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A short review of perfectionism in sport, dance and exercise:

Out with the old, in with the 2×2

— 2,753 words (not including abstract, references, and figures) —

Abstract

The purpose of the current paper is to review research examining multidimensional perfectionism in sport, dance, and exercise. We start by providing a conceptual overview of perfectionism. We then describe three main approaches to examining perfectionism. These approaches are an independent effects approach, the tripartite model, and the 2×2 model of perfectionism. Alongside the description of each approach, research findings are summarized. We close the paper by explaining how the development of the 2×2 model has likely rendered the tripartite model obsolete.

Keywords: perfectionistic strivings; perfectionistic concerns; tripartite model; 2×2 model of perfectionism

1 belief that others are imposing the need for perfection) dimensions of perfectionism. Finally,
2 Stoeber et al.'s [3] model assesses striving for perfection and negative reactions to imperfection.

3 While the use of different models may seem counterproductive, it is through the
4 application of these different models that researchers have come to appreciate and understand the
5 different ways in which perfectionism may manifest in sport, dance, and exercise, as well as its
6 possible consequences. In addition, factor-analytical studies suggest that regardless of the
7 particular model and instrument used, they each capture at least one of two higher-order
8 dimensions of perfectionism (e.g., [4,5,6]). Perfectionistic strivings (PS) are “aspects of
9 perfectionism associated with self-oriented striving for perfection and the setting of very high
10 personal performance standards” ([7], pp. 264). By contrast, perfectionistic concerns (PC) are
11 “aspects associated with concerns over making mistakes, fear of negative social evaluation,
12 feelings of discrepancy between one’s expectations and performance, and negative reactions to
13 imperfection” ([7], pp. 264). These higher-order dimensions can be used to understand all
14 research in sport, dance, and exercise as part of a single, unified model.

15 In a recent edited book, we and a number of colleagues provided a comprehensive review
16 of research examining perfectionism in sport, dance, and exercise [8]. Three chapters, in
17 particular, reviewed studies that examined dimensions of perfectionism separately (an
18 independent effects approach [9]) and studies that examined combinations of dimensions of
19 perfectionism (tripartite model and 2×2 model of perfectionism [10,11]). We use these chapters
20 as a starting point from which to provide a summary of research adopting these three approaches.
21 We encourage interested readers to consult these excellent chapters for further details.

22 **Approach One: An Independent Effects Approach**

23 One approach to examining perfectionism in sport, dance and exercise is to adopt an
24 independent effects approach. This entails examining the correlates and consequences of the two

1 higher-order dimensions of perfectionism separately. As most studies report bivariate
2 correlations, this approach is the most common in research. This approach can also include
3 examining the correlates and consequences of the two dimensions of perfectionism after
4 controlling for their relationship. Such an approach is useful as PS and PC tend to be positively
5 correlated and often display opposing relationships with criterion variables. When adopting this
6 approach, four dimensions of perfectionism can be examined: PS, PC, residual PS, and residual
7 PC. The latter two dimensions are interpreted as the influence of one dimension (PC) on a
8 criterion variable (e.g., anxiety) when the other dimension of perfectionism (PS) is zero (or
9 another fixed value). In other words, interpreting residual PS and residual PC helps answer
10 questions such as, if two athletes report the same level of PS, what is the influence of PC on
11 anxiety?¹

12 Two recent reviews have provided a full account of the findings of research in sport, dance,
13 and exercise that has adopted an independent effects approach [9,12]. These reviews analyzed 81
14 studies with 58 in sport, 10 in dance, and 13 in exercise. The findings of these reviews indicated
15 that PS and PC show different and sometimes opposite patterns of relationships with various
16 correlates and consequences. Specifically, PC showed more consistent positive relationships with
17 maladaptive correlates and consequences (e.g., anxiety, burnout, amotivation [13,14,3]), whereas
18 PS was more ambivalent in that it showed positive relationships with adaptive correlates and
19 consequences (e.g., performance, engagement, autonomous motivation [15,16,17]) as well as
20 maladaptive correlates and consequences (e.g., avoidance goals, anger, exercise dependence

¹Note that the use of this approach has sparked debate among researchers regarding what conclusions can and cannot be drawn regarding perfectionism when using it (see [13,56,57]).

However, the description provided here is common ground for all parties involved.

