each subscale's distributional characteristics revealed degrees of skewness and kurtosis that were acceptable for subsequent analyses. Descriptive statistics and internal consistencies for the Sport-MPS-2 and ABQ subscales (as well as bivariate subscale correlations) are presented in Table 1. As indicated, all subscales had acceptable levels of internal consistency (i.e., α s ³.76). While norms for the Sport-MPS-2 and ABQ have not been established, the subscale scores produced in the present sample across these two instruments appear to be similar in both magnitude and rank-order (for a related discussion, see Gotwals et al., 2010) to those reported in the extent literature for adult/intercollegiate athletes (see Cresswell & Eklund, 2007; Dunn et al., 2002; Gotwals & Dunn, 2009; Gotwals et al., 2010).

Identification of Unhealthy and Healthy Perfectionist Athletes

Within general psychology person-oriented perfectionism research, a specific two-stage cluster analytic protocol (as delineated by Hair, Black, Babin, & Anderson, 2010) has been repeatedly used to help researchers distinguish between healthy perfectionists, unhealthy perfectionists, and nonperfectionists (Ashby & Bruner, 2005; Parker, 1997; Rice & Merzadeh, 2000). This protocol combines the use of both hierarchical and nonhierarchical clustering procedures; doing so is beneficial because it allows for the multiple cluster solutions expediently produced in the hierarchical methods to be "fine-tuned" by subsequent nonhierarchical methods (for a more detailed discussion, see Hair et al., 2010, p. 507–514). As a result, this protocol was adopted in the current study. In the first stage of analysis, Sport-MPS-2 subscale mean item scores were subjected to hierarchical cluster analysis using the Ward's method of cluster formation with squared Euclidean distance measures.³

Table 1 Sport-MPS-2 and ABQ Subscale Descriptive Statistics, Internal Consistencies (α), and Bivariate Correlations (r)

	Sport Multidimensional Perfectionism Scale-2					Athlete Burnout Questionnaire			
	PS	ORG	COM	PPP	PCP	DAA	RA	EX	SD
Sub-scale									
PS	$M = 3.66$ $SD = .62$ $\alpha = .76$	$M = 3.67$ $SD = .83$	$M = 2.89$ $SD = .82$	$M = 2.02$ $SD = .77$	$M = 3.30$ $SD = .71$	$M = 2.55$ $SD = .68$	$M = 2.51$ $SD = .77$	$M = 2.80$ $SD = .94$	$M = 2.10$ $SD = .78$
ORG	.44***	$\alpha = .90$							
COM	.45***	.12	$\alpha = .84$						
PPP	.22*	.20*	.21*	$\alpha = .90$					
PCP	.40***	.00	.41***	.10	$\alpha = .76$				
DAA	.08	-.18	.30***	-.04	.36***	$\alpha = .76$			
RA	.04	-.23*	.33***	-.04	.31***	.48***	$\alpha = .81$		
EX	.02	-.05	.25**	-.03	.42***	.35***	.38***	$\alpha = .92$	
SD	-.18*	-.30***	.03	-.01	.24**	.41***	.44***	.50***	$\alpha = .81$

Note. Internal consistency coefficients (α) are contained in the main diagonal. PS = Personal standards; ORG = Organization; COM = Concern over mistakes; PPP = Perceived parental pressure; PCP = Perceived coach pressure; DAA = Doubts about actions; RA = Reduced accomplishment; EX = Emotional/Physical exhaustion; SD = Sport devaluation.

* $p < .05$; ** $p < .01$; *** $p < .001$.

