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Author note

Correspondence concerning this article should be addressed to Patrick Gaudreau, University of Ottawa, School of Psychology, 136 Jean-Jacques Lussier, Vanier Hall, Ottawa, Ontario, Canada, K1N 6N5, Email: pgaudrea@uottawa.ca, Phone: 613-562-5800 x4308, Fax: 613-562-5147.
Abstract

The 2 x 2 model of perfectionism has recently been analyzed in a critical commentary from Stoeber (2012). The purpose of this article was to have another look at some of the key assumptions of the 2 x 2 model– with a particular focus on the ones that were critically reviewed by Stoeber (2012). In this article, I have tried to clarify our theoretical position to facilitate further theorizing and empirical examination of the 2 x 2 model. The article starts with an overview of the 2 x 2 model of perfectionism. Then, it reiterates the conceptual meanings attached to subtypes of perfectionism while emphasizing that the word “subtype” is a diminutive for within-person combinations of perfectionism. The article proceeds to outline the importance of adopting neutral labels to define subtypes of perfectionism in order to differentiate them from their expected outcomes. The 2 x 2 model is subsequently described as an open-ended theoretical system in which the four hypotheses are needed to offer a compelling framework to test moderating effects. The article also proposes alternative methods, with a particular focus on equivalence testing in order to empirically determine whether some subtypes of perfectionism are associated with equivalent outcomes.

Keywords: Evaluative Concerns Perfectionism; Personal Standards Perfectionism; Adjustment; Achievement Motivation.
We believe that the time has come for theorists and researchers in the perfectionism field to take a much closer look at the notion of positive perfectionism and determine whether it really is a healthy form of behavior that yields positive outcomes for the individual (Flett & Hewitt, 2006, p. 474).

Introduction

It is with great intellectual excitement that my research team and I have read and reflected upon the critical comments and suggestions of Stoeber (2012). This commentary, published just two years after the publication of the 2 x 2 model of dispositional perfectionism (Gaudreau & Thompson, 2010), was taken as yet another call to “take a closer look at the notion of positive perfectionism” (Flett & Hewitt, 2006, p. 474). We unconditionally respect and value the research of our predecessors and present colleagues as they play a pivotal role in shaping the development and ongoing refinements of our research program on perfectionism. I believe that “time has come” to have another look at some of the key assumptions of the 2 x 2 model of dispositional perfectionism¹ – with a particular focus on the ones that were critically reviewed by Stoeber (2012). Therefore, the purpose of this commentary was to clarify our theoretical position in order to facilitate further theorizing and empirical examination of the 2 x 2 model of dispositional perfectionism.

Overview of the 2 x 2 Model

The 2 x 2 model builds on the contribution of several groups of researchers who posited the multidimensional nature of the perfectionism. On the one hand, it recognizes that perfectionism contains a series of facets (e.g., Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt
2 x 2 Model of Perfectionism

& Flett, 1991) differentiated on the basis of their origin (e.g., self vs. social) and their cognitive manifestations (e.g., high standards, doubts about action). On the other hand, it recognizes that facets can be further regrouped and distinguished in two larger dimensions representing evaluative concerns perfectionism and personal standards perfectionism (e.g., Cox, Enns, & Clara, 2002; Dunkley, Blankstein, Masheb, & Grilo, 2006; Stoeber & Otto, 2006). Although facets and dimensions should not be interpreted as interchangeable concepts or synonyms (Gaudreau & Verner-Filion, 2012), the 2 x 2 model offers a platform that can accommodate studies that are based either on the facets (e.g., Cumming & Duda, 2012; Gaudreau, 2012) or the broader dimensions of perfectionism (e.g., Douilliez & Lefèvre, 2011; Gaudreau & Thompson, 2010; Hill, 2013).

