A multidimensional approach to perfectionism and self-compassion

Rebecca J. Linnett

&

Fraenze Kibowski

Nottingham Trent University

Author details

Rebecca Linnett, BSc (hons), MRes – corresponding author

University of Leicester. Department of Health Sciences, George Davies Centre, University Road, Leicester, LE1 7RH
Email: rjl48@leicester.ac.uk
ORCID ID: orcid.org/0000-0002-7357-0552
Twitter: @rebeccalinnett

Dr. Fränze Kibowski

Nottingham Trent University, 50 Shakespeare Street, Nottingham, NG1 4FQ
Telephone: (0115) 848 4514
Email: fraenze.kibowski@ntu.ac.uk
ORCID ID: orcid.org/0000-0002-8852-1278
Abstract

Research suggests that maladaptive perfectionism impedes the development of self-compassion, a self-attitude with numerous biopsychosocial benefits. The precise relationship between these constructs remains unclear, but accurate modelling could foster an understanding of the barriers that perfectionists experience to self-compassion, enabling focused interventions to be developed.

This study used structural equation modelling within a convenience-sampled, general, population (n=428; \( \bar{X} \) age=34.3 yrs, \( SD=12.1 \)) to analyze how multidimensional perfectionism related to multidimensional self-compassion. The maladaptive perfectionism dimensions (Concern over Mistakes; Discrepancy) predicted lower levels of self-compassion and its positive dimensions (Self-kindness; Common Humanity; Mindfulness). Adaptive perfectionism also predicted higher levels of Self-judgment.

Findings were discussed theoretically, and their utility for developing population-tailored, dual-focused, interventions aimed at reducing perfectionism and increasing self-compassion was explored.

Keywords: Perfectionism, self-compassion, structural equation modeling, SEM, latent variable modeling
Introduction

Perfectionism is a multidimensional personality trait characterized by a desire to achieve very high standards, excessive self-criticism if achievements do not live up to expectations, and high levels of distress if a mistake is made (Sirois & Molnar, 2017; Stoeber, 2017). A recent large-scale meta-analysis has shown that levels of perfectionism have been linearly increasing in the UK and North America since the late 1980’s (Curran & Hill, 2017), which is concerning given the association between some forms of perfectionism and poor psychosocial outcomes (Flett, Hewitt, & Heisel, 2014; Limburg, Watson, Hagger, & Egan, 2017; Smith et al., 2017).

Research so far suggests that perfectionists often struggle to develop and maintain the healthy self-attitude of self-compassion (Ferrari, Yap, Scott, Einstein, & Ciarrochi, 2018; Hiçdurmaz & Aydin, 2017; Mosewich et al., 2011; Neff, 2003a), a mindset characterized by non-judgmental awareness of painful thoughts and feelings, recognition of common humanity, and kindness towards oneself during difficult times (Neff, 2003b). Self-compassion is associated with considerable biopsychosocial benefits, such as lower levels of depression, anxiety and stress (MacBeth & Gumley, 2012), better physical health (Homan & Sirois, 2017), and better adjustment to long-term health conditions (Sirois & Rowse, 2016).

The relationship between multidimensional perfectionism and self-compassion has, however, been found to be differential. Perfectionism that is characterized by excessive self-criticism has been found to be consistently associated with lower levels of self-compassion, but self-compassion’s relationship with other forms of perfectionism – e.g. those characterized more by a striving for excellence – is more complex. This paper reports on a structural equation modeling approach to investigating the multidimensional relationship between perfectionism and self-compassion in order to establish how the dimensions of perfectionism and the
dimensions of self-compassion are differentially related. This will help researchers to develop
an understanding of what barriers perfectionists face in being self-compassionate, and
consequently what psychological tools could be constructed and implemented to attempt to
address these barriers.

Multidimensional perfectionism

Prior to the early 1990s, perfectionism was considered to be a unidimensional
phenomenon that was exclusively related to psychopathology (Stoeber & Otto, 2006), but this
has since been contested by some researchers, who argue that perfectionism is a “double-edged
sword” (Stoeber, Damian, & Madigan, 2017) that also has an adaptive dimension (e.g. Smith,
Saklofske, & Yan, 2015; Stoeber, Haskew, & Scott, 2015; Stoeber & Otto, 2006). However,
other prominent researchers in the field argue that although there are some benefits to
perfectionism, in general it is almost always associated with negative outcomes, particularly in
terms of eating disorder symptomology (Norris, Gleaves, & Hutchinson, 2019; Petersson,
Brudin, Clinton, Perseius, & Norring, 2018; Rivière & Douilliez, 2017), suicidality (Flett et
al., 2014; Smith et al., 2017) and a wide array of other mental health concerns (Limburg et al.,
2017). Debate continues over perfectionism’s factor structure, benefits, and costs, but it is
widely acknowledged that the construct varies along a continuum, with people displaying
different amounts of overall perfectionism and the characteristics that underpin its various
subscales (Gaudreau, Franche, Kljajic, & Martinelli, 2017).

This study uses a three-factor model of perfectionism which was developed by Linnett
and Kibowski (2017) using a combination of factors from several existing perfectionism scales
as recommended by Stoeber and Madigan (2016). These factors were suggested as being key
indicators or proxies for the overarching perfectionism dimensions of Perfectionistic Strivings
(PS) and Perfectionistic Concerns (PC), which form a two-factor model of perfectionism that
is commonly used within contemporary perfectionism research. The three-factor model of perfectionism that was used for the current study consisted of one “adaptive” dimension of Striving for Excellence (SE) which is broadly equivalent to PS, and two “maladaptive” dimensions of Concern over Mistakes (CM) and Discrepancy (D) which are broadly equivalent to PC.

The perfectionism dimension of PC has been defined by Stoeber and Otto (2006) as a maladaptive dimension that is focused on concern over mistakes, self-doubt, extrinsically motivated perfectionism and a perceived discrepancy between actual achievements and high expectations (Stoeber & Otto, 2006). Fear of negative social evaluation and negative reactions to imperfection are also characteristic of PC (Gotwals, Stoeber, Dunn, & Stoll, 2012). PC, or maladaptive perfectionism, has been associated with a multitude of negative outcomes (Hill & Curran, 2015) such as low self-esteem, avoidant coping strategies (Moroz & Dunkley, 2015), and a large number of mental health issues such as depression, anxiety disorders, eating disorders and suicidality (Limburg et al., 2017; Smith et al., 2017).