A “stopping rule” based on changes in heterogeneity between successive cluster solutions was used to identify cluster solutions from the hierarchical cluster analysis to carry forward for further investigation (Hair et al., 2010). Specifically, the agglomeration schedule produced from the hierarchical analysis was examined to identify relatively large percentage changes between agglomeration coefficients associated with successive cluster solutions. Hair et al. (2010) state that when such changes occur, the prior cluster solution should be carried forward for further analysis as it potentially provides a good representation of the data. The largest percentage changes in the agglomeration schedule occurred when moving from a three- to a two-cluster solution and from a two- to a one-cluster solution. This is to be expected as, due to the nature of cluster analysis, the largest percentage changes between agglomeration coefficients tend to occur as the agglomeration schedule proceeds toward a single cluster solution. As a result, Hair et al. suggest that a range of cluster solutions should be considered. The largest percentage changes in agglomeration coefficients—apart from those associated with the previously mentioned three- and two-cluster solutions—were produced when proceeding from an eight- to a seven-cluster solution and from a four- to a three-cluster solution. As a result, two-, three-, four-, and eight-cluster solutions were retained for further analysis. The cluster-formation dendrogram indicated that there were no outliers that may have had an undue impact on these cluster solutions.

In the second stage of the present cluster analytic protocol, multiple nonhierarchical (K-means) cluster analyses were conducted upon the data to “optimize” (Hair et al., 2010, p. 531) the cluster solutions retained from the hierarchical cluster analysis and to identify a single final cluster solution. The cluster centroids (i.e., Sport-MPS-2 subscale means) from each retained hierarchical cluster solution were used as initial seed points in associated nonhierarchical cluster analyses. In accordance with Hair et al.’s (2010) recommendations, the most optimal cluster solution was determined on the basis of practical criteria, theoretical meaningfulness, and applicability to the purpose of the research. In consideration of these criteria, the four-cluster solution was chosen as the optimal representation of the data. Table 2 displays the Sport-MPS-2 and ABQ subscale mean item scores pertaining to each cluster in this solution.

For descriptive purposes, a multivariate analysis of variance (MANOVA) was conducted to determine if the clusters in the final solution had significantly different mean scores across the Sport-MPS-2 subscales. Cluster membership (i.e., Clusters 1, 2, 3, and 4) was entered as the independent variable and the six Sport-MPS-2 subscales were entered as dependent variables. A significant multivariate test statistic was obtained: Wilks’s $\Lambda = .060$, $F(18, 305.96) = 28.88$, $p < .001$, partial $h^2 = .608$, indicating the presence of between cluster differences. Follow-up univariate F -tests revealed statistically significant cluster differences on each of the six Sport-MPS-2 subscales (see Table 2).

Mean contrasts (i.e., independent t -tests with Bonferroni corrections) were conducted to identify which clusters differed on each of the Sport-MPS-2 subscales. Effect sizes were computed for each contrast using Cohen’s (1977) index for independent samples (d). As seen in Table 2, Cluster 1 had the highest scores of all four clusters on PPP. This cluster also had significantly higher scores on PS, COM, and PCP than Clusters 3 and 4 and significantly higher ORG scores than

Table 2 Sport-MPS-2 and ABQ Subscale Mean Scores, Standard Deviations, and Univariate Test Statistics for Between-Cluster Comparisons

	Cluster								Univariate test statistics	
	Cluster 1		Cluster 2		Cluster 3		Cluster 4			
	Parent-Oriented Unhealthy Perfectionists (<i>n</i> = 32)	Doubt-Oriented Unhealthy Perfectionists (<i>n</i> = 21)	Non-Perfectionists (<i>n</i> = 22)	Healthy Perfectionists (<i>n</i> = 42)						
Instrument subscale	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>F</i> (3, 113)	Partial <i>h</i> ²
<i>Sport-MPS-2</i>										
Personal Standards	4.13 _a	.44	3.96 _a	.47	2.96 _c	.47	3.52 _b	.43	34.08	.475
Organization	4.11 _a	.54	3.63 _b	.64	2.42 _c	.63	4.01 _a	.44	51.29	.577
Concern Over Mistakes	3.36 _a	.56	3.75 _a	.70	2.51 _b	.62	2.30 _b	.49	41.21	.522
Perceived Parental Pressure	2.81 _a	.75	1.66 _b	.54	1.60 _b	.48	1.81 _b	.56	26.45	.412
Perceived Coach Pressure	3.62 _a	.54	3.94 _a	.66	3.13 _b	.70	2.81 _b	.44	23.37	.383
Doubts About Actions	2.44 _{b,c}	.48	3.32 _a	.59	2.70 _b	.66	2.16 _c	.53	21.78	.366
<i>ABQ</i>										
Reduced Accomplishment	2.38 _{b,c}	.71	3.17 _a	.82	2.77 _{a,b}	.75	2.13 _c	.53	12.42	.248
Emotional/Physical Exhaustion	2.95 _a	.94	3.40 _a	.86	2.96 _a	.78	2.29 _b	.82	8.94	.192
Sport Devaluation	1.98 _{a,b}	.74	2.48 _a	.76	2.44 _a	.81	1.83 _b	.68	5.62	.130

