

Madigan, Daniel J. ORCID logoORCID:  
<https://orcid.org/0000-0002-9937-1818>, Hill, Andrew P. ORCID  
logoORCID: <https://orcid.org/0000-0001-6370-8901>, Mallinson-  
Howard, Sarah H. ORCID logoORCID: <https://orcid.org/0000-0002-8525-1540>, Curran, Thomas and Jowett, Gareth E. ORCID  
logoORCID: <https://orcid.org/0000-0003-4004-2857> (2018)  
Perfectionism and performance in sport, education, and the  
workplace. In: Oxford Research Encyclopaedia of Psychology.  
Oxford University Press, 23pp

Downloaded from: <https://ray.yorks.ac.uk/id/eprint/3798/>

The version presented here may differ from the published version or version of record. If  
you intend to cite from the work you are advised to consult the publisher's version:  
<http://oxfordre.com/psychology/view/10.1093/acrefore/9780190236557.001.0001/acrefore-9780190236557-e-166?rskey=Egh51W&result=1>

Research at York St John (RaY) is an institutional repository. It supports the principles of  
open access by making the research outputs of the University available in digital form.  
Copyright of the items stored in RaY reside with the authors and/or other copyright  
owners. Users may access full text items free of charge, and may download a copy for  
private study or non-commercial research. For further reuse terms, see licence terms  
governing individual outputs. [Institutional Repository Policy Statement](#)

# RaY

Research at the University of York St John

For more information please contact RaY at [ray@yorks.ac.uk](mailto:ray@yorks.ac.uk)

Madigan, D. J., Hill, A. P., Mallinson-Howard, S. H., Curran, T., & Jowett, G. E. (2018). Perfectionism and performance in sport, education, and the workplace. In *Oxford Research Encyclopaedia of Psychology*. Oxford University Press.

## Perfectionism and Performance in Sport, Education, and the Workplace

Daniel J. Madigan, Andrew P. Hill, Sarah H. Mallinson-Howard

York St John University

Thomas Curran

University of Bath

&

Gareth E. Jowett

Leeds Beckett University

## Summary

Perfectionism and performance have long been intertwined. The conceptual history of this relationship is best considered complex, with some theorists maintaining that perfectionism is likely to impair performance and others more recently suggesting that aspects of perfectionism may form part of a healthy pursuit of excellence. Recent studies on perfectionism and performance in sport, education, and the workplace provide us with evidence that perfectionism is indeed an important characteristic in achievement domains. However, this relationship is exceedingly complex. In examining this relationship empirically, researchers have distinguished between two dimensions of perfectionism. The first is perfectionistic strivings that comprise high personal standards and a self-oriented striving for perfection. The second is perfectionistic concerns that comprise a preoccupation with mistakes and negative reactions to imperfection. With regard to perfectionistic strivings, research has revealed that in certain circumstances they are related to better performance. Evidence for this is strongest in education but notably mixed in sport and the workplace. With regard to perfectionistic concerns, while there is evidence that they may not directly impair performance, there is also enough evidence that they may have a detrimental indirect influence on performance. Based on existing research, we argue that there is currently too little research and too many mixed findings to conclude perfectionistic strivings forms part of a healthy pursuit of excellence. In addition, the role of perfectionistic concerns for performance is likely to be more substantive than currently suggested.

*Keywords:* perfectionism, performance, achievement, athletes, students, work

## **Introduction**

Performance matters. Whether it is on the sports field, in the classroom, or at work, how well you perform has important consequences. In sport, your performance in training can determine whether you make the team. In the classroom, obtaining entry to university will depend on the grades you achieve. And at work, if you perform well, you are normally financially rewarded. Conversely, perform poorly on a consistent basis in these domains and you may quickly find yourself off the team, denied entry to your preferred university and program, or even unemployed. With the stakes so high, it is understandable that psychologists have spent a considerable amount of time identifying factors that predict better and worse performance in these domains.

One factor that is influential for performance is perfectionism. Several chapters (e.g., Jowett, Mallinson, & Hill, 2016) and review articles (e.g., Hill & Madigan, 2017) have recently been published that are focused on the consequences of perfectionism. However, the last review of perfectionism and performance, conducted by Stoeber (2012), was over 5 years ago. Our aim here is to revisit Stoeber (2012) and then build on it in two ways. First, we review all new studies that examine perfectionism and performance in sport and education. Second, because no chapter or research article has reviewed studies examining perfectionism and performance in the workplace, we provide the first review of this research. Based on the findings of our review, we revisit the conclusions of Stoeber (2012) with the intention of identifying whether these conclusions still stand given the most recent research.

## **What is Perfectionism?**

When we talk about perfectionism we are referring to a multidimensional personality characteristic that comprises high personal standards that are accompanied by overly critical evaluations of behavior (Frost, Marten, Lahart, & Rosenblate, 1990). One way researchers have developed to conceptualize and measure perfectionism is to think of it as two separate

yet overlapping factors. The first of these factors is labeled perfectionistic strivings and comprises the high personal standards elements of perfectionism. Perfectionistic strivings are most commonly measured using instruments that capture high personal standards, self-oriented perfectionism (i.e., imposing the need for perfection on the self), and striving for perfection (see Stoeber & Madigan, 2016 for a review). The second is perfectionistic concerns and comprises the overly critical evaluations. Perfectionistic concerns are commonly measured using instruments that capture concerns over mistakes, socially prescribed perfectionism (i.e., perceptions that others are imposing the need for perfection), and negative reactions to imperfection. This way of studying perfectionism is known as the two-factor model or hierarchical model of perfectionism (Stoeber & Otto, 2006).

