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Madigan, Daniel J. (2023) Advances in the measurement of perfectionism in sport, dance, and exercise. In: EditorsEmailORCIDHill, Andrew P.a.hill@yorks.ac.ukORCID logohttps://orcid.org/0000-0001-6370-8901UNSPECIFIED, (ed.) The Psychology of Perfectionism in Sport, Dance, and Exercise. Second ed. Routledge

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Madigan, D. J. (in press). Advances in the measurement of perfectionism in sport, dance, and exercise. In A. P. Hill (Ed.), *The Psychology of Perfectionism in Sport, Dance, and Exercise* (2nd Edition). Routledge. [Accepted (28-11-2022)]

## Advances in the Measurement of Perfectionism in Sport, Dance, and Exercise

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### **Summary**

There are currently many measures of perfectionism. These measures contain a different number of subscales and, most of the time, the subscales have different names. This presents a confusing situation to researchers unfamiliar with the perfectionism literature who want to conduct research on perfectionism in sport, dance, and exercise. The aim of the present chapter, then, is to provide clear recommendations for how to measure perfectionism in these domains. To do so, I first introduce readers to the conceptual foundations for these recommendations – the two-factor model and sub-domain-specific models of perfectionism. I then review general and sport-specific measures of perfectionism. In each case I note key features, offer critique, and recommendations in regards to their general use. I close the chapter by discussing which subscales offer best, sub-optimal, and inappropriate proxies of the two-factor higher-order model of perfectionism in sport, dance, and exercise.

## Overview

In the first edition of this chapter all extant measures of multidimensional perfectionism were reviewed (Stoeber & Madigan, 2016). In this revised, second edition, my goal is somewhat different. While I again provide an overview of measures and measurement issues in this area, the focus is now only on the measures that are the most common, valid and reliable for assessing perfectionism in sport, dance, and exercise. In changing this approach, I have also updated the information provided based on new evidence and have added details of translated versions of measures now available in non-English languages. As a result of changing evidence, some of the recommendations have now also changed. I begin the chapter with a brief discussion of three important conceptual and practical issues that form the backdrop to my review, critique, and proposed recommendations.<sup>1</sup>

### The Two-Factor Model of Perfectionism

Perfectionism is multidimensional. This is because it has various interrelated defining features. Research has shown that these different features—when examined together using factor analytic procedures—form two higher-order factors (Stoeber & Otto, 2006): Perfectionistic strivings and perfectionistic concerns. Differentiating perfectionistic strivings and perfectionistic concerns is central to understanding perfectionism. This is because this approach acts as a means to translate research adopting different measures, dimensions, and subscales into the same comparable language. Importantly, when we do so, perfectionistic strivings and perfectionistic concerns are found to show differing relationships with various outcomes, with only perfectionistic concerns consistently related to maladaptive outcomes (such as depressive symptoms), and perfectionistic strivings more mixed and sometimes related to more adaptive outcomes (such as performance; Hill et al., 2019). This approach,

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<sup>1</sup>The author would like to thank and acknowledge the contributions of Joachim Stoeber, first author of the first edition of this chapter, on which a large proportion of the present ideas and text are based.

then, is integral to understanding perfectionism and its measurement in sport, dance, and exercise domains.

### **Proxies of Perfectionistic Strivings and Perfectionistic Concerns**

The two-factor model necessitates the use of the best “proxies” of perfectionistic strivings and perfectionistic concerns. This is because perfectionistic strivings and perfectionistic concerns are broad, higher-order, dimensions that cannot be fully captured with single indicators. Combining two or more subscales allows for greater confidence in capturing the higher-order dimensions, rather than model-specific aspects of perfectionistic strivings and perfectionistic concerns. It also has the advantage of minimising idiosyncrasies in individual subscales. As such, the recommendations that follow are based on the idea that multiple measures of perfectionistic strivings and perfectionistic concerns are required, or at least preferable, and that researchers should seek to use the best available proxy measures of the two higher-order dimensions of perfectionism when doing so.

### **(Sub-)Domain-Specificity of Perfectionism**

One final issue taken into account as part of the present chapter is the importance of domain-specificity and the emergence of sub-domain measures of perfectionism. Few people are perfectionistic in all domains of life and, if you ask people about perfectionism in general, most will mention specific domains of functioning (such as work, school, or sport; Stoeber & Stoeber, 2009). Consequently, it is important to view perfectionism as a domain-specific characteristic (e.g., Dunn, Gotwals, & Causgrove Dunn, 2005). Researchers have therefore begun to measure perfectionism in this way. When doing so in sport, this approach shows greater predictive utility of sport-specific characteristics, processes, and outcomes than general measures of perfectionism (e.g., Dunn et al., 2011). Hence it is important to differentiate between general measures of perfectionism and domain-specific measures of perfectionism. More recently, it has also become apparent that it is important to differentiate

sub-domains – that is, particular aspects of a domain. As such, global (e.g., life generally), domain-specific (e.g., sport), and sub-domain-specific (e.g., performance) measures are differentiated when considering the merits of particular approaches to measuring perfectionism in sport, dance, and exercise.