In comparison, PS is usually described as a more adaptive dimension characterized by high personal standards and intrinsically motivated perfectionism (Stoeber & Otto, 2006). PS (or adaptive perfectionism) usually leads to comparatively few negative outcomes (Hill & Curran, 2015; Stoeber & Otto, 2006), and it has also been associated with positive characteristics such as conscientiousness, problem-focused coping, positive affect (Stoeber et al., 2017) and satisfaction with life (Smith, Saklofske, & Yan, 2015). Nevertheless, it is also important to note that, within clinical populations, all forms of perfectionism have been found to contribute to negative outcomes (Boone & Soenens, 2015; Molnar, Sirois, & Method-Jones, 2016; Shafran, Cooper, & Fairburn, 2002).
Multidimensional self-compassion

In comparison to the differential relationship between the dimensions of perfectionism and positive or negative outcomes, self-compassion has been wholly associated with a multitude of beneficial attributes, such as greater psychological wellbeing (Keng & Liew, 2016), decreased stress, anxiety and depressive symptoms (Pinto-Gouveia, Duarte, Matos, & Fráguas, 2014; Trompetter, de Kleine, & Bohlmeijer, 2016), reduced severity of eating psychopathology (Beekman, Stock, & Howe, 2017; Palmeira, Pinto-Gouveia, & Cunha, 2017), adaptive coping strategies (Sirois, Molnar, & Hirsch, 2015), and better physical and psychological adaptation to emotions (Clark et al., 2015). It has also been found to be associated with better adjustment to long-term health conditions (Ferrari, Dal Cin, & Steele, 2017; Sirois & Rowse, 2016; Sirois & Wood, 2016), better physical health (Homan & Sirois, 2017), better practice and self-regulation of health behaviors (Biber & Ellis, 2017; Dowd & Jung, 2017; Sirois, Kitner, & Hirsch, 2015) and a reduction in health risk behaviors (Kelly, Zuroff, Foa, & Gilbert, 2010).

Neff’s (2003a, 2003b) conceptualization of self-compassion consists of three main components: a) Self-kindness – being kind and understanding to oneself rather than harsh and critical; b) Common humanity – seeing one’s experiences as part of the larger human condition (that is, that we are all imperfect and fallible beings); and c) Mindfulness – non-judgmental awareness of one’s painful thoughts and feelings (Neff, 2003b). Although these facets interact with and enhance each other (Neff, 2016), they are nevertheless conceptually distinct and experienced in phenomenologically unique ways (Neff, 2003b). Consequently, the Self-Compassion Scale (SCS; Neff, 2003a) consists of six factors, representing the three dyads of self-compassion: Self-kindness & self-judgment, common humanity & isolation, and mindfulness & over-identification.
Perfectionistic strivings (PS), perfectionistic concerns (PC), and self-compassion

As evidenced so far, although perfectionism has often been found to be associated with undesirable biopsychosocial outcomes, the benefits of self-compassion have been shown to be numerous (e.g., MacBeth & Gumley, 2012; Neff & Knox, 2017). Consequently, increasing self-compassion amongst individuals could lead to significant improvements in mental and physical health and wellbeing. However, preliminary findings suggest that at least some dimensions of perfectionism are negatively related to self-compassion (Ferrari et al., 2018; Hiçdurmaz & Aydin, 2017; Mosewich et al., 2011; Neff, 2003a; Yeshua, Zohar, & Berkovich, 2019).

Unsurprisingly, PC (or its maladaptive equivalent) has been associated with significantly lower levels of overall self-compassion across all studies to date (Ferrari et al., 2018; Hiçdurmaz & Aydin, 2017; Mosewich et al., 2011; Neff, 2003a), with moderate-to-large effect sizes ranging between $r = -.29$ and $r = -.63$ across four studies. In comparison, PS (or its adaptive equivalent) has had more mixed associations; of the three studies that considered both dimensions of perfectionism, two found PS to be associated with significantly lower self-compassion, although with much smaller effect sizes ranging between $r = -.18$ and $r = -.26$ (Hiçdurmaz & Aydin, 2017; Mosewich et al., 2011). However, the third did not find PS to be significantly associated with self-compassion and, similarly, reported a very small effect size of $r = .07$ which further supported the claim that PS was not associated with a change in self-compassion levels in that sample (Neff, 2003a). In addition, one further study only considered perfectionism unidimensionally, but reported a significant negative association between overall perfectionism and overall self-compassion ($r = -.45$; Yeshua et al., 2019).

In short, PC is consistently associated with lower levels of self-compassion, which is unsurprising given that it is primarily characterized by excessive self-criticism in response to
mistakes and performance that is perceived to be below par, compared to self-compassion’s focus on being tolerant of your flaws and inadequacies and keeping failures in perspective. However, the relationship between PS and self-compassion is harder to explain; it is possible to see, theoretically, how self-compassionate tolerance of inadequacy could be incompatible with the single-minded striving for excellence that is characteristic of PS, which would explain the findings of both Hiçdurmaz & Aydin (2017) and Mosewich et al. (2011) as outlined above. However, this does not explain why Neff (2003a) found there to be no association between the constructs, suggesting that there may be more complex reasons for this apparently differential relationship.

One such reason may be that multidimensional conceptualizations of self-compassion have so far been neglected in studies examining the relationship between self-compassion and perfectionism. Neff (2003a) presents a six-factor conceptualization of self-compassion which is reflected in the Self-Compassion Scale used by all of the studies that have been discussed thus far, but when calculating associations between these constructs, self-compassion has only been considered unidimensionally and therefore the researchers have not examined the relationships between the dimensions of perfectionism and each dimension of self-compassion.

**The present study**

As has been so far demonstrated, existing literature on the relationship between the dimensions of perfectionism and self-compassion has been limited and has yielded mixed results. However, it is promising that all studies to date have found a significant negative relationship between PC and self-compassion, despite using different instruments to measure PC. This triangulation of results suggests that PC’s effect on self-compassion is consistent across several different populations and is not just an artefact of the perfectionism measures used. However, results are conflicted regarding self-compassion’s relationship with PS. In
this regard, these studies’ use of different perfectionism measures and their unidimensional 
conceptualization of self-compassion makes it difficult to determine how self-compassion is 
truly related to this dimension of perfectionism. Consequently, the present study employed an 
approach which combined a number of existing perfectionism measures and modelled self-
compassion as a multidimensional construct, in order to provide a more detailed picture of the 
association between them.

Hypotheses

The overall aim of this study is to investigate how each dimension of perfectionism is 
related to 1) Overall self-compassion, and 2) Each dimension of self-compassion.