Research has found perfectionism to be related to numerous cognitive, affective, and behavioural outcomes (see Hill, Mallinson-Howard, Madigan, & Jowett, 2019, for a review). In addition, research has shown that differentiating between perfectionistic strivings and perfectionistic concerns is important because the two dimensions are related to different outcomes. Perfectionistic strivings are the more complex of the two factors. This is because they can show positive relationships with both adaptive outcomes (e.g., engagement) and maladaptive outcomes (e.g., self-criticism). Perfectionistic concerns are comparatively less complex. This is because they show almost exclusively positive relationships with maladaptive outcomes (e.g., burnout) and negative relationships with adaptive outcomes (e.g., self-esteem).

As perfectionistic strivings and perfectionistic concerns show a different pattern of relationships, it is important to examine their effects separately. When researchers do so, they are said to adopt an independent effects approach. As part of the independent effects approach, researchers can also study the unique effects of the two broad dimensions. That is, the relationships between perfectionistic strivings and perfectionistic concerns with other

variables once the overlap between the two dimensions is controlled for. Partial correlations and semi-partial correlations are typically used to do this (see Hill, 2014, 2017; Stoeber & Gaudreau, 2017). Research adopting this approach has typically found that once the overlap is controlled for, perfectionistic strivings show stronger positive relationships with adaptive outcomes (e.g., positive affect, autonomous motivation, engagement), and perfectionistic concerns show stronger positive relationships with maladaptive outcomes (e.g., anxiety, controlling motivation regulation, burnout; see Hill, Mallinson-Howard, & Jowett, 2018). The implications being that to fully understand the effects of perfectionism, both separate and unique effects need to be examined. As such, in the current chapter we adopted the independent effects approach and note the separate and unique relationships between dimensions of perfectionism and performance.

### **Perfectionism and Performance**

Perfectionism has been studied for many years. Early theoretical work focused on the relationships between perfectionism and psychopathology (e.g., Hollender, 1965). Regarding performance, opinions were mixed. Many theorists argued that perfectionism was likely to impair performance (e.g., Pacht, 1984). This was because the debilitating cognitions, emotions, and behaviours that provided the basis for psychopathology were considered antithetical to better performance. However, others noted that perfectionism may, in some circumstances, contribute to better performance even if it came at some other greater costs (e.g., Burns, 1980). This is because of its potential motivational or energising qualities, in particular the dedication, single-mindedness, and persistence that can follow when people have an obsessive commitment to activities in their lives (e.g., Adler, 1956). This apparent contradiction is perhaps aptly captured by Missildine (1963) who described perfectionists as individuals who come to view themselves as “successful failures.”

While the consequences of perfectionistic strivings are complex, this particular dimension appears to be most important with regard to better performance. This is because perfectionistic strivings encapsulate most of the personal goal-directed elements of perfectionism. For example, research has found perfectionistic strivings are positively related to approach orientations (e.g., mastery-approach goals; Elliot & Church, 1997) that enhance performance (see Stoeber, Damian, & Madigan, 2018, for a review). In addition, research has also found perfectionistic strivings are positively related to more desirable pre-performance affective states (e.g., excitement), cognitive appraisals (e.g., challenge), and reasons for participation (e.g., autonomous motivation regulations; Hill et al., 2018). Again, research suggests that such factors are related to better performance (e.g., Richardson, Abraham, & Bond, 2012).

Perfectionistic concerns, by contrast, are most likely to directly or indirectly undermine performance. This is because while perfectionistic concerns imbue a psychological commitment to perfection, they lack personal goal-directed elements and instead encapsulate a sense of overwhelming external pressure and helplessness. This is evident in research in that perfectionistic concerns have been found to be positively related to avoidance orientations (e.g., performance-avoidance goals) that inhibit performance (Stoeber et al., 2018). Moreover, perfectionistic concerns have been found to be positively related to less desirable pre-performance affective states (e.g., anxiety), cognitive appraisals (e.g., threat), and reasons for participation (e.g., controlled motivation regulations; Hill et al., 2018). In opposition to the performance-related factors associated with perfectionistic strivings, these factors are likely to result in worse performance (e.g., Richardson et al., 2012).

### **Stoeber's (2012) Review of Perfectionism and Performance**

Stoeber (2012) provided the most recent review of studies that have examined perfectionism and performance. In organizing his review, Stoeber (2012) adopted the two-

factor model of perfectionism and examined the independent effects of perfectionistic strivings and perfectionistic concerns (but did not differentiate between separate and unique effects). In this section, we summarize the findings of the 34 studies included in Stoeber's (2012) review. Of the studies included, four examined performance in sport, 26 examined performance in education, and four examined performance in real-world settings and simple laboratory tasks.

The four studies that examined performance in sport employed a range of performance tasks (e.g., body-balancing task, novel basketball task, and triathlon race performance) and examined these relationships in a range of athlete samples (e.g., student athletes and elite triathletes). Three of the four studies found that perfectionistic strivings showed significant positive and small-to-medium correlations with better performance (novel basketball task and triathlon race performance). However, one study found that perfectionistic strivings showed a significant negative and small correlation with worse performance after failure (body-balancing task). In all four studies, perfectionistic concerns were unrelated to performance in sport.