The next part of the chapter is a review of general measures of perfectionism that are recommended, to varying degrees, to measure perfectionism in sport, dance, and exercise, but were not specifically developed for this purpose. The second part will review domain-specific and sub-domain-specific measures of perfectionism that are recommended for use and were specifically developed to measure perfectionism in sport.<sup>2</sup>

### **General measures**

#### **The importance of contextualization**

Since individuals who are invested in sport, dance, or exercise show higher levels of perfectionism in these domains than other areas of life (e.g., Dunn et al., 2005), if the intention is to measure perfectionism in sport, dance, and exercise, general measures of perfectionism need to be contextualized to make sure they capture individual differences in perfectionism in sport, dance, and exercise, not general perfectionism.

To do so, research in personality and individual differences differentiates between tagging, instructional contextualization, and fully contextualized measures (e.g., Holtrop et al., 2014).

Tagging refers to telling participants that the items of a measure should be responded to with reference to a specific domain by adding a “tag” in front of the item section (e.g., “In competitive rowing, ...”; Hill et al., 2014).

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<sup>2</sup>In this review, to aid clarity, the names of scales and subscales are capitalized (e.g., Personal Standards, Concern over Mistakes) whereas the psychological concepts the scales and subscales capture are in lowercase letters (e.g., personal standards, concern over mistakes).

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Instructional contextualization refers to adapting the instructions so to tell participants what domain the items should be responded to (e.g., “Below are a number of statements regarding attitudes toward sport and sport performance. Please read each statement and decide to what degree this statement characterizes *your attitudes toward competitive rowing*”; Hill et al., 2014).

This, however, is often not sufficient for providing a reliable and valid assessment of domain-specific perfectionism, so general measures of perfectionism need to be fully contextualized. The reason is that these measures contain items that refer to life in general (e.g., “My parents rarely expected me to excel in all aspects of my life”; Hewitt & Flett, 1991) or to areas of life, activities, and people outside sport, dance, and exercise (e.g., “If I fail at work/school, I am a failure as a person”, Frost et al., 1990). Such items need to be adapted (i.e., revised or rewritten), for example, by replacing “work/school” with “my sport” (e.g., Hill et al., 2014).

Only when general measures of perfectionism are contextualized, can researchers be sure that they capture perfectionism in sport, dance, and exercise and not general perfectionism in athletes, dancers, and exercisers.

This is different if researchers intend to examine the correlates and consequences of general perfectionism in athletes – for example, does general perfectionism predict general life satisfaction in athletes? In that case, researchers are advised to make clear to participants that the items do not refer to their sport, but to life in general (cf. Gaudreau & Verner-Filion, 2012). Most of the time, though, researchers should seek to use tagging or instructional contextualisation when using general measures.

### **Frost Multidimensional Perfectionism Scale (F-MPS)**

#### *Description*

The F-MPS (Frost et al., 1990) differentiates six dimensions of perfectionism: personal standards, concern over mistakes, doubts about actions, parental expectations, parental criticism, and organization. Personal standards reflect perfectionists' exceedingly high standards of performance. Concern over mistakes reflects perfectionists' fear about making mistakes and the negative consequences that mistakes have for their self-evaluation, whereas doubts about actions reflect a tendency towards indecisiveness related to an uncertainty about doing the right thing. In contrast, parental expectations and parental criticism reflect perfectionists' perceptions that their parents expected them to be perfect and were critical if they failed to meet these expectations. Finally, organization reflects tendencies to be organized and value order and neatness. To capture these aspects, Frost and colleagues (1990) developed the F-MPS. The F-MPS is comprised of thirty-five items forming six subscales: Personal Standards (seven items; e.g., "I have extremely high goals"), Concern over Mistakes (nine items; "If I fail at work/school, I am a failure as a person"), Doubts about Actions (four items; "I usually have doubts about the simple everyday things that I do"), Parental Expectations (five items; "My parents wanted me to be the best at everything"), Parental Criticism (four items; "As a child, I was punished for doing things less than perfect"), and Organization (six items; "Organization is very important to me").

#### *Short form*

Cox, Enns, and Clara (2002) published a twenty-two-item short form of the F-MPS, with five subscales: Personal Standards (five items), Concern over Mistakes (five items), Doubts about Actions (three items), Parental Pressure (five items from the Parental Expectations and Parental Criticism subscales), and Organization (four items). The short form has shown good factorial validity, but scores from the Doubts about Actions subscale

have shown Cronbach's alphas ( $\alpha$ )  $< .70$  (Cox et al., 2002). Because  $\alpha = .70$  is generally considered the lower threshold for acceptable reliability (e.g., Nunnally & Bernstein, 1994), the reliability of the short form's Doubts about Actions scores may be regarded as questionable.<sup>3</sup> All subscales showed correlations with their original counterparts of  $r > .86$  suggesting a strong alignment between the short and long versions.