Based on the consistently negative relationships found between PC and overall self-
compassion to date, it is expected that PC will be negatively related to both Overall self-
compassion and the three positive self-compassion components (Self-kindness, Common 
Humanity, and Mindfulness) and positively related to the three negative components (Self-
judgment, Isolation, and Over-identification). Theoretically, this is likely, given that PC as a 
construct is characterized by an excessively judgmental response to failure or mistakes (in 
comparison to the tolerance of flaws and inadequacies that is promoted by Self-kindness), a 
tendency to feel isolated when experiencing failures or setbacks (in comparison to the Common 
Humanity approach of seeing mistakes or inadequacy as part of the human condition) and a 
disproportionately negative response to failure and over-identification with negative thoughts 
and feelings (in comparison to Mindfulness’ focus on keeping failures in perspective).

- **Hypothesis 1a:** PC will be negatively related to Overall self-compassion.

- **Hypothesis 1b:** PC will be negatively related to the positive self-compassion 
dimensions of Self-kindness, Common Humanity, and Mindfulness; and positively
related to the negative self-compassion dimensions of Self-judgment, Isolation, and Over-identification.

It is harder to hypothesize how PS will perform, but given that it has only been weakly related to overall self-compassion (if at all) in studies so far, it is expected that PS will be unrelated or weakly negatively related to both Overall self-compassion and the three positive self-compassion components, and unrelated or weakly positively related to the three negative components. The assertion that PS will be more weakly associated with self-compassion is based primarily on findings in the literature to date; however it is also likely given that PS has been found to be more weakly related (than PC) to other constructs that are strongly associated with self-compassion, such as self-esteem (Dunkley, Berg, & Zuroff, 2012; Neff & Vonk, 2009) and emotional intelligence (Castilho, Carvalho, Marques, & Pinto-Gouveia, 2017; Smith, Saklofske, & Yan, 2015).

- **Hypothesis 2a:** PS will be weakly – if at all – negatively related to Overall self-compassion.

- **Hypothesis 2b:** PS will be weakly – if at all – negatively related to the positive self-compassion dimensions of Self-kindness, Common Humanity, and Mindfulness; and weakly – if at all – positively related to the negative self-compassion dimensions of Self-judgment, Isolation, and Over-identification.
Method

Participants

Participants were recruited using a mixture of convenience and snowball sampling. Advertisements were placed via the lead researcher’s social media accounts and the study was further advertised by the British Psychological Society’s press office on their social media pages. Participants were also recruited via emails to several academic mailing lists, primarily aimed at postgraduate students and researchers with interests in health and counselling psychology.

488 adults aged between 18 and 72 (\(\bar{X}\) age = 34.3 years, \(SD = 12.1\) years) volunteered to participate in the cross-sectional online survey. Of the 488 participants, 60 had missing data on all predictor variables and therefore the current analyses are all based on data from 428 participants.

83.2% \((n = 406)\) of the total sample were female, 89.1% \((n = 435)\) indicated that English was their first language, and 87.3% \((n = 426)\) identified as white. Further demographic information is available on request.

Measures

Perfectionism

Perfectionism was measured using the 30-item scale that was developed by combining all of the factors indicative of PS and PC from the various measures recommended by Stoeber and Madigan (2016), performing item analysis on the 79-item measure it yielded and then factor analyzing the remaining items (Linnett & Kibowski, 2017; see Table 2.1 for factors utilized). A summary of the scale development process can be found in Appendix A. The 30-item scale (see Appendix B) measured three distinct factors of perfectionism. The maladaptive
dimension (PC) was represented by two factors: “Concern over Mistakes”, which taps into the idea of negative reactions to mistakes (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Hill et al., 2004), and “Discrepancy”, which focuses on the person’s perception that their high standards are not being met (Hill et al., 2004). The adaptive dimension (PS) was represented by one factor, “Striving for Excellence”, which focuses on self-directed perfectionistic behaviors that have a motivational aspect (Hewitt & Flett, 1991, 2004; Hill et al., 2004).

Items were presented as a series of statements, with participants indicating on a 5-point Likert scale how strongly they felt that the statement was reflective of their thoughts, feelings or behavior. Items from the Concern over Mistakes factor included statements such as “To me, a mistake equals failure”, items from the Discrepancy factor included statements such as “My performance rarely measures up to my standards” and items from the Striving for Excellence factor included statements such as “I demand nothing less than perfection of myself”. Categorical McDonald’s omega estimates showed excellent levels of reliability for the three factors of Concern over Mistakes (ω = .94 (95% CI [.93, .95]), Discrepancy (ω = .93 (95% CI [.92, .95]) and Striving for Excellence (ω = .93 (95% CI [.92, .95]). Face validity of the scale was strong, as items clustered into similar factors to those from which the items were originally derived; for instance, the Concern over Mistakes factor consisted of items derived from the “Concern over Mistakes” factors of the F-MPS (Frost, Marten, Lahart, & Rosenblate, 1990) and the Perfectionism Inventory (PI; Hill et al., 2004) and the Striving for Excellence factor consisted of items derived from the “Striving for Excellence” and “Self-oriented perfectionism” factors of the PI and HF-MPS (Hewitt & Flett, 1991, 2004), respectively. The scale was also found to demonstrate adequate convergent and discriminant construct validity.
Self-compassion was measured using the 26-item Self-Compassion Scale (SCS; Neff, 2003a). The SCS presents participants with a series of statements and asks them to indicate on a 5-point Likert scale how often (from “Almost never” to “Almost Always”) they act that way towards themselves when they are going through a difficult time. The SCS includes statements such as “I’m intolerant and impatient towards those aspects of my personality I don’t like” and “I try to see my failings as part of the human condition”. Although the SCS consists of six factors (Self-kindness, Self-judgment, Common Humanity, Isolation, Mindfulness, and Over-identification), Neff (2016) found that at least 90% of the variance in SCS scores can be accounted for by a general factor of self-compassion, arguing that the SCS can therefore be used either to analyze the six subscales of self-compassion or to generate an overall measure. Means for the items from each factor were created (reverse-scoring three of the factors – Self-judgment, Isolation and Over-identification), and a grand mean of all subscale means was then calculated to give an overall measure of self-compassion (e.g. Neff, 2016).