1 [18,19,20]). Residual PS was, however, clearly adaptive in that it displayed consistent positive
2 relationships with adaptive correlates and consequences. Residual PC displayed little difference
3 to PC. Effect sizes ranged in magnitude but were typically medium-sized ($r = .30$ [21]).

4 **Approach Two: The Tripartite Model of Perfectionism**

5 A further approach to examining perfectionism is to focus on combinations of PS and PC.
6 The most established approach to do so is the tripartite model. The tripartite model entails
7 examination of three types of perfectionist: healthy perfectionists (high PS/low PC), unhealthy
8 perfectionists (high PS/high PC), and non-perfectionists (low PS with low PC or high PC). This
9 model is typically tested by adopting a person-centered approach whereby statistical analyses are
10 used to identify qualitatively different groups based on scores of perfectionism and then these
11 groups are compared in terms of levels of other criterion variables (e.g., burnout)². Support for
12 the model is inferred when three groups of perfectionists are established and these groups differ
13 on criterion variables in an expected manner, particularly healthy and unhealthy perfectionists.
14 The tripartite model has a long history that can be traced to Hamachek [22] who advocated a
15 distinction between “normal” and “neurotic” perfectionists. Parker [23] was the first to test the
16 tripartite model, followed shortly after by Rice, Ashby, and colleagues [24,25,26]. It is Rice,
17 Ashby and colleagues who are typically most thought of as affiliated with the model as they have

²There are studies that could be considered to test the tripartite model using variable-centred approaches (e.g., canonical correlation analysis), including nine studies in addition to those reviewed here (see [11]). However, we have opted to exclude these studies here because, while valuable, we do not consider them strict tests of the typology-based tripartite model. Moreover, none of these studies has ever found a canonical correlation involving non-perfectionism, only healthy and unhealthy perfectionism (essentially, a dichotomous model).

1 provided an impressive body of research, including large studies aimed at establishing
2 classification of individuals in the model [27,28]. In sport, dance, and exercise, Dunn was among
3 the first to consider the tripartite and, along with Gotwals, has provided the majority of research
4 testing it in these domains (see [11]).

5 Nine studies have examined the tripartite model using a person-centered approach. Seven
6 of these studies were in sport [29-35], two in dance [36,37] and none in exercise. Three studies
7 provided support for the expected three group structure [29,32,34]. However, the other six were
8 unsupportive in that they identified alternative group structures that included additional groups
9 (four groups; [30,36]) or included groups with different degrees of perfectionism, not different
10 types of perfectionism [31,33,35,37]. In the three studies that provided support for the tripartite
11 model it was found that, in comparison to healthy perfectionists, unhealthy perfectionists
12 reported significantly higher anger and dejection following mistakes, lower self-confidence and
13 optimism following mistakes, lower perceived parental authoritativeness (i.e., demanding yet
14 supportive parent behavior), lower task coping strategies (effort and active behaviors), and
15 higher avoidance coping strategies (behavioral disengagement). It is also noteworthy that based
16 on our own estimates when considering effect sizes as opposed to just statistical significance, the
17 differences between healthy perfectionists and unhealthy perfectionists includes a wider range of
18 coping strategies, again in favor of healthy perfectionists (e.g., planning, venting, wishful
19 thinking, Cohen's $d > 0.30$).

20 **Approach Three: The 2 × 2 Model of Perfectionism**

21 The most recent development in this area of research has been the proposal of a 2 × 2
22 model of perfectionism [38]. The 2 × 2 model includes four “subtypes” of perfectionism derived
23 from combinations of PS and PC: non-perfectionism (low PS/low PC), pure personal standards
24 perfectionism (pure PSP; high PS/low PC), pure evaluative concerns perfectionism (pure ECP;

1 have higher PS and worse for those with the same level of PS to report higher PC. Thirdly, when
2 examining combinations of perfectionism in more detail, high PS and high PC (unhealthy
3 perfectionists or mixed perfectionism) is typically associated with more maladaptive, and less
4 adaptive, correlates and consequences in comparison to high PS and low PC (healthy
5 perfectionists or Pure PSP). Fourthly, it is also valuable to distinguish between all four within-
6 person combinations of perfectionism. This is because the correlates and consequences of low PS
7 and low PC (non-perfectionists and non-perfectionism) are discernably worse in comparison to
8 high PS and low PC (healthy perfectionists or Pure PSP) and better in comparison to low PS and
9 high PC (non-perfectionists or Pure ECP). Finally, the most problematic subtype of
10 perfectionism across sport and dance (and in all likelihood exercise) is low PS and high PC (Pure
11 ECP) followed by high PS and high PC (unhealthy perfectionists or mixed perfectionism).