### *Reliability and validity*

The F-MPS has shown reliability and validity in numerous studies outside sport, dance, and exercise (see Flett & Hewitt, 2015, for a comprehensive review). In this regard, Personal Standards scores have shown to be a key indicator of perfectionistic strivings and Concern over Mistakes scores a key indicator of perfectionistic concerns (Stoeber & Otto, 2006). The use of the F-MPS in sport and dance, however, is limited and mainly restricted to the time before the sport adaptation of the F-MPS was published (discussed shortly). Moreover, most of these studies used the F-MPS without contextualizing it (e.g., Gould, Udry, Tuffey, & Loehr, 1996). The same is true for research examining the F-MPS in exercise (Taranis & Meyer, 2010). Consequently, it is unclear to what degree the studies captured perfectionism in sport and exercise (rather than general perfectionism in athletes and exercisers). A few studies, however, continue to use contextualized versions of the F-MPS subscales and show satisfactory reliabilities. Mouratidis and Michou (2011), for example, contextualized Personal Standards and Concerns over Mistakes to examine perfectionism in sport, motivation, and coping in junior athletes; and Nordin-Bates et al. (2017) contextualized Personal Standards, Concerns over Mistakes, and Doubts about Actions to examine perfectionism in dance, motivation, and burnout in ballet dancers.

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<sup>3</sup>Note that here and in the rest of the chapter when discussing the scores' reliability, I refer to Cronbach's alpha ( $\alpha$ , internal consistency) which is the most commonly used statistic to assess reliability, but there are other statistics (e.g., test-retest correlation). Moreover, there are textbooks that regard Cronbach's alphas between .60 and .70 as acceptable (e.g., George & Mallery, 2003).

### *Translations*

Given that the F-MPS was one of the first multidimensional measures of perfectionism, it is not surprising that there are several available translations. This includes Chinese (Cheng et al., 1999), Korean (Lee & Park, 2011), Polish (Piotrowski & Bojanowska, 2021), Portuguese (Amaral et al., 2013), Romanian (Magurean et al., 2016), and Spanish versions (Gelabert et al., 2011). On the whole, the F-MPS has stood up well to translation with most versions maintaining at least evidence for the reliability and validity of its major subscales. The Portuguese and Spanish translations have also been used in sport (e.g., González-Hernández et al., 2021).

### *Critique*

There are a number of critical points researchers should be aware of when using the F-MPS. First, the factorial validity of the F-MPS is unclear. Factor analyses of the F-MPS items usually find between three and five, rather than six factors, combining Concern over Mistakes and Doubts about Actions items to one factor, or Parental Expectations and Parental Criticism items, or both (e.g., Cox et al., 2002). Second, two items of the Personal Standards subscale (“If I do not set the highest standards for myself, I am likely to end up a second-rate person”; “It is important to me that I be thoroughly competent in everything I do”) seem to capture contingent self-worth rather than personal standards (DiBartolo et al., 2004). Hence researchers interested in capturing “pure” personal standards may consider using the reduced five-item version suggested by DiBartolo et al. (2004). Third, because three Concern over Mistakes items make reference to other people (e.g., “People will probably think less of me if I make a mistake”), the scale confounds personal and social aspects of perfectionistic concerns (cf. Hewitt & Flett, 1991). Finally, most of the Parental Expectations and Parental Criticism items are in the past tense. Consequently, the scales capture how participants remember their parents (and how their parents raised them) rather than how participants

perceive their parents today. This has two implications. First, it is unclear how accurate these retrospective reports are (cf. Halverson, 1988). Second, as discussed, it is unclear if the scales capture aspects of perfectionism or if they should better be conceptualized as antecedents of perfectionism, that is, aspects that lead to the development of perfectionism (e.g., Damian, Stoeber, Negru, & Băban, 2013).

It is also important to note that the items of the Organization subscale are not included when computing total perfectionism scores (Frost et al., 1990). The reason is that Frost et al. considered order and organization a characteristic closely associated with perfectionism, but not a defining component of perfectionism. This view is supported by factor analyses showing that order and organization form a factor separate from perfectionistic strivings and perfectionistic concerns (Kim et al., 2015). This also means that organization should not be regarded as an indicator of perfectionistic strivings or be included in composite measures of perfectionistic strivings (Stoeber & Otto, 2006).

### *Recommendation*

Since there are two reliable and valid domain-specific measures of perfectionism in sport available that follow Frost et al.'s (1990) model of perfectionism—the S-MPS (Dunn et al., 2002) and the S-MPS-2 (Gotwals & Dunn, 2009)—the continued use of the F-MPS to measure perfectionism in sport and dance is difficult to justify, even if the measure is fully contextualized. Hence researchers interested in measuring the aspects of perfectionism in sport and dance following Frost et al.'s (1990) model should refrain from using the F-MPS and instead use the S-MPS or S-MPS-2 contextualizing the items to specific domains (e.g., dance) if necessary. Researchers interested in measuring perfectionism in exercise, however, may find it difficult to use the S-MPS or S-MPS-2 because of the items' reference to competition and training and may instead prefer to use contextualized versions of the F-MPS.