The SCS has demonstrated good internal consistency in past studies, with Neff (2003a) reporting a coefficient $\alpha$ of between .75 and .81 across the six factors. More recently, Neff, Whitaker and Karl (2017) examined the factor structure of the SCS across four distinct populations (college undergraduates, community adults, individuals practicing Buddhist meditation and a clinical sample of individuals with a history of recurrent depression) and found it to be consistent across all four populations, reporting alphas of between .70 and .89 for the six factors and between .91 and .94 for overall self-compassion. The SCS has also demonstrated good convergent and discriminant construct validity (Neff, 2003a; Neff, Kirkpatrick, & Rude, 2007), strong predictive validity (Neff, 2016) and concurrent criterion validity (Neff & McGehee, 2009; Neff, Pisitsungkagarn, & Hsieh, 2008).
Ethical considerations

All research was carried out in accordance with the British Psychological Society’s Code of Ethics and Conduct (2009) and received full ethical approval from Nottingham Trent University’s Research Ethics Committee (ref: 16/02/2017).

Analyses

Descriptive statistics were obtained for all perfectionism and self-compassion factors, and Spearman’s rho correlations were calculated to enable comparison with those from existing literature. Partial correlations were calculated between the more adaptive dimension of perfectionism and the variables of interest, as research has shown that the extent of the positive effects of the more adaptive perfectionism dimension only becomes apparent once the effects of maladaptive perfectionism have been controlled for (Gotwals et al., 2012; Smith, Saklofske, Yan, & Sherry, 2015; Stoeber & Otto, 2006).

Two structural equation models were specified in Mplus version 8.0 (Muthén & Muthén, 2017), the first to test the relationship between the dimensions of perfectionism and overall self-compassion, and the second to investigate this relationship further by testing the relationship between the dimensions of perfectionism and the dimensions of self-compassion. All models controlled for age and sex and were estimated using WLSMV estimation as the indicators for the latent perfectionism factors were categorical. The following indices were used to adjudge model fit:

**Chi-square.** A “good” fit is expected to provide a non-significant $\chi^2$ statistic at the 0.05 threshold (Barrett, 2007). However, it is generally acknowledged that in sample sizes greater than ~200, chi-square values are inflated, meaning the statistic almost always rejects the model when large samples are used (e.g. Hooper, Coughlan, & Mullen, 2008). As there were data...
from 428 participants in the dataset, it is therefore likely that the chi-square statistic would be inflated for this model.

Comparative fit indices. Hu and Bentler (1999) recommend a cut-off of ≥ .95 for the Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI). However, results of other studies do not necessarily support this threshold (Kline, 2011; Yuan, 2005), and thresholds of .90 for both the CFI and TLI are often cited in the literature as indicating “adequate” fit (e.g. Byrne, 1995; Hooper et al., 2008).

Root mean square error of approximation (RMSEA). The RMSEA is termed a “badness-of-fit” index, in that a value of zero represents the best fit. Hu and Bentler (1999) recommend that the cut-off value of the RMSEA should be close to .06, and that values lower than .03 represent excellent fit. They also advise that the upper confidence interval of the RMSEA should be <.08. However, it should be noted that some have argued against universal cut-off points for the RMSEA, contending that these cannot be supported and that the RMSEA should therefore not be pursued in isolation from other indices of model fit (Chen, Carolina, Curran, Bollen, & Kirby, 2009).

Weighted root mean square residual (WRMR). The WRMR is reported here instead of the standardized root mean square residual (SRMR) as the appropriate fit statistic for WLSMV estimation. Yu (2002) advises that with cut-off values <0.95 or 1.0, the WRMR has moderate or strong power to detect model fit. However, the utility of the WRMR has been called into question by other researchers, who argue that it is an experimental fit statistic and should be ignored (see comments by Muthén, 2014).

In terms of sufficient participants for SEM models, various “rules of thumb” are discussed in the literature (e.g. Muthén & Muthén, 2002; Wolf, Harrington, Clark, & Miller, 2013) in which variously 5, 10, or 20 participants are suggested for each parameter that is being
Due to the flexibility of structural equation modeling, no agreed standard exists, and rules of thumb are said to be easier but not sufficient; at best, these can be used to calculate a rough range which is indicative of a sufficient sample size (Wolf et al., 2013). In the present study, 68 parameters are being estimated for Model 1; using the rule of thumb of 5 participants per parameter, 340 participants (5 x 68) would be needed, whereas the rule of thumb of 10 participants leads to an estimation of 680 required participants (10 x 68). The current sample size of 428 lies between these two estimates and thus goes some way towards suggesting that Model 1 may have a sufficient sample size. For Model 2, 99 parameters are estimated. This means that a sample size of 495 (5 participants per parameter) or 990 (10 participants per parameter) is needed, suggesting that Model 2 may be slightly short of a sufficient sample size by at least 60 participants.
Results

Descriptive statistics

Scores for all three perfectionism dimensions were normally distributed, as were scores for the self-compassion factors of Self-kindness, Common Humanity and Mindfulness (see Table 3.1). However, scores for the self-compassion dimensions of Self-judgment, Isolation and Over-identification were significantly negatively skewed, and scores for Overall self-compassion were significantly positively skewed, as they all had $z$-scores >2.58 (Field, 2012). Furthermore, all the perfectionism dimensions and the self-compassion dimension of Common Humanity were significantly platykurtic ($z$ >2.58). These dimensions were not transformed as the WLSMV estimator used to test the models is generally robust to non-normality (Lei, 2009) and is the recommended estimator for skewed categorical data (Muthén, 2001). Spearman’s rho correlations were also used due to the categorical nature of the data and the non-normality of some of the dimensions (Fayers & Machin, 2000).

Spearman’s rho correlations were then calculated between Concern over Mistakes, Discrepancy, age, and all dimensions of self-compassion (see Table 3.2). Partial correlations between Striving for Excellence, age and all dimensions were also calculated, controlling for Concern over Mistakes and Discrepancy due to the suppressing effects of the maladaptive dimensions of perfectionism (as outlined in the Analysis section above).

Model 1: Multidimensional perfectionism on overall self-compassion

A structural equation model was tested of how the latent variables Concern over Mistakes, Striving for Excellence, and Discrepancy related to the observed variable of mean
self-compassion. Participant age and sex were controlled for. As expected, the chi-square test was highly significant ($\chi^2(489, n = 428) = 1063.01, p < .001$). However, all other fit indices apart from the WRMR indicated good model fit (see Table 3.3) and the model accounted for 60% of the variance in self-compassion scores ($r^2 = .60, p < .001$). Age was found to significantly predict higher self-compassion scores ($\beta = .19, p < .001$) but sex was not ($\beta = .05, p = 0.33$).