12 **Out with the Old, in with the 2 × 2**

13 There are a number of debates in this area of research. How perfectionism is best
14 conceptualised, what instruments should and should not be used, the appropriateness of the
15 labels given to dimensions of perfectionism, and, ultimately, its likely consequences. These
16 debates are extremely valuable but well-worn. Readers interested in these issues are directed to
17 Flett and Hewitt [48], Hill [49], and Stoeber and Madigan [50] as starting points. Rather than
18 discuss these issues, we close the paper by offering our opinion on a new issue we think will
19 soon come to the fore. Specifically, two contradictory models of perfectionism are currently
20 being used to examine combinations of PS and PC and it is unclear which one offers the best
21 means of studying perfectionism. In reflecting on this issue ourselves, we believe that the
22 development of the 2 × 2 model has signalled the end of the tripartite model as an approach to
23 examining perfectionism in sport, dance, and exercise. In making this prediction, we are mindful
24 of the ire with which our foreboding may be met by some researchers in this area. Not least

1 because so few studies currently exist examining either of the models in sport, dance, and
2 exercise. However, we have come to this conclusion for a number of reasons. We describe two
3 of the main ones below.

4 Firstly, research examining the tripartite model has provided, at best, mixed support for the
5 model. As evidenced by the research findings described above, less than half of the studies in
6 sport, dance, and exercise provided support for the existence of three types of perfectionist. In
7 addition, the backdrop for these findings raises concerns regarding the model's assumptions
8 about the structure of perfectionism as a personality trait (its "taxometric" structure). That is,
9 whether different types of perfectionist actually exist or perfectionism exists to some degree in
10 everyone. This issue that has been discussed by others (e.g., [8,11,51]). As described by Gotwals,
11 the assumption that types of perfectionist exist is a central tenet of the tripartite model and one
12 that is seriously challenged by existing research. In addition, the only study to examine the
13 taxometric structure of perfectionism found support for studying degrees of perfectionism rather
14 than types [52]. Therefore, at the moment, there is little evidence that types of perfectionist exist
15 beyond the descriptive structures that we impose on our samples [49].

16 Secondly, perhaps the most important basis for our conclusion is the empirical support
17 provided for the 2×2 model. This includes general research findings that attest to the predictive
18 ability of the four (not three) subtypes in the model but also the support for hypothesis 2 (pure
19 ECP vs non-perfectionism), in particular. The tripartite model does not distinguish between these
20 two types of perfectionism. For this reason, Stoeber [53,54] has suggested the use of this
21 hypothesis to pit the tripartite and 2×2 model against each other (or at least to check for a
22 tripartite model within the 2×2 model). Based on findings so far, there is clear value in
23 differentiating between the two subtypes of perfectionism not included in the tripartite model.
24 We also believe that hypothesis 3 is similarly important. Specifically, whether mixed

1 perfectionism is the most problematic subtype of perfectionism (as in the tripartite model) or
2 pure ECP is the most problematic subtype of perfectionism (as in the 2×2 model). Again,
3 empirical evidence appears to be stacked against the tripartite model in this regard. Therefore,
4 while the 2×2 model is not without weaknesses (see [55]), in our opinion, it will provide a
5 better understanding of the consequences of combinations of PS and PC in sport, dance, and
6 exercise. We hope to see empirical evidence that confirms or refutes our contention in the near
7 future.

8 **Conclusion**

9 Perfectionism appears to warrant its status as one of the most studied personality traits in
10 sport, dance, and exercise with research revealing that it is associated with a wide range of
11 correlates and consequences in these domains. The precise correlates and consequences of
12 perfectionism differ depending on the dimension examined, PS or PC, whether the relationship
13 between PS and PC is taken into account, and on what particular combinations of PS and PC are
14 examined. When examining combinations of PS and PC in sport, dance, and exercise, we
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