**Hewitt-Flett Multidimensional Perfectionism Scale (HF-MPS)**

*Description*

The HF-MPS (Hewitt & Flett, 1991) is based on a multidimensional model of perfectionism differentiating three forms of perfectionism: self-oriented, other-oriented, and socially prescribed. Self-oriented perfectionism reflects internally motivated beliefs that striving for perfection and being perfect are important. Self-oriented perfectionists have exceedingly high personal standards, strive for perfection, expect to be perfect, and are highly self-critical if they fail to meet these expectations. In contrast, other-oriented perfectionism reflects internally motivated beliefs that it is important for others to strive for perfection and be perfect. Other-oriented perfectionists expect others to be perfect, and are highly critical of others who fail to meet these expectations. Finally, socially prescribed perfectionism reflects externally motivated beliefs that striving for perfection and being perfect are important to others. Socially prescribed perfectionists believe that others expect them to be perfect, and that others will be highly critical of them if they fail to meet their expectations (Hewitt & Flett, 2004). The HF-MPS is a forty-five-item measure with three subscales: Self-Oriented Perfectionism (fifteen items; e.g., “I demand nothing less than perfection of myself”), Other-Oriented Perfectionism (fifteen items; “If I ask someone to do something, I expect it to be done flawlessly”), and Socially Prescribed Perfectionism (fifteen items; “People expect nothing less than perfection from me”).

*Short form*

Cox et al. (2002) published a fifteen-item short form of the HF-MPS (with each subscale comprising five items) that has shown excellent factorial validity, but may be problematic when used to measure other-oriented perfectionism. The reasons are two-fold. First, Other-Oriented Perfectionism scores showed  $\alpha < .70$  questioning the reliability of the scores. Second, all Other-Oriented Perfectionism items are reverse-scored whereas none of

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the Self-Oriented Perfectionism and Socially Prescribed Perfectionism items are. Because reverse-scored items of the HF-MPS can form a separate method factor (De Cuyper et al., 2015), Cox et al.'s (2002) short form confounds content and method. Whereas self-oriented and socially prescribed perfectionism are measured with positively scored items (the more participants agree with the *item content, the higher their perfectionism*), *other-oriented perfectionism is measured with reverse-scored items* (the less participants agree with the item content, the higher their perfectionism). This is not a problem when only Self-Oriented Perfectionism and Socially Prescribed Perfectionism are used (e.g., Jowett et al., 2013), but presents difficulties of interpretation when using Other-Oriented Perfectionism because disagreeing with statements that it is OK for others to be imperfect may not be the same as agreeing with statements that others should be perfect (Hill et al., 2014). The Self-Oriented and Socially Prescribed subscales from the short measure show strong correlations of  $r > .94$  with their original counterparts, and can therefore be recommended in situations where it is less feasible to use all items from the original version. The short and long version of Other-Oriented Perfectionism have a notably lower correlation of  $r = .73$  which again raises questions about this particular subscale.

### *Children and Adolescent version*

Researchers should note that there is also a twenty-two-item version of the HF-MPS specifically created for use with children and adolescents called the Child–Adolescent Perfectionism Scale (CAPS; Flett et al., 2016) which captures self-oriented perfectionism (twelve items) and socially prescribed perfectionism (ten items). In order to measure other-oriented perfectionism in this population, the CAPS will need to be supplemented by the recently developed Other-Oriented Perfectionism Subscale-Junior Form (Hewitt et al., 2022). Use of the CAPS precedes the more recent publication of assessment of its psychometric properties as it was available for use in an unpublished form (Flett et al., 2000). Subscales

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have demonstrated acceptable reliabilities of  $\alpha > .81$  in samples aged 8 years and older (Hewitt et al., 2022).

### *Reliability and validity*

The HF-MPS has shown reliability and validity in numerous studies outside sport, dance, and exercise (see Flett & Hewitt, 2015, for a review). Furthermore, Self-Oriented Perfectionism scores have been shown to be a key indicator of perfectionistic strivings and Socially Prescribed Perfectionism scores a key indicator of perfectionistic concerns (Stoeber & Otto, 2006). The HF-MPS and its short form have been used frequently in sport, both in their original form and contextualised version. For example, Curran and Hill (2018) explored general perfectionism and responses to performance failure in a sample of athletes whereas Grugan et al. (2020) examined contextualised perfectionism and antisocial behaviour in athletes. Studies have also used the HF-MPS in exercise domains. Deck et al. (2021), for example, examined perfectionism and exercise dependence. The CAPS has begun to be used more frequently, too, and has been used in sport (e.g., Donachie et al., 2019) and dance (e.g., Molnar et al., 2021). These studies are generally supportive of the use of the HF-MPS, particularly the shorter versions of the instrument.

### *Translations*

Similar to the F-MPS, there are several translations available of the HF-MPS for those interested in employing the scales in a non-English language. This includes Dutch (De Cuyper et al., 2015), Italian (Rice et al., 2020), Indonesian (Safitri & Preston, 2020), and Turkish versions (Yasar, 2015). Again, the majority of alternative iterations of the original HF-MPS have translated well and have shown reliability and validity evidence for its multidimensional structure. I am not aware, however, of any instances where these versions have been used in sport, dance, or exercise.

### *Critique*

There are, however, a number of open questions regarding the HF-MPS. First, the position of socially prescribed perfectionism in relation to the two-factor model of perfectionism is not 100% clear (cf. Sironic & Reeve, 2015). Whereas SPP has been shown to be a reliable and valid indicator of perfectionistic concerns across numerous studies, there are researchers who consider socially prescribed perfectionism—that is, the perception that others are expecting one to be perfect—to be associated with perfectionism, but not an integral part of perfectionism (Shafran, Cooper, & Fairburn, 2002). Moreover, one item (“My parents rarely expected me to excel in all aspects of my life”, reverse-scored) has a similar content as the items of the F-MPS Parental Expectations subscale capturing developmental antecedents of perfectionism rather than perfectionism itself (cf. Damian et al., 2013).