Note. Within each row, subscale means with the subscript "a" are significantly higher than means with the subscripts "b" and "c"; subscale means with the subscript "b" are significantly higher than means with the subscripts "c" (as determined through independent *t* tests with Bonferroni corrections [all $ps < .05$]). All univariate *F*-tests significant at $p < .001$.

Clusters 2 and 3. Cluster 2 had the highest scores of all four clusters on DAA, but was similar to Cluster 1 in that it had (a) significantly higher PS, COM, and PCP than Clusters 3 and 4 and (b) significantly higher ORG scores than Cluster 3. Cluster 3 had the lowest scores of all four clusters on PS and ORG. Finally, Cluster 4 had significantly higher PS, significantly lower COM and PCP scores than Clusters 1 and 2, and significantly lower DAA scores than Clusters 2 and 3. Effect sizes associated with these differences ranged from .73 to 3.12.

Clusters 1 and 2 were similar in that both clusters were characterized by relatively high scores across facets of both perfectionistic strivings and perfectionistic concerns. For example, both clusters reported tendencies to set high personal standards of performance (PS), equate personally-committed mistakes with failure (COM), and experience enhanced concern over perceived expectations and pressure imposed by coaches (PCP). This pattern of mean Sport-MPS-2 subscale scores reflects the definition of unhealthy perfectionists offered by Stoeber and Otto's (2006) common conceptual framework and is similar to profiles of unhealthy/maladaptive/dysfunctional perfectionism produced/used in both the sport psychology and general psychology literature (see Dunn, Gotwals, et al., 2006; Gotwals et al., 2003; Parker, 1997; Stoeber et al., 2007). Clusters 1 and 2, however, could be distinguished based on their relative scores across two facets of perfectionistic concerns—PPP and DAA. Athletes in Cluster 1 were more sensitive to perceived expectations and criticism from their parents (PPP) than any other cluster. In contrast, the athletes in Cluster 2 were more dissatisfied and uncertain about the quality of their preperformance training (DAA) than any other cluster. Differences between these two clusters' PPP and DAA scores were associated with large effect sizes (1.72 and 1.66, respectively) indicating that the two clusters' respective levels of PPP and DAA were prominent and identifiable features of each cluster. As a result, the athletes in Cluster 1 and Cluster 2 were respectively labeled, *Parent-Oriented Unhealthy Perfectionists* and *Doubt-Oriented Unhealthy Perfectionists*.

Cluster 4 was characterized by moderate-to-high levels of perfectionistic strivings in combination with low levels of perfectionistic concerns. Regarding perfectionistic strivings, the athletes in this cluster used pre- and during-performance plans and routines (ORG) to a greater extent and set higher standards of performance (PS) than those in Cluster 3. However, Cluster 4 reported a lower tendency to set high performance standards in comparison with Clusters 1 and 2. Regarding perfectionistic concerns, Cluster 4 had relatively low levels across the Sport-MPS-2 subscales that collectively represent athletes' concerns over, and negative reactions to, imperfect performance (i.e., COM, PPP, PCP, and DAA). This cumulative pattern of relative standing across Sport-MPS-2 subscales fits with the description of healthy perfectionism as presented in Stoeber and Otto's (2006) common conceptual framework. Indeed, general psychology researchers have used the terms "healthy/adaptive perfectionists" to label clusters/groups with similar patterns of scores across global perfectionism measures (see Parker, 1997; Rice & Merzadeh, 2000; Stoeber et al., 2007). As a result, Cluster 4 was labeled *Healthy Perfectionists*.