Figure 1 presents the standardized factor loadings and parameter estimates for the paths of Model 1. The Perfectionistic Concerns (PC) dimensions of Concern over Mistakes and Discrepancy were found to significantly predict lower levels of mean self-compassion at $p < .001$ ($\beta = -.45$ and $\beta = -.34$ respectively) – providing support for Hypothesis 1a – but the Perfectionistic Strivings (PS) dimension of Striving for Excellence was not ($\beta = -.02, p = 0.71$) – providing support for Hypothesis 2a.

Model 2: Multidimensional perfectionism on multidimensional self-compassion

A second structural equation model was then tested of how the latent variables Concern over Mistakes, Striving for Excellence, and Discrepancy related to the observed self-compassion variables of Self-kindness, Self-judgment, Common Humanity, Isolation, Mindfulness and Over-identification with a hierarchical latent variable of overall perfectionism. Participant age and sex were controlled for. As expected, the chi-square test was highly significant ($\chi^2(624, n = 428) = 1258.320, p < .001$). However, all other fit indices apart from the WRMR indicated good model fit (see Table 3.3).
Figure 2 presents the standardized factor loadings and parameter estimates for the statistically significant paths of the final structural equation model, with the measurement models for CM, SE and D omitted. Concern over Mistakes was the strongest indicator for Overall perfectionism ($\beta = .92, p < .001$), followed by Striving for Excellence ($\beta = .73, p < .001$) and Discrepancy ($\beta = .86, p < .001$). The PC dimensions of Concern over Mistakes and Discrepancy significantly predicted lower levels of the positive self-compassion dimensions of Self-kindness (CM $\beta = -.37, p < .001$; D $\beta = -.32, p < .001$), Common Humanity (CM $\beta = -.41, p < .001$; D $\beta = -.15, p < .001$) and Mindfulness (CM $\beta = -.46, p < .001$; D $\beta = -.17, p < .01$) and higher levels of Self-judgment (CM $\beta = .35, p < .001$; D $\beta = .32, p < .001$), Isolation (CM $\beta = .31, p < .001$; D $\beta = .39, p < .001$) and Over-identification (CM $\beta = .41, p < .001$; D $\beta = .23, p < .001$) – providing support for Hypothesis 1b. The PS dimension of Striving for Excellence was found to only predict higher levels of the negative self-compassion dimension of Self-judgment – although weakly ($\beta = .13, p < .01$) – and was not significantly related to any of the other dimensions of self-compassion, thus providing support for Hypothesis 2b.
The aim of this study was to investigate how the dimensions of perfectionism differentially relate to self-compassion, both as an overall concept and as a six-dimensional construct. The results showed that, as hypothesized, each dimension of perfectionism related differently to the individual dimensions of self-compassion. The maladaptive perfectionism dimensions were associated with significantly lower levels of overall self-compassion and of the positive self-compassion dimensions (i.e. Self-kindness, Common Humanity and Mindfulness), and also with significantly higher levels of the negative self-compassion dimensions (i.e. Self-judgment, Isolation and Over-identification). However, the adaptive perfectionism dimension was not significantly associated with overall self-compassion and was only weakly associated with one of the self-compassion dimensions, namely Self-judgment.

In finding a negative relationship between maladaptive perfectionism and overall self-compassion, this study replicates the findings of Neff (2003a), Mosewich et al. (2011), Hiçdurmaz & Aydin (2017) and Ferrari et al. (2018). This study’s findings also replicate those of Neff (2003a) in finding there to be no significant relationship between adaptive perfectionism and overall self-compassion (or between adaptive perfectionism and five of the six self-compassion dimensions). However, this paper’s findings also partially diverge from those of Mosewich et al. (2011) and Hiçdurmaz & Aydin (2017) as these studies found a significant negative relationship between adaptive perfectionism and overall self-compassion and the present study generally did not; instead, this study only found adaptive perfectionism to be associated with one of the self-compassion dimensions (Self-judgment).

The diverging results between this study and those of Mosewich et al. (2011) and Hiçdurmaz & Aydin (2017) may be because both the present study and Neff (2003a) reported partial correlations for the relationship between adaptive perfectionism and self-compassion.
(in order to control for the suppressor effects of maladaptive perfectionism that we have already outlined), and the SEM approach used in this paper automatically takes into account the covariances between the latent variables (Muthén & Muthén, 2017), thus controlling for the effect of maladaptive perfectionism. Both studies that controlled for maladaptive perfectionism in this way found no significant association between adaptive perfectionism and self-compassion. However, neither Mosewich et al. (2011) nor Hiçdurmaz and Aydin (2017) report having controlled for the effects of maladaptive perfectionism, and it is therefore possible that the negative relationship they found between adaptive perfectionism and overall self-compassion is in fact an artificially inflated result.

By considering maladaptive perfectionism multidimensionally, this study has made a novel contribution to the literature, demonstrating that while both of the maladaptive perfectionism dimensions of Concern over Mistakes and Discrepancy have a significant detrimental effect on an individual’s ability to be self-compassionate, Concern over Mistakes predicts lower levels of self-compassion than Discrepancy does. Furthermore, by also considering self-compassion multidimensionally, this study has demonstrated for the first time how the different dimensions of perfectionism relate to the individual dimensions of self-compassion. As Neff (2016) notes, although the individual dimensions of self-compassion are distinct, they do still impact one another. Consequently, it is important to consider the components of self-compassion individually as has been done in the present study, as this provides a more detailed picture of how each dimension relates to the other self-compassion dimensions and to other constructs, giving a more fine-grained analysis than if self-compassion was considered unidimensionally.

One interesting finding that has arisen from this multidimensional approach is that although both of the maladaptive dimensions of perfectionism predict significantly lower levels of Common Humanity and Mindfulness, the Concern over Mistakes perfectionism dimension
predicts considerably lower levels of these self-compassion dimensions than Discrepancy does. This may be because the Concern over Mistakes mindset – which is summed up well by the Perfectionism Inventory item “If I make a serious mistake, I feel like I’m less of person” (Hill et al., 2004) – is intrinsically at odds with the Common Humanity dimension of self-compassion, which stresses that failings are part of the human condition. Similarly, a high level of Concern over Mistakes is also in opposition to the Mindfulness approach, which is about keeping emotions in balance and keeping things in perspective (Neff, 2003a). In comparison, although the Discrepancy dimension of perfectionism is still negatively associated with these dimensions of self-compassion, its focus on dissatisfaction with achievements is perhaps theoretically less opposed.