Second, the factorial validity of the full-length scale has been questioned. Using confirmatory factor analysis (CFA) to test the three-factor structure of the scale, Cox et al. (2002) found most fit indices indicating an unsatisfactory fit, which lead them to develop the fifteen-item short form described above. The reason for Cox et al.’s finding of unsatisfactory fit may be that the HF-MPS contains a significant number of reverse-scored items (e.g., “I never aim for perfection in my work”). In support of this idea, in one study these items formed a separate factor (De Cuyper et al., 2015). When this “method factor” was included in the CFA, the model fit improved significantly. Finally, some researchers have suggested that there are factors within the subscales of self-oriented and socially prescribed perfectionism that show different predictive validities (e.g., Trimpeter et al., 2006). In particular, Campbell and Di Paula’s (2002) suggestion to differentiate perfectionistic striving and importance of being perfect (when regarding self-oriented perfectionism) and conditional acceptance and others’ high standards (when regarding socially prescribed perfectionism) has been empirically supported (Stoeber & Childs, 2010), but so far this has not been taken up in research on

perfectionism in sport, dance, and exercise with the exception of one study in which perfectionistic striving and importance of being perfect were differentiated (Hill et al., 2010).

### *Recommendation*

Researchers interested in measuring the aspects of perfectionism in sport, exercise, and dance following Hewitt and Flett's (1991) multidimensional model of perfectionism have a number of choices depending on their aims. If the goal is to measure general perfectionism, then researchers should use the HF-MPS, if the goal is to capture the proxies of perfectionistic strivings and perfectionistic concerns in sport – self-oriented and socially prescribed perfectionism – then researchers should use and contextualise the respective five-item subscales of Cox et al.'s (2002) HF-MPS short form, but if the goal is to capture sub-domain aspects of perfectionism, the PPS-S (discussed shortly) is more appropriate. There is mixed evidence that Other-Oriented Perfectionism should be included in the two-factor model of perfectionism and was excluded by Cox et al. (2002). With its distinct focus on demands on others, it is not a clear proxy of either perfectionistic strivings nor perfectionistic concerns so is best excluded.

### **Domain-specific measures**

#### **Sport-Multidimensional Perfectionism Scale (S-MPS) and S-MPS-2**

##### *Description*

The S-MPS (Dunn et al., 2002) was the first published sport-specific measure of perfectionism and is based on Frost et al.'s (1990) multidimensional model. The S-MPS is comprised of thirty-four items forming four subscales: Personal Standards (seven items; e.g., "I have extremely high goals for myself in my sport"), Concern over Mistakes (eight items; "If I fail in competition, I feel like a failure as a person"), Perceived Parental Pressure (nine items; "I feel like I am criticized by my parents for doing things less than perfectly in

competition”), and Perceived Coach Pressure (six items; “Only outstanding performance during competition is good enough for my coach”).

Whereas the S-MPS is based on the F-MPS, there are some important differences to note. First, the S-MPS follows Stöber (1998) in combining parental expectations and parental criticism to one dimension labeled perceived parental pressure (see also Cox et al., 2002). Second, the S-MPS adds another dimension that is of key importance to athletes: perceived coach pressure (see also the MIPS described below). Moreover, except for one Perceived Parental Pressure item, all items of the two pressure scales in the F-MPS are in the past tense, not present tense as is the case in the S-MPS. Third, the S-MPS omits Doubts about Actions and Organization which were, however, added in a later revision of the S-MPS, the S-MPS-2 (Gotwals & Dunn, 2009).

In the S-MPS-2, Doubts about Actions (six items; e.g., “I usually feel unsure about the adequacy of my pre-competition practices”) reflects on doubts about the adequacy of pre-competition training, whereas Organization (six items; “I follow pre-planned steps to prepare myself for competition”)<sup>4</sup> reflects on having an organized pre-competition training regime and—for the same reasons as F-MPS Organization detailed previously—should not be used as an indicator of perfectionistic strivings.

### *Reliability and validity*

The S-MPS is the most widely used domain-specific measure of multidimensional perfectionism in sport and has demonstrated reliability and validity in numerous studies (e.g., Dunn et al., 2006). The S-MPS-2 is less frequently used—most researchers continue to use the S-MPS or use the S-MPS-2 ignoring Doubts about Actions and Organization (e.g., Crocker et al., 2014)—but has demonstrated reliability and validity as well (e.g., Gotwals et

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<sup>4</sup>Beware of the formatting error in Gotwals and Dunn’s (2009) Table 2.1. Item 31 captures doubts about actions, not organization.

al., 2010). As with the F-MPS, Personal Standards and Concern over Mistakes scores have been shown to be key indicators of perfectionistic strivings and perfectionistic concerns (e.g., Stoeber et al., 2009). To my knowledge, the S-MPS has not yet been used to measure perfectionism in dance or exercise.

### *Translations*

Like the F-MPS, on which the S-MPS is based, there are now several translated versions available. This includes Brazilian (Nascimento Junior et al., 2015), Czech (Květon et al., 2022), Mexican Spanish (Pineda-Espejel et al., 2017), and Turkish versions (Ercan & Kabakci, 2020). All are translations of the S-MPS-2 rather than the original version so include the two additional subscales. It would appear that for the most part the scale translates well into these other languages with evidence to support their validities and reliabilities.