Regarding performance in education, 18 of the 26 studies found that perfectionistic strivings showed significant positive and small-to-medium correlations with a range of performance measures (e.g., grade point average [GPA] and exam performance). The other eight studies found that perfectionistic strivings showed nonsignificant positive and small correlations with performance (e.g., GPA and classroom tests). In seven of the 26 studies, perfectionistic concerns showed significant negative and small correlations with these variables. In one study, perfectionistic concerns showed a significant positive and small correlation with grades (the average across German, English, and mathematics). The remaining 15 studies found that perfectionistic concerns showed nonsignificant negative and



small correlations. These relationships were similar across the various performance measures (e.g., GPA and exam performance).

Finally, in the four remaining studies performance was assessed using a range of measures. These measures were (i) music awards, (ii) aptitude tests similar to those used in personnel selection and focused on skills such as one's ability to reason, (iii) the Stroop test that captures an individual's ability to suppress conditioned responses, and (iv) a letter detection test which aimed to determine the amount of evidence required before a decision is made. In these studies, perfectionistic strivings showed significant positive and small-to-medium correlations with more music awards, better performance in aptitude tests, and better performance in the two laboratory tasks (Stroop test and letter detection test). Again, perfectionistic concerns showed nonsignificant negative and small correlations with these performance outcomes. Of note, perfectionistic strivings also predicted better performance in aptitude tests over and above general aptitude and conscientiousness.

Overall, then, the available evidence suggested that perfectionistic strivings are typically positively correlated with better performance, while perfectionistic concerns are typically uncorrelated to performance. These findings led Stoeber (2012) to conclude that, contrary to much of the earlier theoretical thinking, "perfectionism does not necessarily lead to impaired performance" (p. 300) and that perfectionistic strivings may even form "part of a healthy pursuit of excellence" (p. 301). However, "this may only be the case when perfectionistic strivings are not accompanied by elevated levels of perfectionistic concerns" (p. 301). With these conclusions as a backdrop, we now provide an updated review.

### **The Current Review**

The current review was based on two electronic literature searches. Our first search aimed to identify new studies not included in Stoeber's (2012) review. This search was based on several databases (PsycINFO, PsycARTICLES, SPORTDiscus) using the terms

“perfection\*” and “performance”, from January 2011<sup>1</sup> to February 2018, and focused on peer-reviewed journal articles published in English. Our second search aimed to identify studies on perfectionism and performance in the workplace. This search was the same as the first but additionally included the term “work” and was instead from January 1990<sup>2</sup> to February 2018. From our first search, we identified an additional 13 studies not previously included in Stoeber’s (2012) review. From our second search, we identified three studies on performance in the workplace. We included bivariate correlations to examine separate effects and, when information was available, calculated partial correlations to examine unique effects. All studies are summarized in Table 1.

### **Performance in Sport**

Since Stoeber’s (2012) review, there have been an additional three studies published that examined perfectionism and performance in sport (Hill, Hall, Duda, & Appleton, 2011; Hill, Stoeber, Brown, & Appleton, 2014; Thompson, Kaufman, De Petrillo, Glass, & Arnkoff, 2011). We describe these studies in detail below.

Thompson et al. (2011) examined the relationship between perfectionism and performance as part of an evaluation of the effectiveness of a mindfulness sport performance enhancement program. This particular study reported a one-year follow-up to a four-week mindfulness intervention reported in two earlier studies (De Petrillo, Kaufman, Glass, & Arnkoff, 2009; Kaufman, Glass, & Arnkoff, 2009). In the earlier studies, archers, golfers, and runners completed several baseline measures (e.g., perfectionism, anxiety, and confidence) and then participated in the four-week mindfulness intervention. In the follow up study, the relationship between perfectionism (measured before the intervention) and change in best mile time (from before the intervention to the follow-up period) among a subgroup of runners

---

<sup>1</sup>The latest article included in Stoeber’s (2012) review was published in 2011.

<sup>2</sup>The date the first multidimensional measures of perfectionism were published.

from the original sample was reported. Perfectionistic strivings showed a nonsignificant positive and medium correlation with improvement in the best mile time over the one-year period. Perfectionistic concerns showed a significant positive and large correlation with improvement.

In the second additional study, Hill and colleagues (2011) examined the relationship between perfectionism and performance as part of a study that sought to test responses of perfectionists to successive failure. Participants were student-athletes and the performance task consisted of six-minutes cycling at the equivalent of 35%  $\text{VO}_{2\text{max}}$ . In total four trials were performed, two of these trials were performed with athletes receiving false-failure feedback. Across trials, perfectionistic strivings showed a nonsignificant positive and small correlation with distance covered and revolutions per minute (RPM) and perfectionistic concerns showed a nonsignificant and small negative correlation with distance covered and RPM. We also note that athletes high in perfectionistic strivings reacted more negatively to the perceived failure on the task reporting significantly higher appraisal of threat, lower satisfaction, and lower effort.

In the final study, Hill et al. (2014) examined whether perfectionistic strivings within a team, perfectionistic concerns within a team, and team-oriented perfectionism (i.e., demanding perfection from teammates) predicted team performance. They did so by measuring perfectionism in rowing crews and observing rowing boat performance over four days of competition. Across 36 boats, team-oriented perfectionism predicted a significant and large linear improvement in competition performance. By contrast, perfectionistic strivings within the team showed a nonsignificant negative and small correlation with improvement in competition performance and perfectionistic concerns within the team showed a nonsignificant positive and small correlation with improvement in competition performance.