Another interesting relationship that has been demonstrated by this multidimensional approach is that, although Concern over Mistakes is more strongly related to overall self-compassion and five of the six self-compassion dimensions than Discrepancy, there is actually a stronger positive relationship between Discrepancy and the self-compassion dimension of Isolation than there is between Isolation and Concern over Mistakes. This may be because the Discrepancy mindset of comparison – mostly between expectations and actual achievements (Hill et al., 2004) – may encourage a tendency to compare oneself to others and believe that they are probably happier and having an easier time, which is characteristic of the negative self-compassion dimension of Isolation (Neff, 2003a). The model in this paper tested Discrepancy as the predictor and Isolation as the outcome, but it is also possible that this may be a bidirectional relationship, with higher levels of Isolation facilitating a perfectionistic sense of achievements not living up to expectations, which then contributes to a more Isolation-like mindset and thus results in a downward spiral.

With regards to the relationship between the ostensibly “adaptive” perfectionism dimension of Striving for Excellence and self-compassion, we found that Striving for
Excellence actually has a statistically significant relationship with higher levels of Self-judgment, which was surprising. This suggests that Striving for Excellence does still contribute to lower levels self-compassion via an increase in self-judgmental thoughts, feelings and behaviors. This could be because a Striving for Excellence mindset still encourages a considerable degree of self-assessment and judgment of achievements, which is congruous with some elements of the Self-judgment dimension of self-compassion which focus on being judgmental of one’s own flaws and inadequacies (Neff, 2003a). However, this relationship could also be suggestive of the idea that self-judgment may sometimes be adaptive; that is, being part of a mindset which encourages excellence through self-monitoring, leading to higher levels of Striving for Excellence perfectionism and, consequently, the more positive outcomes – such as greater conscientiousness and problem-focused coping – that have been posited as being related to higher levels of “adaptive” perfectionism (Stoeber et al., 2017). Nonetheless, if this is the case, it is likely that Self-judgment will only have positive associations up to a certain point, as very high levels of this mindset are unlikely to be adaptive.

Although this study has considered the relationships between perfectionism and self-compassion cross-sectionally, they are unlikely to be a static entity; a person with high levels of maladaptive perfectionism, who is incredibly self-critical and cannot stand mistakes, is likely to find it very difficult to make allowances for themselves and show kindness towards themselves when they slip up or when they face adverse life circumstances. In this way, the negative relationship between these two constructs therefore self-sustains. Self-compassion can be a very difficult practice to cultivate, and some even argue that mindfulness can appear opposed to our innate evolved nature of emotional reactivity (Shapiro, Siegel, & Neff, 2018). Particularly in the beginning, it is likely that people will ebb and flow in how self-compassionate they are able to be with themselves, which may be difficult for people high in maladaptive perfectionism (who may, ironically, criticize themselves for not being self-
People who are high in maladaptive perfectionism are likely to be rigidly driven by “shoulds” – essentially, “I should be perfect” – and are therefore likely to initially struggle to practice self-compassion precisely because it is the complete antithesis of how they generally see the world.

Societal influences are also a major factor in the development and maintenance of perfectionism over self-compassion. For example, in highly competitive occupations such as medicine, perfectionism is often encouraged and is even presented as being a positive thing for patients and healthcare providers (Peters & King, 2012), despite the acknowledgement that it leaves doctors vulnerable to stress, burnout and other mental health concerns (Craiovan, 2014; Enns, Cox, Sareen, & Freeman, 2001). Similarly, within the context of sport and the performing arts, perfectionism is often seen as the mark of an excellent athlete or performer (Hall & Hill, 2012; Hill, Witcher, Gotwals, & Leyland, 2015) with both fields drawing a fine line between facilitating and debilitating levels of stress. More broadly, societal standards of beauty, fitness and health perpetuated by the mainstream media and social media sites such as Instagram have also been found to contribute to or encourage perfectionistic mindsets, as well as health-risk behaviors and disordered eating (Perloff, 2014; Tiggemann & Zaccardo, 2018).

In short, there are numerous individual and societal factors that are likely to contribute to increased levels of perfectionism and lower levels of self-compassion. However, although it may be difficult and even uncomfortable for perfectionists to practice self-compassion in the beginning, the benefits of a self-compassionate mindset, particularly for people who struggle with high levels of perfectionism, cannot be overstated. However, as Shapiro et al. (2018) note, it is important that individuals display kindness towards themselves and the pitfalls they encounter while they are developing this skill, otherwise it would be easy to become discouraged and give up on the practice.
Recent studies such as those by Rozental et al. (2018) have demonstrated that internet-based cognitive behavioral therapy (I-CBT) is effective in reducing perfectionism, with participants demonstrating significantly lower scores on the F-MPS’ ‘Concern over Mistakes’ subscale between pre-treatment and follow-up as well as reduced levels of depression and anxiety. Furthermore, at 6-12-month follow-up they found that 59% of participants in one sample and 43% in another met the criteria for recovery, and that participants showed similar levels of perfectionism, depression and anxiety as they had post-treatment, suggesting that I-CBT is also effective in maintaining improvements made during treatment. The findings of the present study, which showed that both Concern over Mistakes and Discrepancy were strong indicators of overall perfectionism, suggest that although the Discrepancy dimension of perfectionism was not assessed by Rozental et al. (2018), this could also be expected to decrease as a result of interventions targeting perfectionism. In turn, this study’s findings that the Concern over Mistakes and Discrepancy dimensions of perfectionism are negatively associated with self-compassion indicate that self-compassion could therefore be expected to increase as a result of lowered levels of these aspects of perfectionism. Lloyd, Schmidt, Khondoker and Tchanturia’s (2015) systematic review and meta-analysis of psychological interventions to reduce perfectionism also found evidence that a variety of cognitive-behavioral interventions (individual, guided self-help, web-based and group) were able to significantly reduce aspects of perfectionism as well as anxiety, depression, obsessive-compulsive behavior and eating disorder symptomology.

Similarly, although self-compassion is considered to be a relatively stable personality trait (e.g. Clark et al., 2015; Keng & Liew, 2016), it is also possible for it to be induced through interventions such as the Mindful Self-Compassion Program (MSCP; Neff & Germer, 2013). The MSCP has been reported to lead to significant increases in self-compassion and
mindfulness amongst participants (Kirby, Tellegen, & Steindl, 2017; Neff & Germer, 2013); consequently, it may be reasonable to assume that, over time, self-compassionate states achieved through such interventions could be transformed into more effortless traits, in much the same way as has been found to be possible for mindfulness (Davis & Hayes, 2011).