### *Critique*

There are a minor issues to note. First, one Personal Standards item (“If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player”) seems to capture contingent self-worth rather than personal standards (see DiBartolo et al., 2004, and the F-MPS critique above). The absence of the mention of perfection from these items has also recently been raised as a possible concern (see Chapter 13). Second, whereas both S-MPS and S-MPS-2 have shown good factorial validity (e.g., Gotwals et al., 2010), some items have shown low loadings (loadings < .30) on their target factor or cross-loadings (loadings of > .30 on a different factor than the target factor). Third, the scales measuring perceived parental pressure and perceived coach pressure comprise a different number of items and items with different content. Hence, scores are not directly comparable and therefore one cannot test, for example, if athletes perceive more pressure to be perfect coming from their coach or their parents (see e.g., Madigan, 2016). Finally, there are some inconsistencies across and within the S-MPS subscales regarding training and competition.

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Whereas all Concern over Mistakes items mention competition, only five of the Perceived Parental Pressure items, four of the Perceived Coach Pressure items, and none of the Personal Standards items do. Conversely, one Personal Standards item mentions training whereas no other S-MPS item does. In contrast, all S-MPS-2 Doubts about Actions and Organization items concern training.

### *Recommendation*

Notwithstanding these issues, both the S-MPS and the S-MPS-2 are reasonable domain-specific measures of perfectionism in sport. Consequently, researchers interested in measuring the aspects of perfectionism in sport and dance following Frost et al.'s (1990) model of perfectionism should use the S-MPS or S-MPS-2 to measure perfectionism in sport and use contextualized versions where needed (e.g., dance). Note however that some items need to be adapted for different sports (e.g., items mentioning “players” need to be revised for sports that do not have players such as track or figure skating; Dunn et al., 2011). The Personal Standards and Concerns over Mistakes subscales are the most appropriate to represent perfectionistic strivings and concerns. The S-MPS and S-MPS-2 cannot be recommended for measuring perfectionism in exercise as its items are not applicable or easily adapted for use in that domain.

## **Multidimensional Inventory of Perfectionism in Sports (MIPS)**

### *Description*

The MIPS is based on a combination of different models of multidimensional perfectionism: Frost et al.'s (1990), Hewitt & Flett's (1991), and the two-factor model (Stoeber & Otto, 2006). The MIPS was developed in German (Stöber, Otto, & Stoll, 2004) and later translated to English (Stoeber, Otto, & Stoll, 2006). The original MIPS comprised seventy-two items forming nine subscales, each with eight items: Perfectionistic Aspirations during Training (e.g., “During training, I strive to be as perfect as possible”), Perfectionistic

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Aspirations during Competitions (“During competitions, I strive to be as perfect as possible”), Negative Reactions to Nonperfect Performance during Training (e.g., “During training, I feel extremely stressed if everything does not go perfectly”), Negative Reactions to Nonperfect Performance during Competitions (“During competitions, I feel extremely stressed if everything does not go perfectly”), Perceived Pressure from Parents (“My parents expect my performance to be perfect”), Perceived Pressure from Coach (“My coach expects my performance to be perfect”), Perceived Pressure from Teammates (“My teammates expect my performance to be perfect”), Perfectionistic Pressure on Teammates (“I expect perfect performance of my teammates”), and Negative Reactions to Nonperfect Performance of Teammates (“I feel extremely stressed if everything does not go perfectly for my teammates”) with the latter two subscales reflecting other-oriented perfectionism directed at teammates.

In the journal publications following the construction of the MIPS, the first four scales were renamed Striving for Perfection during Training/Competition and Negative Reactions to Imperfection during Training/Competition (Stoeber et al., 2007; Stoeber et al., 2008). Moreover, the scales were reduced to five items to improve factorial validity (Stoeber et al., 2007). The parent and coach subscales were also renamed Parental Pressure to be Perfect and Coach Pressure to be Perfect (cf. Madigan, 2016).

### *Reliability and validity*

The five-item scales capturing striving for perfection and negative reaction to imperfection have shown reliability and validity in numerous studies (e.g., Mallinson-Howard et al., 2021). Moreover, in structural equation models, Striving for Perfection and Negative Reactions to Mistakes scores have been shown to be reliable indicators of perfectionistic strivings and perfectionistic concerns (e.g., Madigan et al., 2018). The Parental Pressure and Coach Pressure subscales have also shown reliability and validity in more recent

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studies (e.g., Madigan, 2016). The MIPS has been used on one occasion to examine perfectionism and creativity in dancers (Nordin-Bates et al., 2020), but has yet to be used in exercisers.

### *Translations*

In addition to the original German version of the MIPS, there are also Italian (De Maria et al., 2021) and Spanish versions (Atienza et al., 2020). The Spanish version focuses only on the Striving for Perfection and Negative Reactions to Imperfection subscales, but provides evidence for their reliability and validity. The Italian version on the other hand includes all subscales from the original German version of the MIPS and was broadly supportive of the original factor structure in sport.