With regard to unique effects, two studies provided sufficient information to calculate partial correlations (Hill et al., 2011, 2014). There was very little change in the size of these correlations when compared to their unpartialled counterparts. In both studies, perfectionistic strivings still showed nonsignificant positive and small correlations with performance. Again, perfectionistic concerns still showed nonsignificant positive (Hill et al., 2014) and negative (Hill et al., 2011) and small correlations with performance. These findings imply that the relationships are similar when both dimensions are considered separately and when their overlap is controlled for.

Due to the experimental manipulations in two of the three studies, it is difficult to draw general conclusions regarding perfectionistic strivings, perfectionistic concerns, and performance in sport from these studies. Nonetheless, unlike the findings of Stoeber (2012), evidence that perfectionistic strivings were positively correlated with performance in sport in these new studies is absent. None of the three studies provided support for a significant positive correlation between perfectionistic strivings and performance. Findings regarding perfectionistic concerns are, however, more consistent with Stoeber's review with results being largely inconclusive and, strangely, actually finding perfectionistic concerns may be positively correlated to performance in sport in some instances.

### **Performance in Education**

We found an additional ten studies that examined perfectionism and performance in education (all reported in Table 1). Like previous studies, the 10 new studies employed a range of different measures of performance including grade point average (GPA), academic grades (i.e., the results attributed to a specific class or course), and exam performance. We summarise these studies below based on the measure of performance used.

Seven of the 10 studies examined perfectionism and GPA. Of the seven studies, two included multiple samples, providing nine samples in total. Seven of the nine samples

reported correlations between perfectionistic strivings and GPA. Overall, six of these seven samples found significant positive and small-to-medium correlations. The final sample found a nonsignificant positive and small correlation. All nine samples reported correlations between perfectionistic concerns and GPA. The findings were more mixed for perfectionistic concerns. Two of the nine samples found significant negative and small correlations, one sample found a significant positive and small correlation, and the other six found nonsignificant negative and small correlations.

Of especial note, one of the seven studies examining GPA employed a longitudinal design (the others were cross-sectional). Damian, Stoeber, Negru-Subtirica, and Baban (2017) adopted a three-wave longitudinal design over a period of nine months. They examined the longitudinal role of perfectionism predicting achievement but also examined reciprocal effects (i.e., achievement predicting perfectionism) in high school students. The study found that perfectionistic strivings was a positive predictor of academic achievement over time, whereas perfectionistic concerns was not. Interestingly, though, achievement also predicted both perfectionistic strivings and concerns over the study period, suggesting that the interplay between perfectionism and performance in education is more complex than simple unidirectional effects.

Two studies examined the relationship between perfectionism and academic grades (Harvey, Moore, & Koestner, 2017; Shim, Rubenstein, & Drapeau, 2016). Shim, Rubenstein, and Drapeau (2016) examined grades in mathematics and Harvey et al. (2017) examined average grades in English and mathematics. Both studies found significant positive and small correlations for perfectionistic strivings. Only one of the two studies examined perfectionistic concerns. It found a nonsignificant negative and small correlation (Shim et al., 2016).

The final study examined exam performance (Stoeber, Haskew, & Scott, 2015). University students were provided with a text to study for two to four days and were

subsequently asked questions about this text in an exam format. Perfectionistic strivings showed a significant positive and medium correlation with exam performance. Perfectionistic concerns showed a nonsignificant negative and small correlation. This study also examined mediators (i.e., psychological processes that could explain the observed relationships) and showed that task-approach goals (e.g., beliefs that one can and will improve task performance) mediated the positive relationship between perfectionistic strivings and exam performance.

With regard to unique effects, eight studies reported sufficient information to calculate partial correlations (see Table 1). For perfectionistic strivings, five out of the eight partial correlations showed stronger positive correlations. For perfectionistic concerns, six out of the eight partial correlations showed stronger negative correlations. These findings are consistent with a general trend in this area. Once the overlap between perfectionism dimensions is controlled, perfectionistic strivings are more strongly related to adaptive outcomes and perfectionistic concerns are more strongly related to maladaptive outcomes (namely, better or worse performance).

Returning to Stoeber (2012), the author found that perfectionistic strivings were typically positively correlated to performance in education. New research is consistent with previous research in that nine out of ten samples found perfectionistic strivings to show a significant positive correlation with performance in education. Again, and consistent with Stoeber's review, our additional review provided mixed evidence for perfectionistic concerns being uncorrelated to performance. Instead two studies were found to show a significant negative correlation, and one study showed a significant positive correlation with performance in education.

### **Performance in the Workplace**

Although summaries of studies on perfectionism have examined important work-related outcomes such as work engagement (e.g., Stoeber & Damian, 2016), no chapter or article has reviewed the research that has examined the relationship between perfectionism and performance in the workplace. We found only three studies that have examined these relationships (Hrabluik, Latham, & McCarthy, 2012, Study 1 and 2; Sherry, Hewitt, Sherry, Flett, & Graham, 2010).<sup>3</sup>

Sherry et al. (2010) examined perfectionism and research productivity (i.e., the number of publications produced) in a large sample of psychology lecturers/professors. The study also examined several other proxies of productivity that included first authored publications, number of citations, and an impact rating (i.e., the impact factor of the journal in which the highest cited paper appeared). Perfectionistic strivings showed a significant negative and small correlation with research productivity. Perfectionistic concerns showed a significant negative and small correlation with research productivity. Of the two dimensions, perfectionistic strivings exhibited the larger negative correlation with research productivity. A similar pattern of correlations was evident for the other proxies of productivity, except the correlation between perfectionistic concerns and impact rating was nonsignificant negative and small.