These findings demonstrate how effective interventions aimed at targeting perfectionism or self-compassion can be, but to date there have been no interventions formulated that aim to both increase self-compassion and decrease perfectionism. The findings of this study make explicit how perfectionism erodes self-kindness, a sense of common humanity, and mindfulness, and increases self-judgment, isolation, and over-identification with painful emotions. The formulation of a dual-focus intervention that addresses perfectionistic thoughts, feelings, and behaviors and fosters an increasingly self-compassionate mindset could therefore be particularly beneficial to individuals, especially within clinical populations and applied health settings. For example, within diabetic populations, one study has so far demonstrated that Mindful Self-Compassion training can reduce diabetes distress and increase glycemic control amongst people with Type 1 and Type 2 diabetes (Friis, Johnson, Cutfield, & Consedine, 2016). It has also been posited that increased self-compassion could contribute to higher levels of self-care and health-promoting behaviors amongst diabetic individuals (Friis, Consedine, & Johnson, 2015). These findings are important, as evidence suggests that individuals with some chronic illnesses report lower levels of self-compassion and higher levels of shame and self-blame (Harrison et al., 2015; Harrison, Robertson, Goldstein, & Brooks, 2017), but so far interventions have only focused on increasing self-compassion rather than concurrently aiming to reduce perfectionism.
Creating tailored interventions

A dual-focus intervention that addresses all areas of multidimensional perfectionism and multidimensional self-compassion could be an effective tool across many varied populations. However, the findings of the present study, conducted within a general population sample, suggest that for this population, perfectionism’s greatest impact is via Concern over Mistakes, which is associated with lower levels of Mindfulness and Common Humanity and higher levels of Over-identification with painful thoughts and feelings. Interventions developed for this population could therefore be focused on reducing excessive concern over mistakes, increasing mindfulness and feelings of common humanity, and aiming to reduce over-identification with difficult emotions.

Consequently, if the relationship between self-compassion and perfectionism were to be explored within specific clinical populations, it would also be theoretically possible to develop targeted interventions that address the unique needs of that patient group. For example, within diabetes populations, perfectionists can struggle with the idea that they will never be able to achieve “metabolic perfection” (Basco, 1998) – i.e. complete control over their blood glucose levels – and can therefore give up on attempts to manage their condition altogether because they feel that they have “failed”. Building on the findings of this study and the models presented, it would be possible to explore the relationship between multidimensional perfectionism and multidimensional self-compassion within samples of people with diabetes and accurately model the effect this has on health outcomes. This would mean that the barriers to self-compassion experienced by people with diabetes could be thoroughly explored, which would then potentially enable interventions to be developed that aimed to reduce these specific barriers as a means to improving health outcomes.
The specific difficulties encountered by individuals living with chronic physical or psychological health problems are varied, and the use of the present study’s model could enable a flexible and responsive intervention to be developed that could be adapted to meet the specific needs of a number of populations.

**Strengths, limitations, and future research directions**

The findings of this study indicate that multidimensional perfectionism is an important factor in the development of multidimensional self-compassion. However, it should be noted that a large proportion of the sample were white (87.3%) and female (83.2%). This may partly be due to the primary method of recruitment, as Topolovec-Vranic and Natarajan (2016) found that samples recruited via social media are more likely to be female. In addition to the intervention recommendations already outlined, future work should seek to investigate the differential relationship between the dimensions of perfectionism and self-compassion within a more varied sample. The findings from Model 2 also need to be interpreted in light of the relatively small sample size for a model of that complexity, with at least 60 more participants being needed to reach the lower “rule of thumb” sample size recommendation of 5 participants per parameter (which would result in 495 participants being needed for the 99 parameters being estimated in this model).

As Cohen (1965, as cited in Howell, 2013) notes, “in psychology, we measure men by their shadows” (p.8). SEM is well-placed to enable the measurement of these “shadows”, allowing variables that cannot be directly observed, such as perfectionism and self-compassion, to be estimated using measurement models comprised of numerous observed variables or indicators. The SEM approach used in this study is therefore advantageous as it allows simultaneous analysis of the relationships between multiple variables and ensures that measurement error is not aggregated in a residual error term for the latent variables created.
However, the use of SEM techniques to predict changes in outcome variables cannot confirm or deny a causal relationship. It would therefore be beneficial to employ longitudinal methods over a number of time-points to ascertain whether there is a causal relationship between perfectionism and self-compassion in much the same way as has been possible for perfectionism and depressive symptoms (Soenens et al., 2008) or for self-compassion and self-esteem (Marshall et al., 2015).

**Conclusion**

Despite the limitations outlined, all of the hypotheses of the study were fully supported, and the models tested demonstrated that, within this general population sample, both maladaptive dimensions of perfectionism have a significant negative impact on overall self-compassion and its positive components, simultaneously increasing levels of the negative dimensions of self-compassion. Furthermore, even the more adaptive dimension of perfectionism has been found to raise levels of self-judgment amongst this sample.

These findings have the potential to significantly impact individual and therapeutic approaches to physical and psychological health and wellbeing, as they demonstrate how detrimental the maladaptive dimensions of perfectionism can be to the development and maintenance of self-compassion, and how the Concern over Mistakes dimension is generally more problematic in this regard than Discrepancy. Furthermore, the findings show that even the dimension of perfectionism that is considered more adaptive can still lead to negative outcomes, as demonstrated by the relationship between Striving for Excellence and higher levels of Self-judgment. This knowledge can be used within existing cognitive-behavioral and psychotherapeutic frameworks to develop interventions that target these aspects of perfectionistic thinking and behavior as a way of reducing an individual’s mental barriers to
the psychologically and physiologically beneficial practice of developing and maintaining a self-compassionate mindset.

In conclusion, this study has extended current knowledge of how high levels of some forms of perfectionism can have a significant detrimental effect on the development and maintenance of a self-compassionate mindset, generating fresh understandings which have the potential to positively influence approaches to biopsychosocial wellbeing.

Acknowledgements

The authors would like to thank all the participants who took the time to share their experiences of perfectionism and self-compassion – without them, this research could not have taken place.

May you be safe. May you be peaceful. May you be kind to yourself. May you give yourself the compassion that you need.

Data availability

The data that support the findings of this study are openly available via the Open Science Framework at http://doi.org/10.17605/OSF.IO/N2FHU

Declarations and funding

The authors declare that there are no competing interests with respect to this research and that they received no financial support for the research or for their authorship of this paper.