### *Critique*

Even though the Negative Reactions to Imperfection scale has been shown to be a reliable and valid indicator of perfectionistic concerns (e.g., Gotwals et al., 2012), the scale captures negative reactions to imperfection rather than perfectionistic concerns per se, that is, anxiety and worry about imperfection (e.g., concern over making mistakes) or about the consequences of imperfection (e.g., negative evaluation from others). Furthermore, the MIPS scales capturing perfectionistic pressure on teammates and negative reactions to nonperfect performance of teammates have never been properly tried and tested. Consequently, it is unclear what to make of these scales. This is different for the scales capturing perceived pressure to be perfect, where researchers are beginning to use them more frequently with athlete samples (e.g., Madigan et al., 2019).

### *Recommendation*

Even though there are conceptual questions of whether Negative Reactions to Imperfection captures perfectionistic concerns (if we take “concerns” literally), both Striving for Perfectionism and Negative Reactions to Imperfection have been shown to be reliable and

valid indicators of perfectionistic strivings and perfectionistic concerns in numerous studies and can be recommended. Moreover, it is recommended that researchers consider using the MIPS scales capturing perceived pressure from teammates even though there is so far only limited information on their reliability and validity (cf. Madigan et al., 2016). This is because teammates are likely a significant influence on athletes' experiences in sport, and while there are measures of parental pressure and coach pressure, there is currently no other measure of teammate pressure.

### **Sub-Domain-Specific Measures**

#### *Performance Perfectionism Scale for Sport (PPS-S)*

The most recent addition to the field has been the PPS-S (Hill et al., 2016). The PPS-S is based on Hewitt and Flett's conceptualisation of perfectionism and comprises twelve items forming three sub-scales: Self-Oriented Performance Perfectionism (four items; "I put pressure on myself to perform perfectly"), Socially Prescribed Performance Perfectionism (four items; "People criticize me if I do not perform perfectly"), and Other-Oriented Performance Perfectionism (four items; "I criticize people if they do not perform perfectly"). The items are focused on the sub-domain of sport performance, rather than life or sport generally.

#### *Reliability and validity*

Hill et al. (2016) provided reliability and validity evidence for all sub-scales of the PPS-S. This was across five samples of junior athletes (two for exploratory analyses, and three for confirmatory analyses). There is also evidence for reliability in adult athlete samples (e.g., Olsson et al., 2022). The scale has yet to be used in a dance domain.

#### *Translations*

There are also a few recent translations of the PPS-S. This includes a Brazilian version (Angelo et al., 2019), Polish version (Waleriańczyk et al., 2022), and a Turkish version

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(Esentas et al., 2020). A note of caution, however, is warranted in relation to the Turkish translation. Their analyses provided support for a unidimensional model. As the PPS-S purports to measure a multidimensional construct, at this time, the Turkish version cannot be recommended. The other translations appear to be adequate in terms of their reliability and validity.

### *Critique*

There are a couple of points of critique to note. There is some evidence that one Socially Prescribed Performance Perfectionism item (“People always expect my performances to be perfect”) cross-loads onto Self-Oriented Performance Perfectionism. This was found in two of three samples when adopting exploratory structural equation modelling (Hill et al., 2016). In addition, because the PPS-S is a relatively new addition to the perfectionism literature, it has yet to be used (and evaluated) in large numbers of samples and studies beyond its initial validation.

### *Recommendation*

Those individuals wishing to capture perfectionism in the sub-domain of performance (i.e., sport or dance performance) are recommended to use the PPS-S. In addition, those wishing to adopt the popular Hewitt and Flett approach to conceptualising perfectionism may prefer to use the PPS-S rather than contextualising the HF-MPS. In regards to capturing perfectionistic strivings and perfectionistic concerns, I recommend using the self-oriented and socially prescribed sub-scales of the PPS-S. Researchers have recently begun to do so in sport (e.g., Watson et al., 2021). While the scale has yet to be used in dance settings, it is recommended to those interested in capturing dance performance perfectionism as its items seem readily applicable. However, the scale cannot currently be recommended for use in exercise settings where the concept of performance and item phraseology in the scale may not easily apply.

### Overall Recommendations

Based on the above discussions, I have some further broad recommendations regarding measuring perfectionism in sport, dance, and exercise. As noted in Table 2.1, there are now various proxies of perfectionistic strivings and perfectionistic concerns and these are available across various different measures. This includes three measures specifically developed for the sport domain. As such, so as to capture the two higher dimensions of perfectionism across the range of relevant aspects of sport, it is recommended to use multiple sport-specific measures simultaneously (see Watson et al., 2021, for an example of how to do this). Adopting this approach has the benefit of capturing the breadth of perfectionistic strivings and perfectionistic concerns while counteracting some of the potential inadequacies and nuances found in individual subscales.

I note here, however, that the subscales have different numbers of items and different response scales. Consequently, as highlighted in the first edition of this chapter, researchers should either use the scales as indicators in structural equation modeling (e.g., Stoeber et al., 2009) or—if this is not feasible—researchers should first standardize all scores to make sure the scores are on the same scale ( $M = 0$ ,  $SD = 1$ ) before they are combined. This will ensure that all subscales combined get the same weight and avoid the situation where scales that have more items or use response scales with more categories (e.g., a one-to-seven scale compared to a one-to-five scale) will get a disproportionate weight in the aggregate score (e.g., Madigan et al., 2015).