The 2 x 2 model was proposed as a platform to sketch out the richness of the multidimensional nature of perfectionism, while proposing formalized hypotheses amenable to empirical scrutiny. To attain these goals, we focused our attention on the within-person combinations of core facets/dimensions of perfectionism (rather than on the facets/dimensions themselves). As such, we proposed that within-person combinations of perfectionism should offer a more meaningful level of analysis to differentiate the antecedents, processes, and outcomes of perfectionism. Four prototypical subtypes of perfectionism were defined on the basis of distinct within-person combinations of low/high levels of personal standards perfectionism (PSP) and evaluative concerns perfectionism (ECP). The four subtypes and the four hypotheses of the 2 x 2 model are summarized in Figure 1.

**Subtypes Are Within-Person Combinations of Core Dimensions of Perfectionism**

Stoeber (2012) evaluated our usage of the word “subtype” as conceptually inappropriate and as something that promotes the use of improper statistical analyses (i.e., median-split
approach). In the past, we erred on the side of prudence by meticulously delineating the meaning attached to the word “subtypes” in the 2 x 2 model of perfectionism. It is worth pausing to reiterate some key elements of how subtypes have been described in the 2 x 2 model. Subtypes should be taken as latent entities that can be inferred conceptually and statistically within the confines of both variable-centered and person-centered analytical approaches. They cannot be interpreted as known subgroups or directly observable categories such as gender or random assignment in an experimental vs. control conditions. In two of our past studies, we clearly recommended against the artificial creation of subtypes using median-split approaches (Gaudreau, 2012; Gaudreau & Verner-Filion, 2012) because facets and dimensions of perfectionism are better conceived as continuously distributed variables (Broman-Fulks, Hill, & Green, 2008). In such cases, median split approaches are known to create spurious interactions that provide biased parameter estimates of main and interactive effects (Bissonnette, Ickes, Bernstein, & Knowles, 1990; Streiner, 2002).

In the parlance of the 2 x 2 model, subtypes of perfectionism are heuristics that prototypically characterize four distinct within-person combinations of core conceptual dimensions of the perfectionism disposition. On that point, we totally agree with the recommendation of Stoeber (2012) to refer to subtypes of perfectionism as within-person combinations of perfectionism. This interpretation is entirely consistent with our operational definition of the word “subtypes of perfectionism” which should be taken as a diminutive for “within-person combinations of evaluative concerns and personal standards perfectionism”. However, the decision to replace the diminutive “subtypes” by “within-person combinations of perfectionism” is more a matter of preference than a matter of necessity given our repeated
efforts to define, explain, and now reiterate the meaning that should be attached to both expressions.

**Beyond Describing Subtypes of Perfectionism as Adaptive or Maladaptive**

In the 2 x 2 model, the labels selected to characterize and define the within-person combinations of perfectionism were purposefully selected to separate subtypes of perfectionism from their expected outcomes. As such, the model differentiates itself from the tripartite model (e.g., Rice & Slaney, 2002; Stoeber & Otto, 2006) because it explicitly rejects the use of labels that inherently define the subtypes of perfectionism as adaptive/healthy or maladaptive/unhealthy. These neutral etiquettes are a fundamental distinction between the 2 x 2 and the tripartite models because they explicitly consider that subtypes of perfectionism should not be conceived as inherently good or bad.

Whether personal standards perfectionism is adaptive or not is a question to be determined *empirically rather than semantically*. Positively or negatively laden labels are questionable (McNulty & Fincham, 2012) because they promote tautological or circular reasoning by entangling the subtypes of perfectionism with their expected outcomes (i.e., healthy perfectionism is inherently healthy). If a personality dimension was so clearly good or bad, why would we even need to spend time and labour to investigate its effects? In fact, empirical evidence suggests that the association between perfectionism and consequential life outcomes is marked by a substantial amount of inconsistency (Gotwals, Stoeber, Dunn, & Stoll, 2012). Etiquettes such as good/adaptive or bad/maladaptive situate the adaptive or maladaptive nature of perfectionism within the trait or the disposition itself rather than within the confines of complex transactions between the person and the environment (e.g., Hobfoll, 2002; Lazarus &
Folkman, 1984; Sameroff, 2009). Without the neutral labels introduced in the 2 x 2 model, reviewers and researchers outside the perfectionism research program are often left wondering why an inherently good property of the person can correlate to bad outcomes or why an inherently bad property of the person can correlate to good outcomes. As such, positively or negatively laden labels might create unneeded obstacles for theorists and researchers willing to search for person x situation explanations that could offer a more nuanced and thorough understanding of the effects of perfectionism.

