



## A multi-sample investigation of the higher-order latent dimensionality of the Sport-Multidimensional Perfectionism Scale-2



John G.H. Dunn<sup>a,\*</sup>, John K. Gotwals<sup>b</sup>, Janice Causgrove Dunn<sup>a</sup>, Anne-Marie Selzler<sup>a</sup>, Michael R. Lizmore<sup>a</sup>, Matthew Vaartstra<sup>a</sup>, Klaudia M. Sapieja<sup>a</sup>, Vania E. Gamache<sup>a</sup>

<sup>a</sup> Faculty of Physical Education and Recreation, University of Alberta, Canada

<sup>b</sup> School of Kinesiology at Lakehead University, Canada

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### ABSTRACT

**Objective:** Examine the higher-order latent dimensionality of the Sport-Multidimensional Perfectionism Scale-2 (Sport-MPS-2: Gotwals & Dunn, 2009).

**Design:** Correlational.

**Method:** A total of 1605 athletes (562 female) from eight independent samples completed the Sport-MPS-2. Athletes in one sample ( $n = 239$ ) also completed a portion of the Multidimensional Inventory of Perfectionism in Sport (MIPS: Stoeber, Otto, & Stoll, 2006). The correlation matrices among the Sport-MPS-2 subscales for five samples were analyzed with exploratory factor analyses. The covariance matrices for the subscales in the three remaining samples (including the sample that completed the MIPS) were analyzed with confirmatory factor analyses and exploratory structural equation modeling (ESEM: Asparouhov & Muthén, 2009).

**Results:** Two highly interpretable factors—labelled *Perfectionistic Strivings* and *Perfectionistic Concerns*—were obtained for each data set.

**Conclusion:** Theorists note the importance of using multiple indicators to measure perfectionistic strivings and perfectionistic concerns in sport. The current factor-analytic and ESEM results indicate that the six subscales comprising the Sport-MPS-2 may help to achieve this objective.

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The dispositional achievement-motivation construct of perfectionism has received a great deal of research attention in the domain of sport over the last two decades (Gotwals, Stoeber, Dunn, & Stoll, 2012). Although disagreement still exists among theorists as to exactly how perfectionism in sport should be conceptualized and measured, most researchers in sport advocate that perfectionism is best captured by multidimensional domain-specific measures (see Dunn, Causgrove Dunn, Gotwals, Vallance, Craft, & Syrotuik, 2006; Gotwals et al., 2012; Stoeber, 2011). Existing measures designed to meet these multidimensional domain-specific criteria are the Sport Multidimensional Perfectionism Scale (Sport-MPS: Dunn, Causgrove Dunn et al., 2006), the Sport-Multidimensional Perfectionism Scale-2 (Sport-MPS-2: Gotwals & Dunn, 2009), the Multidimensional Inventory of Perfectionism in

Sport (MIPS: Stoeber, Otto, & Stoll, 2006), and the Perfectionism in Sport Scale (PSS: Anshel & Eom, 2003). Given that each measure differs with respect to item content and subscale composition, valuable validity evidence can be obtained by examining the degree to which the instruments' subscales reflect the two higher-order dimensions of perfectionism that are commonly recognized by theorists: namely, *perfectionistic strivings* and *perfectionistic concerns* (see Stoeber & Madigan, 2016).

Perfectionistic strivings in sport reflect “aspects of perfectionism associated with striving for perfection and setting exceedingly high standards of performance [in sport]” (Stoeber, 2012, p. 294). In contrast, perfectionistic concerns in sport reflect aspects of perfectionism “associated with concern over making mistakes, fear of negative evaluation by others, and feelings of discrepancy between one's expectations and performance [in sport]” (Stoeber, 2012, p. 295). High perfectionistic strivings are often associated with adaptive functioning in sport (primarily when the overlap with perfectionistic concerns is controlled) whereas high perfectionistic concerns predominantly correspond with maladaptive

\* Corresponding author. Faculty of Physical Education and Recreation, 3-100 University Hall, Van Vliet Complex, University of Alberta, Edmonton, Alberta T6G 2H9, Canada.