In additional analyses, Sherry et al. (2010) also examined the unique relationships between perfectionism and research productivity when controlling for conscientiousness and neuroticism. After controlling for perfectionistic concerns, conscientiousness, and neuroticism, perfectionistic strivings still showed a significant negative and small correlation with research productivity. Finally, after controlling for perfectionistic strivings,

---

<sup>3</sup>We found one other study that had included measures of perfectionism and workplace performance but had not directly looked at their relationship (Burke, Davis, & Flett, 2008).

conscientiousness and neuroticism, perfectionistic concerns then showed a nonsignificant positive and small correlation with research productivity.

In two other studies, Hrabluik et al. (2012) sought to examine perfectionism and workplace performance in police officers. They differentiated maximum performance (performance on a promotional exam) and typical performance (performance as rated in supervisor reviews). In their first study, perfectionistic strivings showed a significant positive and medium correlation with maximum performance. In their second study, perfectionistic strivings showed a nonsignificant positive and small correlation with typical performance. Unfortunately, the studies by Hrabluik and colleagues used a composite measure of perfectionistic concerns that included a measure of “contingent self-worth” that was derived from a measure of perfectionistic strivings. We do not think this adequately measures perfectionistic concerns and thus do not report on these findings. Because perfectionistic concerns were not measured, unique effects could not be calculated.

No previous review has summarised research examining perfectionism and performance in the workplace. However, when considered in light of Stoeber (2012), research in the workplace is more equivocal for perfectionistic strivings, with one study suggesting they are correlated with better performance, one study suggesting that they are correlated with worse performance, and one study suggesting the relationship is inconclusive. The findings for perfectionistic concerns are also somewhat at odds with Stoeber’s (2012) general findings that perfectionistic concerns are uncorrelated to performance. Perfectionistic concerns showed a significant negative and small correlation with lecturer/professor productivity.

### **Revisiting Stoeber’s (2012) Conclusions**

We started the chapter by highlighting the conclusions of Stoeber’s review. Following our review of new research published since, we suggest that overall there is mixed support for



his conclusions. With regard to perfectionistic strivings, there is some support for the assertion that it is associated with better performance, most notably from education where this is a frequent finding. Overall, based on the two reviews, this was evident in the correlations of 25 out of 36 samples in education. However, there is also evidence of a more complex picture for perfectionistic strivings as signalled by the other 11 samples in education and research in sport and the workplace. For example, all of the new studies in sport found nonsignificant correlations. Moreover, across the two reviews, only two out of seven studies provide evidence of a significant positive correlation. These findings are compounded by a case from the workplace where lecturer/professor productivity suffers as a result of elevated perfectionistic strivings, even after controlling for the overlap with perfectionistic concerns. Given this complexity, we believe that there is currently insufficient evidence to suggest that perfectionistic strivings are part of a healthy pursuit of excellence.

With regard to perfectionistic concerns, Stoeber's original conclusion that perfectionistic concerns may not necessarily impair performance is again met with mixed support from the new research reviewed here. Whereas research in sport tends to support the assertion (across both reviews five of seven studies show nonsignificant correlations), research in education and the workplace again paints a more complex picture. In education, there is some evidence that perfectionistic concerns are associated with worse performance (across both reviews 9 of 36 samples show significant negative correlations). And in the workplace, evidence so far suggests that perfectionistic concerns are related to lower productivity. These findings, then, at least allude to a more substantive role for perfectionistic concerns than currently advocated.

### **Critical Observations and Directions for Future Research**

Based on our review, we now provide a series of critical observations of existing research. This critique centres on our belief that the relationship between perfectionism and

performance is complex; however, complexity has not yet been fully captured by research.

To capture this complexity, we advocate five directions for future research.

First, and foremost, we need more studies examining the relationship between perfectionism and performance. In total, there are only seven studies in sport and three in the workplace. As such, conclusions about how perfectionism relates to performance in sport and the workplace are especially tentative.

Second, we need additional longitudinal research. Across our review and that of Stoeber (2012) only four longitudinal/prospective studies exist: one in education, three in sport, and none in the workplace. By excluding a temporal component, existing studies cannot provide evidence of causation or examine reciprocal effects, nor can the studies provide any insight into whether perfectionism predicts performance over time, fluctuations in performance, or patterns of performance.

Third, we need an increased focus on mediation. We have surprisingly little evidence of the explanatory factors in the perfectionism-performance relationship. Several studies have now provided initial evidence for mediating factors in sport and education (e.g., Stoeber et al., 2015), but more are needed. This work would help identify any positive indirect pathways (e.g., performance-approach goals) and negative indirect pathways (e.g., performance-avoidance goals) from perfectionistic strivings to performance. It would also help identify what indirect paths, if any, exist that may mean perfectionistic concerns does influence performance in sport and education, as has been found in the workplace.

Fourth, we need to examine the combined (or interactive effects) of the two dimensions of perfectionism. One approach that allows researchers to do just this is the recently developed  $2 \times 2$  model of perfectionism (Gaudreau & Thompson, 2010). This model allows the relationships of combinations of the two dimensions to be examined (e.g., high perfectionistic strivings and high perfectionistic concerns). Without research adopting such

an approach we cannot examine if, as Stoeber suggests, perfectionistic strivings is part of a healthy pursuit of excellence only when not accompanied by elevated levels of perfectionistic concerns.