Furthermore, observing a correlation of a dimension of perfectionism with positively or negatively valenced outcomes should not be interpreted as evidence for its inherently adaptive or maladaptive nature. This interpretation is problematic for several reasons. For example, this viewpoint negates the fact that even some negatively valenced outcomes (i.e., negative affect) can play an adaptive role from a self-regulatory standpoint. Of course, chronic negative affects indicate emotional disturbance and distress that can aggravate into mental disorders and psychopathologies. However, negative affect also entails a perceived discrepancy between actual and desired standards that might promote efforts to reduce the discrepancy (Carver & Scheier, 1998). Therefore, negatively valenced outcomes, under certain circumstances, can play self-regulatory functions (Wrosch & Miller, 2009) that would prevent them from being categorized as entirely maladaptive from a self-regulatory standpoint. Overall, it seems important to move beyond labeling and interpreting subtypes of perfectionism as inherently adaptive or maladaptive to reconcile with the fact that they might, at times, correlate with a host of both desirable and undesirable outcomes.
The 2 x 2 Model as an Open-Ended Theoretical System

Stoeber (2012) was accurate in pointing out the fact that the 2 x 2 model originated from a perspectivist approach to theory construction (e.g., McGuire, 2004; Locke, 2007). As such, the 2 x 2 model was proposed as an open-ended theoretical system that could eventually incorporate boundary conditions of the positive and/or negative effects of any of the four subtypes of perfectionism. Let us pause a brief moment to insist on the word “eventually”. Past research has been characterized with robust but also mixed findings (Gotwals et al., 2012). Research on perfectionism – using the more traditional theoretical approaches – has yet, for the most part, to explicate when and for whom some dimensions of perfectionism correlate with good or bad outcomes. The acceptance of a novel theoretical framework, such as the 2 x 2 model, can be a rather tricky and slow moving process. Fortunately, one anonymous reviewer encourages us to settle for a modest compromise by proposing three alternative hypotheses (see hypothesis 1a, 1b, and 1c). In the context of proposing a novel model, complicating the “storyline” by specifying a moderating effect of hypothesis 1 (see Stoeber, 2012, p. 542) or two versions of the same theory (see Stoeber, 2012, p. 544) would have been evaluated as an “overkill” for a germane but yet to be published theoretical model at that time.

What if pure SOP and non-perfectionism do not significantly differ? Self-oriented perfectionism has often failed to significantly correlate with consequential life outcomes (e.g., Gotwals et al., 2012). Rather than sweeping empirical evidence under the carpet, the 2 x 2 model has proposed one alternative hypothesis (hypothesis 1c) that accounts for this viewpoint. Stoeber (2012) asserted that hypothesizing a non-significant difference between pure SOP and non-perfectionism (hypothesis 1c) can promote incorrect statistical reasoning and interpretation of null effects. We concur. However, theorists should not be blamed for formulating hypotheses
that are not readily testable within the traditional null hypothesis significance testing paradigm. Alternative methods of equivalence testing are already available to allow researchers to determine the empirical tenability of hypothesis 1c (Cribbie, Gruman, & Arpin-Cribbie, 2004; Goertzen & Cribbie, 2010). “Equivalence tests reverse the usual null hypothesis: They posit that populations being compared are different and use the data to prove otherwise” (Robinson, Duursma, & Marshall, 2005, p. 903). As such, hypothesis 1c should be maintained as a potentially informative piece of information in the 2 x 2 model. Perhaps it could even motivate researchers with substantive expertise in advanced statistical methods to incorporate the tenets of equivalence testing within their own research programs on perfectionism.