E-mail address: [john.dunn@ualberta.ca](mailto:john.dunn@ualberta.ca) (J.G.H. Dunn).

functioning in sport (Gotwals et al., 2012).

From a measurement perspective, it has been argued that perfectionistic strivings and perfectionistic concerns are “broad higher-order dimensions that cannot be fully captured with single indicators [i.e., subscales]” (Stoeber & Madigan, 2016, p. 48) and are therefore best assessed “when each [higher-order] dimension is measured with multiple scales” (Stoeber, 2012, p. 296). As such, the challenge for researchers interested in studying perfectionistic strivings and perfectionistic concerns in sport is to identify and select appropriate subscales that enable an adequate and comprehensive assessment of these higher-order dimensions.

Following a recent review of existing multidimensional domain-specific measures of perfectionism in sport (i.e., the Sport-MPS, Sport-MPS-2, MIPS, and PSS), Stoeber and Madigan (2016) recommended that perfectionistic strivings be measured with some combination of the Personal Standards (PS) subscale of the Sport-MPS (or Sport-MPS-2), the Personal Standards subscale of the PSS, and the Striving for Perfection (SP) subscale of the MIPS. Stoeber and Madigan also recommended that perfectionistic concerns be measured with some combination of the Concern over Mistakes (COM) subscale of the Sport-MPS (or Sport-MPS-2), the Concern over Mistakes subscale of the PSS, and the Negative Reactions to Imperfection (NRI) subscale of the MIPS. A cursory review of the extant literature indicates that researchers have tended to favor the combination of the aforementioned Sport-MPS and MIPS subscales to measure perfectionistic strivings and concerns in sport (over combinations involving PSS subscales).

Although we concur with Stoeber and Madigan's (2016) view that combinations of the previously mentioned subscales reflect central aspects of perfectionistic strivings and perfectionistic concerns in sport (also see Rasquinha, Dunn, & Causgrove Dunn, 2014), we respectfully posit that there is a potential problem associated with their recommendations. Specifically, if researchers were to strictly follow Stoeber and Madigan's advice, other potentially important indicators of perfectionistic strivings and perfectionistic concerns in sport (that could contribute to the understanding of these higher-order dimensions) may be overlooked. For example, Gotwals and colleagues (e.g., Gotwals & Dunn, 2009; Gotwals, Dunn, Causgrove Dunn, & Gamache, 2010; Gotwals et al., 2012) have repeatedly contended that the Perceived Coach Pressure (PCP), Perceived Parental Pressure (PPP), and Doubts About Actions (DAA) subscales of the Sport-MPS-2 are indicators of perfectionistic concerns, and the Organization (ORG) subscale of the Sport-MPS-2 is an indicator of perfectionistic strivings. Based on these contentions, if researchers adhere to Stoeber and Madigan's guidelines and choose not to incorporate the PCP, PPP, DAA, and ORG subscales of the Sport-MPS-2 into their assessment strategies, this could result in the use of proxy measures that underrepresent the constructs of perfectionistic strivings and perfectionistic concerns in sport.

A detailed explanation of why the PPP, PCP, DAA, and ORG subscales are included as measures of perfectionism (along with the PS and COM subscales) in the Sport-MPS-2 can be found across a number of studies (see Dunn, Causgrove Dunn, & Syrotuik, 2002; Dunn, Causgrove Dunn et al., 2006; Dunn, Gotwals, Causgrove Dunn, & Syrotuik, 2006; Gotwals & Dunn, 2009; Gotwals et al., 2010). Empirical evidence supporting the inclusion of these subscales as measures of perfectionistic strivings and perfectionistic concerns can also be found in the literature. For example, the PCP and PPP subscales have shown strong positive relationships with the Socially Prescribed Perfectionism (SPP) subscale of Hewitt and Flett's (1991) Multidimensional Perfectionism Scale (Hewitt-MPS) in samples of football players and figure skaters (see Dunn, Causgrove Dunn et al., 2006)—where SPP is a recognized indicator of perfectionistic concerns (see Stoeber & Otto, 2006). Similarly,