Cluster 3 reported relatively low levels across facets representing perfectionistic strivings. For example, Cluster 3 had lower scores across both PS and ORG than any other cluster. In line with general psychology cluster analytic perfectionism

research (for a review, see Stoeber & Otto, 2006), the athletes in Cluster 3 were labeled *Nonperfectionists*.

Cluster solution validation. Table 3 presents the composition of each cluster in the four-cluster solution according to gender and athletes' primary sport (i.e., a team sport [volleyball, hockey, or basketball] or an individual sport [wrestling or track and field]). To investigate whether these two variables influenced participants' cluster membership, two chi-square tests for independence were conducted in which cluster membership served as one categorical variable and gender or type of sport served as the other. Results produced from both tests were nonsignificant (χ^2 [3, $N = 117$] = 1.43 and 5.00 [respectively], both $ps > .05$) indicating that both genders and both sport types were proportionally represented among the four clusters.

Inter-Cluster Differences in Athlete Burnout Symptoms

Having established unique clusters of perfectionists, a second MANOVA was conducted to test for cluster differences in the experience of athlete burnout symptoms. Cluster membership was entered as the independent variable and the three ABQ subscales were entered as dependent variables. This analysis produced a significant multivariate test statistic: Wilks's $\Lambda = .649$, $F(9, 270.30) = 5.84$, $p < .001$, partial $\eta^2 = .134$. Follow-up univariate F -tests revealed significant intercluster differences for each ABQ subscale (see Table 2).

Mean contrasts and effect sizes were again calculated to identify intercluster differences across each ABQ subscale (see Table 2). The results most pertinent to the current study's purpose were those that directly compared the cluster of healthy perfectionists (i.e., Cluster 4) with both clusters of unhealthy perfectionists (i.e., Clusters 1 and 2). Along these lines, the healthy perfectionists had lower scores on all three ABQ subscales in comparison with the doubt-oriented unhealthy perfectionists and lower scores on emotional/physical exhaustion in comparison with parent-oriented unhealthy perfectionists. The healthy perfectionists also had lower scores than nonperfectionists across all three athlete burnout indices. Effect sizes for these differences ranged from .75 to 1.62 and were indicative of meaningful differences.

Discussion

The overarching purpose of this study was to investigate the utility of distinguishing between healthy and unhealthy perfectionism in sport. As a first step in this evaluation, a person-oriented approach (Bergmann et al., 2003; Magnusson, 1998) was adopted to identify unique groups of athletes whose perfectionism profiles fit those of unhealthy and healthy perfectionists as described by theorists (Hamachek, 1978; Lundh, 2004) and defined within Stoeber and Otto's (2006) common conceptual framework. An iterative cluster analytic protocol conducted upon intercollegiate athletes' Sport-MPS-2 subscale scores produced a four-cluster solution; subsequent intercluster comparisons revealed theoretically meaningful differences that reflected distinctions between unhealthy and healthy perfectionists (see Table 2). The following discussion presents these differences, in light of the inherent limitations of the adopted research design and analytical strategy, to provide (a) tentative

Table 3 Cluster Composition by Gender and Sport Type

Cluster		Number of Athletes			
		Total <i>n</i>	Gender		Sport Type
#	Label		Female	Male	Team Sports Individual Sports
1	Parent-Oriented Unhealthy Perfectionists	32	12	20	24 8
2	Doubt-Oriented Unhealthy Perfectionists	21	7	14	12 9
3	Non-Perfectionists	22	9	13	12 10
4	Healthy Perfectionists	42	20	22	21 21

Note. Team sports = Basketball, volleyball, and hockey; Individual sports = Track and field and wrestling.

insight into the composition of unhealthy and healthy perfectionism in sport and (b) directions for future research.