Meanwhile, we agree with Stoeber (2012) that failure to reject the null hypothesis (within the traditional null hypothesis significance testing) should not be taken as evidence to support hypothesis 1c – though such interpretation remains a common practice in psychological sciences. A warranted interpretation would more simply conclude that non-perfectionism is not significantly different from pure SOP. However, even such interpretation might be incorrect. The effect size of a non-significant correlation can possess narrow or wide confidence intervals. Reporting the dispersion around the effect size would encourage researchers to interpret non-significant effects (and even significant ones) in a less definitive manner by stating that results are inconclusive – that is, the reported effect could be small or large in either the expected or the unexpected direction (Bonett, 2012). It might be preferable to assume that inconclusive evidence exists to infer that pure SOP confers any advantages or disadvantages to individuals compared to non-perfectionism. While waiting for the growing acceptance of alternative statistical methods of equivalence testing, we would recommend that applied researchers (including ourselves)
interpret these null effects as inconclusive evidence for hypothesis 1a or hypothesis 1b rather than as supporting evidence for hypothesis 1c.

**Four hypotheses vs. two versions of the model.** Stoeber (2012) concluded his commentary article by proposing a reformulation of the hypotheses of the 2 x 2 model. This proposed reformulation seemed premature given the relative infancy of the 2 x 2 model in the psychological literature. Albeit *simple and elegant* at first glance, the proposed modifications offer limited room for theoretical upgrades that could eventually incorporate moderating factors. *Simplicity and parsimony* should not be taken as interchangeable synonyms. All four hypotheses of the 2 x 2 model are needed – hence parsimonious – to account for some of the moderated effects that will likely emerge from studies derived from the 2 x 2 model.

The flexibility conferred by an open-ended system retaining *all four hypotheses* has recently been demonstrated in a study in which culture moderated the association between subtypes of perfectionism and academic satisfaction (Franche, Gaudreau, & Miranda, 2012). In a sample of European Canadian students, the four hypotheses of the 2 x 2 model were supported. In the sample of Asian Canadian students, pure self-oriented perfectionism was associated to higher satisfaction than non-perfectionism (hypothesis 1a), but it was not significantly higher than mixed perfectionism (hypothesis 4). Similarly, pure socially prescribed perfectionism was associated with lower satisfaction than mixed perfectionism (hypothesis 3), but it was not significantly lower than non-perfectionism (hypothesis 2). Results from the Asian Canadian sample, which supported the *socially prescribed perfectionism as a cultural makeup hypothesis* proposed by Franche et al. (2012), refuted both version A and version B of the model proposed by Stoeber (2012). These findings illustrate that the four original hypotheses of the 2 x 2 model (compared to two alternative versions of the same model) offer a more encompassing platform to
hypothesize and reinterpret the unique associations between subtypes of perfectionism and life outcomes across levels of a moderator.

**Integrating Variable-Centered and Person-Centered Approaches**

The variable-centered approach (VCA) and the person-centered approach (PCA) have evolved as parallel streams of inquiry in psychological sciences. Recent developments in statistical methods have bridged the gap between the two traditions which are now perceived as complementary rather than mutually exclusive paradigms (Bauer & Shanahan, 2007; Marsh, Ludtke, Trautwein, & Morin, 2009; Muthén & Muthén, 2000). Perfectionism is a vibrant example of a research program that has successfully benefited from an opened integration of the VCA and PCA traditions. The systematic review of Stoeber and Otto (2006), which clearly highlighted what can be learned from synthesizing both approaches, was instrumental in shaping the 2 x 2 model. Rather than pitting the VCA against the PCA, the 2 x 2 model tried to offer a harmonizing perspective that would sit at the frontier of the two research streams. Subtypes or within-person combinations of perfectionism cannot be understood without fully considering the underlying continuous distribution of the facets and dimensions upon which they are inferred (Broman-Fulks et al., 2008). The VCA is absolutely necessary to fuel meaningful interpretations of unknown classes or subtypes of perfectionism.

As acknowledged by a more recent systematic review of Stoeber (2011), the effect of personal standards perfectionism cannot be fully understood without fully considering the effect of evaluative concerns perfectionism. As such, there seems to be a consensus that perfectionism should be studied as a disposition composed of two core dimensions that might combine, interact, or suppress the effects of one another to predict consequential life outcomes. Whether such effects be investigated using statistical models from the PCA (e.g., cluster analyses, latent
class analyses) or from the VCA (e.g., multiple regression, moderated multiple regression, moderated structural equation modeling) is another question of preference rather than necessity.