Finally, one of the most important issues is to examine the perfectionism-performance relationship under various conditions. Research in sport is beginning to adopt such designs (e.g., Hill et al., 2011). However, this is not the case in either education or the workplace. Incorporating contextual moderating factors offers a more ecologically valid set of circumstances in which to study this relationship. Doing so is also necessary in order to test many of the assertions associated with perfectionism (e.g., perfectionistic vulnerability; Hewitt & Flett, 1993). We believe this type of research is central to unpicking the complexity evident in current research.

### **Conclusions**

Overall, our review of recent studies on perfectionism and performance in sport, education, and the workplace provides us with further evidence that perfectionism is an important characteristic in achievement domains. It is, however, unclear if perfectionism leads to impaired performance. In certain circumstances, perfectionistic strivings are related to better performance. Evidence for this is strongest in education but notably mixed in sport and the workplace. However, there is currently too little research and too many mixed findings to conclude perfectionistic strivings forms part of a healthy pursuit of excellence. In addition, while there is evidence that perfectionistic concerns may not impair performance, there is also enough evidence that they may have a more complex role for performance.

## References

- Adler, A. (1956). The neurotic disposition. In H. L. Ansbacher & R. R. Ansbacher (Eds.), *The individual psychology of Alfred Adler* (pp. 239–262). New York: Harper.
- Burke, R. J., Davis, R. A., & Flett, G. L. (2008). Workaholism types, perfectionism and work outcomes. *The Journal of Industrial Relations and Human Resources*, 10, 30-40.
- Burnam, A., Komarraju, M., Hamel, R., & Nadler, D. R. (2014). Do adaptive perfectionism and self-determined motivation reduce academic procrastination? *Learning and Individual Differences*, 36, 165-172.
- Burns, D. (1980). The perfectionist's script for self-defeat. *Psychology Today*, 14, 34–52.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). Applied multiple regression/correlation analysis for the behavioral sciences (3rd Ed.). Mahwah, NJ: Lawrence Erlbaum.
- Cox, B. J., Enns, M. W., & Clara, I. P. (2002). The multidimensional structure of perfectionism in clinically distressed and college student samples. *Psychological Assessment*, 14, 365-373.
- Damian, L. E., Stoeber, J., Negru, O., & Băban, A. (2014). Perfectionism and achievement goal orientations in adolescent school students. *Psychology in the Schools*, 51, 960-971.
- Damian, L. E., Stoeber, J., Negru-Subtirica, O., & Băban, A. (2017). Perfectionism and school engagement: A three-wave longitudinal study. *Personality and Individual Differences*, 105, 179-184.
- De Cuyper, K., Pieters, G., Claes, L., Vandromme, H., & Hermans, D. (2013). Indirect measurement of perfectionism: Construct and predictive validity. *Journal of Social and Clinical Psychology*, 32, 844-858.

- De Petrillo, L. A., Kaufman, K. A., Glass, C. R., & Arnkoff, D. B. (2009). Mindfulness for long-distance runners: An open trial using Mindful Sport Performance Enhancement (MSPE). *Journal of Clinical Sport Psychology*, 4, 357-376.
- Dunkley, D. M., Lewkowski, M., Lee, I. A., Preacher, K. J., Zuroff, D. C., Berg, J. L., ... & Westreich, R. (2017). Daily stress, coping, and negative and positive affect in depression: Complex trigger and maintenance patterns. *Behavior Therapy*, 48, 349-365.
- Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 72, 218-232.
- Flett, G. L., Hewitt, P. L., Boucher, D., Davidson, L., & Munro, Y. (2001). The Child-Adolescent Perfectionism Scale: Development, validation, and association with adjustment. Unpublished manuscript.
- Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, 14, 449-468.
- Gaudreau, P., & Thompson, A. (2010). Testing a  $2 \times 2$  model of dispositional perfectionism. *Personality and Individual Differences*, 48, 532-537.
- Gotwals, J.K., Stoeber, J., Dunn, J.G.H., & Stoll, O. (2012). Are perfectionistic strivings in sport adaptive? A systematic review of confirmatory, contradictory, and mixed evidence. *Canadian Psychology*, 53, 263-279.
- Harvey, B. C., Moore, A. M., & Koestner, R. (2017). Distinguishing self-oriented perfectionism-striving and self-oriented perfectionism-critical in school-aged children: Divergent patterns of perceived parenting, personal affect and school performance. *Personality and Individual Differences*, 113, 136-141.
- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, 60, 456-470.

- Hewitt, P. L., & Flett, G. L. (1993). Dimensions of perfectionism, daily stress, and depression: a test of the specific vulnerability hypothesis. *Journal of Abnormal Psychology, 102*, 58-65.
- Hill, A. P. (2014). Perfectionistic strivings and the perils of partialling. *International Journal of Sport and Exercise Psychology, 12*, 302-315.
- Hill, A. P. (2017). Real and imagined perils: A reply to Stoeber and Gaudreau (2017). *Personality and Individual Differences, 108*, 220-224.
- Hill, A. P., Hall, H. K., & Appleton, P. R. (2011). The relationship between multidimensional perfectionism and contingencies of self-worth. *Personality and Individual Differences, 50*, 238-242.
- Hill, A. P., Hall, H. K., Duda, J. L., & Appleton, P. R. (2011). The cognitive, affective and behavioural responses of self-oriented perfectionists following successive failure on a muscular endurance task. *International Journal of Sport and Exercise Psychology, 9*, 189-207.
- Hill, A. P., & Madigan, D. J. (2017). A short review of perfectionism in sport, dance and exercise: out with the old, in with the 2×2. *Current Opinion in Psychology, 16*, 72-77.
- Hill, A. P, Mallinson-Howard, S. H., & Jowett, G. E. (in press). Multidimensional perfectionism in sport: A meta-analytical review. *Sport, Exercise, and Performance Psychology*.
- Hill, A. P, Mallinson-Howard, S. H., Madigan, D. J., & Jowett, G. E. (in press). Perfectionism in sport, dance, and exercise: An extended review and reanalysis. In G. Tenenbaum & R. C. Eklund (Eds.), *Handbook of Sport Psychology* (4th Edition). London: Wiley.