The idea to use multiple measures may not be universally agreed upon. Notably, Dunn and colleagues (2016) argued that using multiple subscales from one measure – the S-MPS-2 – is sufficient to capture perfectionistic strivings and perfectionistic concerns. I respectfully disagree with this proposal. This is for two main reasons. First, conceptually, some particular aspects measured by the S-MPS-2, namely, parent and coach pressure, are best considered

antecedents of perfectionism rather than defining features (see Madigan et al., 2019, in sport; Curran & Hill, 2022, more generally). Second, empirically, in factor analyses, the inclusion of the recommended proxy measures into a higher-order model suggests they better represent the higher order dimensions. This is perhaps best illustrated in Dunn et al.'s own study where the addition of Multidimensional Inventory of Perfectionism in Sport (MIPS) subscales to the model results in reductions in factor loadings of other S-MPS-2 subscales, and the recommended proxies emerge as the strongest loading dimensions. Finally, it is worth noting that Dunn and colleagues have subsequently chosen to adopt a multiple measures approach (e.g., Lizmore et al., 2019).

The recommendation that multiple instruments are used to capture the two factors of perfectionism necessitates best proxies are identified and used from domain-specific measures. In addition, it also requires exclusion of other proxies that are either sub-optimal or inappropriate (see again Table 2.1).

In terms of sub-optimal proxies, there is one subscale – Doubts about Action – that could be used but only in instances where it is not possible to use other, better proxies (e.g., availability of translations). The main reason for this recommendation is based on evidence from the original F-MPS that it is difficult to differentiate Doubts about Action from Concerns over Mistakes. In fact, in many instances, both form a single factor (Stöber, 1998). Given that Concerns over Mistakes better represents the idea of perfectionistic concerns and overly critical evaluations that underpin perfectionistic concerns, in this instance, Doubts about Action should be considered second-best. In addition, this subscale could be considered to be too narrow to capture perfectionistic concerns in sport (at the domain level) – reflecting only doubts about the adequacy of pre-competition training – and therefore not in line with the rest of the S-MPS subscales.

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Finally, in terms of inadequate proxies, for the aforementioned reasons, parental and coach aspects (antecedents of perfectionism), organization (peripheral to perfectionism), and other-oriented perfectionism (distinctive in its focus on demands of others) cannot be recommended for use to represent perfectionistic strivings and perfectionistic concerns. Doing so weakens the construct validity of perfectionistic strivings and perfectionistic concerns. In addition, it provides sub-optimal measurement that may contribute to increased measurement error and confusion regarding the correlates and consequences of perfectionism in sport, dance, and exercise.

### **Concluding Comments**

Measurement is the foundation on which the study of perfectionism is built. It is hoped that the recommendations that I have offered in this chapter provide more solid ground from which to further advance our understanding of perfectionism in sport, dance, and exercise. I have reviewed current instruments and made recommendations for their use. I have also identified the subscales that should be used to capture the broad higher-order dimensions of perfectionistic strivings and perfectionistic concerns. In doing so, I have advocated for the use of multiple measures of perfectionism and identified suboptimal subscales and subscales that are best avoided. Adhering to these recommendations will improve measurement of perfectionism and our understanding of its effects in sport, dance, and exercise.

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Table 2.1. Recommended measures to capture perfectionistic strivings and perfectionistic concerns in sport, dance, and exercise

Measures	Reference	Best/Recommended subscales of...		Suboptimal subscales of...		Inappropriate subscales
		Perfectionistic strivings	Perfectionistic concerns	Perfectionistic strivings	Perfectionistic concerns	
<i>General measures<sup>a</sup></i>						
F-MPS	Frost et al. (1990)	Personal Standards	Concern over Mistakes	-	Doubts about Action	Parental Expectations Parental Criticism Organization
HF-MPS	Hewitt & Flett (1991, 2004)	Self-Oriented Perfectionism	Socially Prescribed Perfectionism	-	-	Other-Oriented Perfectionism
<i>Domain-specific measures</i>						
S-MPS, S-MPS-2	Dunn et al. (2002); Gotwals et al. (2009)	Personal Standards	Concern over Mistakes	-	Doubts about Action	Perceived Parental Pressure Perceived Coach Pressure Organization
MIPS	Stöber et al. (2004); Stoeber et al. (2006)	Striving for Perfection	Negative Reactions to Imperfection	-	-	Parental Pressure Coach Pressure
<i>Sub-domain-specific measures</i>						
PPS-S	Hill et al. (2016)	Self-Oriented Performance Perfectionism	Socially Prescribed Performance Perfectionism	-	-	Other-Oriented Performance Perfectionism

*Note:* Measures are listed in the order as discussed in this chapter. F-MPS = Frost Multidimensional Perfectionism Scale; HF-MPS = Hewitt-Flett Multidimensional Perfectionism Scale; S-MPS = Sport Multidimensional Perfectionism Scale; PPS-S = Performance Perfectionism Scale-Sport; MIPS = Multidimensional Inventory of Perfectionism in Sport. <sup>a</sup>Note that general measures need to be contextualized or have their items adapted (or both) to measure perfectionistic strivings and perfectionistic concerns in sport, exercise, and dance.