Research on perfectionism attracts researchers and graduate students from various disciplines and areas of psychological sciences. This diversity is an asset that fosters the utilization and comparison of distinct perspectives and insights from individuals who were trained to investigate the world with slightly different but complementary schemas. Replication (or lack thereof), with different methods provide useful scientific information to extrapolate on the generalizability of a model. In our past research, we demonstrated that multiple regression with (Gaudreau & Thompson, 2010; Gaudreau & Verner-Filion, 2012) or without interactive term (Gaudreau, 2012) as well as structural equation models with or without interactive term (Franche et al., 2012) can be used to examine the within-person combinations of two facets of perfectionism. More complex PCA models, such as latent class analyses, might be preferable to examine how multiple facets of perfectionism combine themselves within the four subtypes of the 2 x 2 model of perfectionism. We believe that it is important to refrain from forcefully prescribing which methods are to be used to probe the 2 x 2 model of perfectionism. Instead, we offered some guiding principles to identify the needed and sufficient conditions to support/refute the hypotheses within the VCA (Gaudreau, 2012). It is our hope that guiding principles will foster the development and implementation of even more innovative and “out of the box” ways of investigating the model.

Conclusion

Overall, we found points of agreement and disagreement with the various issues outlined by Stoebert (2012) in his critical commentary. Debates and scientific disagreements are healthy in
psychological sciences. Therefore, we have tried to adopt a constructive stance in outlining both similarities and dissimilarities in our respective theoretical positions on perfectionism.

Despite our reasoning, we understand and respect that some researchers will prefer to abandon the word “subtype” when referencing to the four within-person combinations of perfectionism of the 2 x 2 model. For lack of better wording and because our usage of this term has been sufficiently detailed, we will maintain our usage of this diminutive in our research program. Other researchers are free to disregard our suggestion and to adopt the parlance that matches with their epistemological beliefs. We also wish to highlight the importance of replacing etiquettes that define the within-person combinations of perfectionism as inherently healthy/adaptive or unhealthy/maladaptive with more neutral labels. Furthermore, it is important to reiterate that the 2 x 2 model proposes four distinct hypotheses (see Figure 1). In a recent study of Franche et al. (2012), the open-ended system of four hypotheses proved to be useful to generate a moderating hypothesis and to empirically reinterpret unique patterns of associations across levels of the moderator.

In closing, we took note of the critical comments of Stoeber (2012) and we understand that hypothesis 1 might be less conventional insofar as it encompasses three alternative (and somewhat contradictory) hypotheses. The relationship between personal standards perfectionism and consequential life outcomes remains, for the moment, largely heterogeneous and equivocal. Meta-analyses would be useful to quantity this heterogeneity and to explore both conceptual and methodological factors that could explain some of the inconsistent findings. Building a larger corpus of empirical knowledge might or might not help to resolve this issue. From a constructivist approach to theory development (e.g., McGuire, 2004; Locke, 2007), we would like to conclude this commentary note by encouraging researchers to identify the boundary
conditions of hypothesis 1. We are hopeful that with an increasing number of researchers and students cogitating on this idea, the research program of perfectionism will rapidly come closer to understanding under which conditions and for which types of outcomes (e.g., performance, motivation, mental health) pure personal standards perfectionism does confer some benefits and advantages compared to non-perfectionism. Quantifying and reporting both the size and the uncertainty of these benefits (or the lack thereof) would also be important to reinterpret subtypes of perfectionism in light of their clinical, educational, and social importance. Implementing equivalence testing could, sooner than later, offer yet another methodological tool to researchers willing to empirically determine whether pure personal standards perfectionism and non-perfectionism can be taken as conferring equivalent advantages or disadvantages to human functioning.

Endnote

1 Gaudreau and Verner-Filion (2012) have offered a detailed description of seven postulates of the 2 x 2 model.

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References


**Figure 1.** Four subtypes of perfectionism and four hypotheses of the 2 x 2 model of perfectionism. > denotes better adjustment than. = denotes equivalent adjustment.