- Hill, A. P., Stoeber, J., Brown, A., & Appleton, P. R. (2014). Team perfectionism and team performance: A prospective study. *Journal of Sport and Exercise Psychology*, 36, 303-315.
- Hollender, M. H. (1965). Perfectionism. *Comprehensive Psychiatry*, 6, 94-103.
- Hrabluik, C., Latham, G. P., & McCarthy, J. M. (2012). Does goal setting have a dark side? The relationship between perfectionism and maximum versus typical employee performance. *International Public Management Journal*, 15, 5-38.
- Jansson-Fröjmark, M., & Linton, S. J. (2007). Is perfectionism related to pre-existing and future insomnia? A prospective study. *British Journal of Clinical Psychology*, 46, 119-124.
- Jowett, G. E., Mallinson, S. H., & Hill, A. P. (2016). An Independent Effects Approach to Perfectionism in Sport, Dance, and Exercise. In A. P. Hill (Ed.), *The Psychology of Perfectionism in Sport, Dance, and Exercise* (pp. 85-149). London: Routledge.
- Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, 127, 376.
- Kaufman, K. A., Glass, C. R., & Arnkoff, D. B. (2009). Evaluation of Mindful Sport Performance Enhancement (MSPE): A new approach to promote flow in athletes. *Journal of Clinical Sport Psychology*, 3, 334-356.
- Kljajic, K., Gaudreau, P., & Franche, V. (2017). An investigation of the 2×2 model of perfectionism with burnout, engagement, self-regulation, and academic achievement. *Learning and Individual Differences*, 57, 103-113.
- Limburg, K., Watson, H. J., Hagger, M. S., & Egan, S. J. (in press). The relationship between perfectionism and psychopathology: A meta-analysis. *Journal of Clinical Psychology*.

- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods, 12*, 23-44.
- Missildine, W. H. (1963). *Your inner child of the past*. New York: Simon & Schuster.
- Pacht, A. R. (1984). Reflections on perfection. *American Psychologist, 39*, 386.
- Rice, K. G., Lopez, F. G., Richardson, C. M., & Stinson, J. M. (2013a). Perfectionism moderates stereotype threat effects on STEM majors' academic performance. *Journal of Counseling Psychology, 60*, 287.
- Rice, K. G., Lopez, F. G., & Richardson, C. M. (2013b). Perfectionism and performance among STEM students. *Journal of Vocational Behavior, 82*, 124-134.
- Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin, 138*, 353.
- Sherry, S. B., Hewitt, P. L., Sherry, D. L., Flett, G. L., & Graham, A. R. (2010). Perfectionism dimensions and research productivity in psychology professors: Implications for understanding the (mal) adaptiveness of perfectionism. *Canadian Journal of Behavioural Science/Revue canadienne des sciences du comportement, 42*, 273.
- Shim, S. S., Rubenstein, L. D., & Drapeau, C. W. (2016). When perfectionism is coupled with low achievement: The effects on academic engagement and help seeking in middle school. *Learning and Individual Differences, 45*, 237-244.
- Slaney, R. B., Rice, K. G., Mobley, M., Trippi, J., & Ashby, J. S. (2001). The revised almost perfect scale. *Measurement and Evaluation in Counseling and Development, 34*, 130-145.



- Stoeber, J. (2012). Perfectionism and performance. In S. M. Murphy (Ed.), *The Oxford handbook of sport and performance psychology* (pp. 294-306). New York: Oxford University Press.
- Stoeber, J., & Damian, L. E. (2016). Perfectionism in employees: Work engagement, workaholism, and burnout. In *Perfectionism, health, and well-being* (pp. 265-283). Springer, Cham.
- Stoeber, J., Damian, L. E., & Madigan, D. J. (2018). Perfectionism: A motivational perspective. In J. Stoeber (Ed.), *The psychology of perfectionism: Theory, research, and applications*. London: Routledge.
- Stoeber, J., & Gaudreau, P. (2017). The advantages of partialling perfectionistic strivings and perfectionistic concerns: Critical issues and recommendations. *Personality and Individual Differences*, 104, 379-386.
- Stoeber, J., Haskew, A. E., & Scott, C. (2015). Perfectionism and exam performance: The mediating effect of task-approach goals. *Personality and individual differences*, 74, 171-176.
- Stoeber, J., & Madigan, D. J. (2016). Measuring perfectionism in sport, dance, and exercise: Review, critique, recommendations. In A. P. Hill (Ed.), *The psychology of perfectionism in sport, dance and exercise* (pp. 31–56). London: Routledge.
- Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and Social Psychology Review*, 10, 295-319.
- Thompson, R. W., Kaufman, K. A., De Petrillo, L. A., Glass, C. R., & Arnkoff, D. B. (2011). One year follow-up of mindful sport performance enhancement (MSPE) with archers, golfers, and runners. *Journal of Clinical Sport Psychology*, 5, 99-116.