The cluster solution adopted in this study identified two clusters (i.e., Clusters 1 and 2) with relatively high levels across facets of both perfectionistic strivings (e.g., PS and Org) and perfectionistic concerns (e.g., COM, PCP, PPP, and DAA). According to Stoeber and Otto's (2006) common conceptual framework, such a profile is reflective of unhealthy perfectionists. Two specific perfectionistic concerns facets—PPP and DAA—further distinguished these two clusters. That is, Cluster 1 (parent-oriented unhealthy perfectionism) and Cluster 2 (doubt-oriented unhealthy perfectionists) had higher respective scores on PPP and DAA than the three remaining clusters (see Table 2). While general psychology researchers have identified multiple unhealthy forms of perfectionism (see Dixon, Lapsley, & Hanchon, 2004; Lundh et al., 2008), it is novel within the sport psychology literature to suggest that unique unhealthy perfectionist orientations characterized by differing degrees of different perfectionistic concerns facets can be used to describe athletes' perfectionist tendencies.

The two remaining clusters in the present cluster solution (i.e., Clusters 3 and 4) were characterized by achievement profiles respectively analogous to non-perfectionism and healthy perfectionism (as defined by Stoeber & Otto's [2006] common conceptual framework). That is, while Cluster 3 (nonperfectionists) was characterized by low levels across both perfectionistic strivings and perfectionistic concerns, Cluster 4 (healthy perfectionists) displayed moderate-to-high levels of perfectionistic strivings (e.g., PS and Org) in combination with relatively low levels of perfectionistic concerns (e.g., COM, DAA, PPP, and PCP). The healthy perfectionist cluster's relative standing on the Sport-MPS-2 personal standards (PS) subscale is worthy of further discussion because doing so illustrates a lack of clarity within the pertinent literature regarding the levels of perfectionistic strivings that are expected to (a) define healthy perfectionism and (b) distinguish the achievement orientation from unhealthy perfectionism.

The Sport-MPS-2 PS subscale represents tendencies to endorse very high standards of personal sport performance (Dunn, Causgrove Dunn et al., 2006)—a facet central to perfectionistic strivings (Sagar & Stoeber, 2009). In the current study, healthy perfectionists (Cluster 4) had significantly higher PS scores in comparison with nonperfectionists (Cluster 3; see Table 2), replicating a finding routinely produced in cluster analytic research conducted within general psychology (for a review, see Stoeber & Otto, 2006). However, the healthy perfectionist cluster also had significantly lower PS scores than both clusters of unhealthy perfectionists. On the one hand, this result contrasts with Stoeber and Otto's (2006) framework in which both healthy and unhealthy perfectionists are defined as having similarly high degrees of perfectionistic strivings. On the other hand, this finding could reflect Hamachek's contention that healthy perfectionists' "self-expectations are both more reasonable and realistic" (1978, p. 28) than those endorsed by unhealthy perfectionists. Cluster analytic perfectionism research conducted within general psychology does little to clarify this issue. For example, clusters labeled as healthy/adaptive perfectionists have had scores on the Frost-MPS personal standards subscale that are lower than (see Parker, 1997; Rice & Merzadeh, 2000), higher than (see Rice, Bair, Castro, Cohen, & Hood, 2003; Rice & Dellwo, 2002), or equal to (see Rice & Lapsley, 2001) those of clusters labeled as maladaptive/dysfunctional perfectionists.

Such disparate findings suggest that the personal standards adopted by individuals identified as healthy perfectionists may not be adequately understood and should be explored in more depth in future research.

In discussing characteristics of the present cluster solution, it is important to recognize that the generalizability of this solution is limited by several factors. While there are no sample size requirements for cluster analysis, it can be questioned whether the present sample ($N = 117$) is large enough to accurately and proportionally represent the underlying structure of perfectionist orientations within the intercollegiate athlete population (if any such structure indeed exists). For instance, the size of the parent-oriented and doubt-oriented unhealthy perfectionist clusters ($n = 32$ and 21 , respectively) makes it difficult to determine whether the two clusters' distinction is due to characteristics specific to the present sample or whether the clusters are representative of proportionally small, yet meaningful, groups within the intercollegiate athlete population (for a related discussion, see Hair et al., 2010). Cross-validation of the present cluster solution among independent, and larger, samples is required to address this issue (Hair et al., 2010).