the DAA subscale has shown moderate positive correlations with the Concern Over Mistakes and Doubts About Actions subscales of Frost, Marten, Lahart, and Rosenblate's (1990) Multidimensional Perfectionism Scale (Frost-MPS) in a sample of hockey players (see Gotwals et al., 2010)—where both Frost-MPS subscales are recognized as indicators of perfectionistic concerns (see Stoeber & Otto, 2006). The ORG subscale of the Sport-MPS-2 was positively correlated with the personal standards subscale of the Frost-MPS ( $r = .32$ ) in the same sample of hockey players (Gotwals et al., 2010), and characteristics that are similar to those assessed by the item content of the ORG subscale (of the Sport-MPS-2) have been identified in recent qualitative investigations of the perspectives endorsed by perfectionistic athletes, dancers, and musicians (see Gotwals, 2016; Gotwals & Spencer-Cavaliere, 2014; Hill, Witcher, Gotwals, & Leyland, 2015).

In addition to each individual Sport-MPS-2 subscale being relevant to perfectionism in sport, evidence suggests that the simultaneous use of all six Sport-MPS-2 subscales has benefits. For example, all Sport-MPS-2 subscales have been used simultaneously to help differentiate between healthy/adaptive and unhealthy/maladaptive profiles of perfectionism in sport (e.g., Dunn, Causgrove Dunn, Gamache, & Holt, 2014; Gotwals & Spencer-Cavaliere, 2014). Moreover, when all six Sport-MPS-2 subscales have been used to assess perfectionism in athletes, the Sport-MPS-2 has shown itself to be a stronger (and more sensitive) predictor of other sport-specific criterion variables (e.g., attitudinal body image; competitive trait anxiety) in comparison to global/generic measures of perfectionism (see Dunn, Craft, Causgrove Dunn, & Gotwals, 2011; Gotwals et al., 2010). Taken collectively, the aforementioned body of empirical evidence indicates that all six Sport-MPS-2 subscales appear to be contributing towards the understanding and assessment of perfectionism in sport. We therefore propose that all six subscales should be considered as indicators of perfectionistic strivings and perfectionistic concerns in sport.

One potential way to examine the validity of the arguments put forward regarding the relevance of all six Sport-MPS-2 subscales as indicators of perfectionistic strivings and perfectionistic concerns is to examine the higher-order latent dimensionality of the instrument. In other words, rather than conducting factor analyses on correlations at the item level, higher-order factor analyses can be conducted on correlations at the subscale level. Validity evidence to support the view that all six Sport-MPS-2 subscales reflect indicators of perfectionistic strivings and perfectionistic concerns would be obtained if two higher-order factors emerged whereby the PS and ORG subscales loaded on a factor resembling perfectionistic strivings and the COM, PCP, PPP, and DAA subscales loaded on a factor resembling perfectionistic concerns. Additional validity evidence could be obtained if the SP and NRI subscales of Stoeber et al.'s (2006) MIPS were also included in the analyses, whereby SP loaded on the same (perfectionistic strivings) factor as PS and ORG, and NRI loaded on the same (perfectionistic concerns) factor as COM, PCP, PPP, and DAA (cf. Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). Therefore, the purpose of this study was to examine the higher-order latent dimensionality of the Sport-MPS-2 and determine—at a structural level—if all six subscales of the Sport-MPS-2 could be considered to reflect meaningful indicators of perfectionistic strivings and perfectionistic concerns in sport.

No previous research has examined the higher-order latent dimensionality of the Sport-MPS-2 (or, to the best of our knowledge, any other multidimensional domain-specific measure of perfectionism in sport). This type of internal structurally-related validity evidence is commonly viewed as an essential part of the construct-validation process surrounding instrument development (Messick, 1989; Myers, Chase, Pierce, & Martin, 2011), and in

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