Table 1. *A review of recent research on perfectionism and performance in sport, education, and the workplace*

Study	Sample	Domain	Instru.	Perfectionistic			Criterion variable	PS	PC	PS	PC
				Strivings (PS)	Concerns (PC)	Cor		<i>r</i>	<i>r</i>	<i>pr</i>	<i>pr</i>
Hill, Hall, Duda, & Appleton (2011)	68 adult athletes (29% female)	Sport	HF-MPS-sh	SOP	SPP	<b>.33</b>	Distance/Average RPM	.10	-.01	.11	-.04
Hill, Stoeber, Brown, & Appleton (2014)	231 adult rowers (51% female)	Sport	HF-MPS-sh	SOP	SPP	<b>.38</b>	Improvement in boat position	-.05	.06	-.08	.09
Thompson, Kaufman, De Petrillo, Glass, & Arnkoff (2011)	10 adult athletes	Sport	F-MPS	PStan	CM	—	Improvement in best mile time	.30	<b>.69</b>	—	—
Burnam, Komarraju, Hamel, & Nadler (2014)	393 students (48% female)	Education	FMPS	PS	CoPC	<b>.43</b>	GPA	<b>.17</b>	.02	<b>.18</b>	-.06
Damian, Stoeber, Negru, & Băban (2014)	584 students (58% female)	Education	CAPS	SOP	SPP	<b>.43</b>	GPA	<b>.19</b>	-.08	<b>.25</b>	<b>-.18</b>
Damian, Stoeber, Negru-Subtirica, & Băban (2017) †	386 students	Education	CAPS	SOP	SPP	<b>.62</b>	GPA	<b>.31</b>	<b>.10</b>	<b>.31</b>	<b>-.11</b>
De Cuyper, Pieters, Claes, Vandromme, & Hermans (2013)	50 students	Education	HF-MPS, F-MPS	CoPS	CoPC	—	GPA	.10	-.03	—	—

Harvey, Moore, & Koestner (2017)	203 students (57% female)	Education	CAPS-14	SOP	–	–	Grades	<b>.22</b>	–	–	–
Kljajic, Gaudreau, & Franche (2017)	510 students (72% female)	Education	HF-MPS	SOP	SPP	<b>.47</b>	GPA	<b>.19</b>	<b>-.17</b>	<b>.30</b>	<b>-.29</b>
Rice, Lopez, Richardson, & Stinson (2013a)	232 Students (100% female)	Education	APS-R	S	D	<b>-.15</b>	GPA	<b>.18</b>	<b>-.18</b>	<b>.15</b>	<b>-.15</b>
	215 students (0% female)	Education	APS-R	S	D	-.02	GPA	<b>.21</b>	-.09	<b>.21</b>	-.08
Rice, Lopez, & Richardson (2013b)	175 students (100% female)	Education	APS-R	–	D	–	GPA	–	-.08	–	–
	119 students (0% female)	Education	APS-R	–	D	–	GPA	–	-.08	–	–
Shim, Rubenstein, & Drapeau (2016)	169 students (37% female)	Education	F-MPS	PS	CM	<b>.44</b>	Grades	<b>.18</b>	-.06	<b>.23</b>	-.15
Stoeber, Haskew, & Scott (2015)	100 students (89% female)	Education	HS-MPS	SOP	SPP	<b>.45</b>	Exam	<b>.22</b>	-.12	<b>.30</b>	<b>-.24</b>
Hrabluik, Latham, & McCarthy (2012)	235 police officers	Workplace	F-MPS	PS	–	–	Police promotion exam	<b>.30</b>	–	–	–
	242 police officers	Workplace	F-MPS	PS	–	–	Job performance	.10	–	–	–
Sherry, Hewitt, Sherry, Flett, & Graham (2010)	1,258 psychology professors (38 % female)	Workplace	HF-MPS	SOP	SPP	<b>.24</b>	Research productivity (total publications)	<b>-.10</b>	<b>-.06</b>	<b>-.09</b>	-.04

Note.: Intru. = Instrument, F-MPS = Multidimensional Perfectionism Scale (Frost et al., 1990), F-MPS-Sh = Frost et al.'s (1990) Multidimensional Perfectionism Scale - Short Version (Cox et al., 2002), HF-MPS = Multidimensional Perfectionism Scale (Hewitt & Flett, 1991), HF-MPS-Sh = Hewitt and Flett's (1991) Multidimensional Perfectionism Scale - Short Version (Cox et al., 2002), CAPS = Child and Adolescent Perfectionism Scale (Flett et al., 2001), APS-R = Almost Perfect Scale-Revised (Slaney et al., 2001); PStan = Personal standards, CoPS = A composite of multiple subscales indicative of perfectionistic strivings, SOP = self-oriented perfectionism, SP = Striving for perfection, SE = Striving for excellence, HS = High standards; CM

= Concern over mistakes, CoPC = A composite of multiple subscales indicative of perfectionistic concerns, SPP = Socially prescribed perfectionism, NRI = Negative reactions to imperfection, D = Discrepancy; † = Correlations presented are for perfectionism scores at time one.

Partial correlations were calculated by using the formulas provided by Cohen, Cohen, West, and Aiken (2003, p. 90, equation 3.3.11).

Bold = significant ( $p < .05$ ).