The present concerns over generalizability are compounded by the fact that cluster analysis is inherently a data-driven statistical technique that always produces solutions specific to the sample at hand (Hair et al., 2010). As a result, it is impossible to predict with any degree of certainty whether the present cluster solution would be reproduced had a different sample been obtained. This inherent limitation of cluster analysis may be especially relevant in the current study given that a 4-cluster solution was chosen to best represent the data while 3-cluster solutions are most common in general psychology cluster analytic perfectionism research (for a review, see Stoeber & Otto, 2006). Hair et al. (2010) indicate that one way to counter the sample-specific nature of cluster analysis is to establish supportive criterion validity evidence for the cluster solution at hand. In the current study, such evidence was produced by investigating whether the produced clusters demonstrated theoretically-meaningful differences across indices of athlete burnout.

It was hypothesized that healthy perfectionist athletes would report lower levels of burnout symptoms in comparison with unhealthy perfectionist athletes. Intercluster comparisons across the subscales of the ABQ produced partial support for this prediction. In line with this expectation, the cluster of healthy perfectionists reported lower levels on all three athlete burnout symptoms in comparison with the cluster of doubt-oriented unhealthy perfectionists (see Table 2). In contrast, healthy perfectionists were lower than the parent-oriented unhealthy perfectionists on only one of three burnout symptoms (i.e., emotional/physical exhaustion). While this differing degree of support was unexpected, speculative explanations can be derived by considering (a) the defining features of both unhealthy perfectionist clusters, (b) theoretical conceptualizations of the origins of athlete burnout, and (c) the competitive sport context from which the present sample was obtained.

As previously discussed, the parent-oriented unhealthy perfectionist cluster was distinguished from the three remaining clusters by a high score on the Sport-MPS-2 PPP subscale (see Table 2). This subscale represents athletes' tendencies to perceive their parents as a source of social pressure (Dunn et al., 2002). Within the context of intercollegiate sport, though, athletes are relatively removed from their parents' expectations and criticisms (for related discussions, see Dunn, Gotwals, et al., 2006; Gotwals et al., 2003). According to Smith's (1986) cognitive-affective

model of burnout, removal of this source of pressure would make the competitive environment less threatening to parent-oriented unhealthy perfectionists and, thus, decrease their susceptibility to burnout. In contrast, the doubt-oriented unhealthy perfectionist cluster was distinguished by a high score on the Sport-MPS-2 DAA subscale—indicating that athletes in this cluster felt a relatively high degree of uncertainty about, and dissatisfaction with, the quality of their competitive training (Gotwals & Dunn, 2009). Within the context of intercollegiate varsity sport, athletes' competitive training tends to be managed and controlled to a high degree by their coaches (Eitzen, 2003). Coakley (1992) suggested that such contexts—where athletes are not empowered with the ability to control their experiences in sport—are conducive to the development of burnout. This feature of the intercollegiate sport context, in combination with the doubt-oriented unhealthy perfectionists' tendencies to be dissatisfied with their training, may have contributed to the relatively higher levels of burnout symptoms reported by this cluster.

The present intercluster comparisons also indicated that the healthy perfectionists had lower scores across all three burnout indices in comparison with the nonperfectionists (see Table 2). Speculations regarding the etiology of these differences can be drawn from the facts that the healthy perfectionists' scores on the PS subscale were significantly higher in comparison with the nonperfectionists, but relatively moderate in comparison with both clusters of unhealthy perfectionists. Several PS items reflect the belief that the achievement of high standards of sport performance is personally meaningful and valued (e.g., "It is important to me that I be thoroughly competent in everything I do in my sport;" "I hate being less than the best at things in my sport"). Smith (1986) indicated that burnout can develop when athletes perceive their engagement in sport to be (a) irrationally full of personal meaning and value (e.g., when athletes feel that their performances define their self-worth) or (b) devoid of personal meaning and value (e.g., when athletes are amotivated to train/compete in their sport). Accordingly, the finding that the healthy perfectionists reported lower levels of burnout symptoms in comparison with the nonperfectionists may have been related to (a) the healthy perfectionists' tendencies to perceive their engagement in sport to be personally meaningful—but not self-defining (as reflected by the cluster's relatively moderate PS scores) and (b) the nonperfectionists' tendencies to perceive a lack of meaning in their sport-based achievement efforts (as reflected by their relatively low PS scores).

The purpose of speculations presented in the previous two paragraphs was to provide tentative explanations for findings not originally hypothesized and potential directions for future investigations. The nature of these speculations reflects a fundamental assumption adopted throughout this study: namely, that individuals' levels of perfectionism (in combination with pertinent aspects of the environment) directly influence their subsequent susceptibilities to burnout. While this perspective (a) fits with conceptualizations of healthy/unhealthy perfectionism and athlete burnout (e.g., Hamachek, 1978; Smith, 1986) and (b) is routinely adopted in the extant perfectionism-athlete burnout literature (e.g., Appleton et al., 2009; Hill, Hall, & Appleton, 2010), it is not inherently supported by the cross-sectional nature of the present data. Given that data reflecting the participants' levels of perfectionism and burnout symptoms were collected simultaneously, causality or direction of influence between these two variables cannot be determined. Within the present research design, it is equally plausible that the perfectionist tendencies

that defined each cluster were functions—as opposed to determinants—of their respective levels of burnout symptoms.⁴

Evidence for the direction of influence between perfectionism and burnout could be produced by investigating the mechanisms through which athletes with different perfectionist orientations experience different levels of burnout symptoms. For example, a series of studies conducted by Hill and colleagues have sought to explore whether certain variables—including coping strategies (Hill, Hall, & Appleton, 2010), self-acceptance (Hill, Hall, Appleton, & Kozub, 2008), and validation seeking (Hill, Hall, Appleton, & Murray, 2010)—mediate the relationships between individual facets of perfectionism and burnout among samples of male and female high performance athletes. However, the analytical strategy adopted in these studies (structural equation modeling) is not inherently designed to take into account profiles comprised of multiple interacting variables (for a discussion, see Bergmann, 1988). Therefore, alternative (and innovative) research designs and analytical strategies will be required to identify factors that may mediate relationships between healthy/unhealthy perfectionism and athlete burnout.

Similar to the current study, Lemyre et al. (2008) also used a person-oriented approach to investigate relationships between perfectionism and burnout in sport among high performance athletes. As interpreted through Stoeber and Otto's (2006) common conceptual framework, these researchers found that a cluster of athletes defined (in part) by unhealthy perfectionist tendencies reported higher levels of burnout symptoms than a cluster of athletes defined (in part) by nonperfectionist tendencies. These results differ from the present findings in several ways. First, the current study's nonperfectionist and unhealthy perfectionist clusters generally did not report differing levels of burnout symptoms (see Table 2). Second, a group of healthy perfectionist athletes was not represented in Lemyre et al.'s cluster solution. This difference is important given that, in the current study, the healthy perfectionist cluster tended to have lower burnout symptom levels than both the nonperfectionist and unhealthy perfectionist clusters. While this comparison of results is limited due to differences between the studies (regarding assessment strategy, design, and the variables included in analysis), it suggests that sport-based perfectionism researchers who use cluster analysis to represent the person-oriented approach should consider a variety of cluster solutions—and take into account multiple criteria—before choosing a single solution as the most appropriate representation of the structure inherent to athletes' perfectionist tendencies (see Hair et al., 2010).

It is also important to recognize the current study's potential contribution to applied sport psychology contexts. Past perfectionism-burnout research has generally used a variable-oriented approach focused on illuminating relationships between singular perfectionism dimensions/facets and burnout indices (e.g., Appleton et al., 2009; Chen et al., 2009; Hill et al., 2008). Such an approach provides sport psychology consultants with limited guidance in determining specific athletes' burnout vulnerabilities because athletes' perfectionist orientations cannot be defined by solely referring to a single perfectionism dimension (Dunn, Gotwals et al., 2006; Gotwals et al., 2003; Lundh et al., 2008). In contrast, the current study adopted a person-oriented approach in that it (a) identified specific groups of athletes with unique profiles of multiple interacting perfectionism facets and (b) demonstrated significant differences between these groups' burnout symptoms. As a result, the present person-oriented findings are in a format that provides a better match to the

structure of individual athletes' perfectionist orientations and are, therefore, more amenable to generalization to "real world" applied sport psychology contexts (in comparison with variable-oriented findings; see Bergman et al., 2003; Magnusson, 1993). While the present findings are in need of validation and replication before such generalization is appropriate, it is hoped that the current study can serve as an example—and a seed point—for future research with enhanced relevancy to applied sport psychologists' interactions with perfectionist athletes.

After reviewing results produced in the extant group-based perfectionism literature, Stoeber and Otto (2006) concluded that "individuals with high levels of perfectionistic strivings and low levels of perfectionistic concerns by and large do evince good mental health compared to individuals with high levels of perfectionistic strivings and high levels of perfectionistic concerns" (p. 315). As a result, Stoeber and Otto indicated that the terms *healthy perfectionists* and *unhealthy perfectionists* were appropriate labels (respectively) for such individuals. However, Stoeber and Otto qualified this statement by indicating that the reviewed results had not provided convincing evidence that perfectionism contributes positively to individuals' development or to their ability to adapt to different contexts. Similarly, while the present results indicated that the cluster of healthy perfectionists reported higher levels of mental health (in the form of lower burnout levels) in comparison with the clusters of nonperfectionists and doubt-oriented unhealthy perfectionists, such results do not demonstrate functional or adaptive advantages specific to any cluster. This point is important given Hall's (2006) contention that athletes' perfectionistic tendencies may contribute to positive outcomes in the short-term, but are ultimately dysfunctional in the long term. Accordingly, in comparison with the present cross-sectional results, research adopting longitudinal designs may be able to more fully evaluate the degree to which different perfectionist orientations can be characterized as being functional and/or adaptive in nature (see Stoeber & Otto, 2006).

Notes

1. The competitive seasons for the hockey, basketball, volleyball, and wrestling teams were approximately 6 months in length. However, the competitive season for the track and field team took place over 4 months (data were collected from this team within the first month of this 4-month competitive season).
2. Two separate multivariate analyses of variance (MANOVAs) were conducted to examine whether athletes' perfectionism and burnout levels differed depending on whether their data were collected less than 24 hr pre/post-competition (i.e., the hockey team) or greater than 24 hr pre/post-competition (the remaining teams). Both analyses produced nonsignificant multivariate test statistics ($ps = .111$ and $.208$).
3. The Ward's method and squared Euclidean distance were chosen as the clustering algorithm and similarity measure (respectively) to use in the present hierarchical cluster analysis because (a) characteristics of the expected/desired cluster solution could not be predicted before analysis, (b) Hair et al. (2010) identified the Ward's method as one of the "best available" (p. 512) clustering algorithms to use within hierarchical cluster analysis, and (c) the algorithm has been repeatedly used across general psychology and sport psychology cluster analytic perfectionism research (e.g., Dixon et al., 2004; Lemyre et al., 1996; Parker, 1997; Vallance et al., 2006). See Hair et al. (2010) for a detailed discussion of this clustering algorithm and similarity measure.
4. I thank one of the anonymous reviewers for bringing this point to my attention.

Acknowledgments

This study was supported by a grant awarded to the author by Lakehead University's Senate Research Committee. The author thanks John G. H. Dunn (University of Alberta) for his helpful comments and suggestions regarding a previous draft of this manuscript.

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