Word count: 7,473 (excl. abstract, declarations, acknowledgements, references, appendices, tables & figures)
References


Neff, K. D., Whitaker, T. A., & Karl, A. (2017). Examining the factor structure of the Self-Compassion Scale in four distinct populations: Is the use of a total scale score


https://doi.org/10.1016/S0005-7967(01)00059-6


Sirois, F. M., Kitner, R., & Hirsch, J. K. (2015). Self-compassion, affect, and health-
https://doi.org/10.1037/hea0000158

Sirois, F. M., & Molnar, D. S. (2017). Perfectionistic strivings and concerns are differentially
associated with self-rated health beyond negative affect. *Journal of Research in
Personality, 70*, 73–83. https://doi.org/10.1016/j.jrp.2017.06.003

https://doi.org/10.1080/15298868.2014.996249


illness populations: A longitudinal study of inflammatory bowel disease and arthritis.

https://doi.org/10.1016/j.paid.2015.05.010

perfectionistic concerns interact to predict negative emotionality: Support for the
tripartite model of perfectionism in Canadian and Chinese university students.
*Personality and Individual Differences, 81*, 141–147.
https://doi.org/10.1016/j.paid.2014.09.006


Appendix A

Scale analysis outline

Part I of the first author’s Master’s thesis focused on constructing and psychometrically assessing a combined measure of perfectionism. This appendix provides an outline of this analysis.

As suggested by Stoeber and Madigan (2016), the measurement of perfectionism can be improved by combining factors from a number of existing perfectionism scales which they consider to be key indicators or proxies for Perfectionistic Strivings and Perfectionistic Concerns. Combining all suggested factors (as outlined in Table 2.1 of the main text) results in a pool of 79 items, which is impractical, especially if being administered alongside other measures. Therefore, the pool of 79 items was analyzed in order to identify a psychometrically sound scale that measures multidimensional perfectionism in a short but meaningful way. To achieve this goal, the 79-item pool was analyzed using item analysis to identify which items functioned well psychometrically. The remaining items were then analyzed in terms of dimensionality using Exploratory Factor Analysis (EFA) on a split-half of the sample. The other half of the sample was then used to check the identified factor structure using Confirmatory Factor Analysis (CFA).

Item analysis. As the aim of the analysis was to produce a relatively short scale of no more than 30 items, a conservative approach was used and items were flagged for removal if they were found to be under-performing on 1 or more of the indices examined. Ten items were identified as having a potentially problematic proportion of missing data (i.e. more than 4% of the total data for that item; Fayers & Machin, 2000). These items were retained until the EFA stage to ascertain whether they clustered as a distinct factor, but were flagged for removal if this was not the case. Responses for all items covered the full range of response options (1-5).
but problems such as inadequate response distribution or poor item-total correlations led to 37 out of the 79 items being subsequently rejected from the item pool.

**Dimensionality.** The dataset was then randomly split in half using SPSS and items retained from the item analysis were used to explore the scale’s dimensionality by running an EFA on one half of the data \( (n = 244) \) in Mplus 6.12 (Muthén & Muthén, 2011) and generating a parallel analysis in SPSS. Three factors had eigenvalues that exceeded those generated for that factor by the parallel analysis, and these also met the Kaiser-Guttman criterion of >1.0. The scree plot also pointed towards a 3-factor solution being the most appropriate. Rotated factor loadings showed that two items cross-loaded at ≥0.4 on more than one factor; these items were subsequently removed. Four further items were flagged for removal as more than 4% of the total data for that item was missing and these items did not cluster into a distinct factor.

The content of the remaining items within each factor suggested that Factor 1 \( (EV = 20.91) \) represented a “Concern over Mistakes” (CM) subscale, Factor 2 \( (EV = 3.19) \) represented a “Striving for Excellence” (SE) subscale and Factor 3 \( (EV = 2.05) \) represented a “Discrepancy” (D) subscale. Labelling of the factors was guided by the items’ subscales of origin. Once the labelling and descriptions of the factors had been decided, six further items were removed as their content was not deemed to be congruous with the rest of the items in that factor. In total, three items (loading between .42 and .65) were removed from CM, two items (loading at .43 and .63) were removed from SE and one item (loading at .45) was removed from D.

The reliability of the final factors was then assessed using McDonald’s omega \( (\omega) \) adjusted for interval level measurements, using bootstrapping to generate an omega distribution from which 95% confidence intervals could be constructed. Reliability was found to be
excellent for all three factors (CM $\omega = 0.94$, 95% CI [.93, .95]; SE and D $\omega = 0.93$, 95% CI [.92, .95]).

**Confirmatory factor analysis.** The three-factor model was then tested on the second half of the dataset using CFA and model fit was adjudged using the indices outlined in this paper’s main text. As expected, the chi-square test was highly significant, but all other fit indices apart from the WRMR indicated good model fit. Furthermore, the hierarchical model in which the three factors acted as indicators for the latent variable Overall perfectionism (OP) also demonstrated good model fit, with the exception of the WRMR and the chi-square test. OP was also found to have an excellent level of reliability ($\omega = 0.97$, 95% CI [.96, .97]).

Unstandardized and standardized factor loadings indicated that all factors significantly predicted all of their indicator variables.

**Validity testing.** Construct validity was explored by examining a series of Spearman’s rho correlations between perfectionism scores and age, and two independent samples $t$-tests were used to explore sex and ethnicity differences. Convergent validity was partially supported as the maladaptive perfectionism dimensions of CM and D showed significant moderate-to-strong negative correlations with Overall self-compassion and the positively-scored self-compassion dimensions of Self-kindness, Common Humanity and Mindfulness, and significant moderate-to-strong positive correlations with the negatively-scored self-compassion dimensions of Self-judgement, Isolation and Over-identification (Hiçdurmaz & Aydin, 2017; Mosewich et al., 2011; Neff, 2003a). However, convergent validity was also partially unsupported as there were no significant differences between white and non-white participants in terms of OP (Castro & Rice, 2003; Chang, Watkins, & Banks, 2004).
Discriminant validity was also partially supported as, once CM and D had been controlled for, there were small or non-significant correlations between the adaptive perfectionism dimension of SE and all dimensions of self-compassion, including Overall self-compassion (Hiçdurmaz & Aydin, 2017; Mosewich et al., 2011; Neff, 2003a). As expected, there was also no significant relationship between age and all perfectionism dimensions, and there were no significant sex differences in CM scores (Enns et al., 2001; Stoeber & Stoeber, 2009). However, discriminant validity was also partially unsupported in that females scored significantly higher than males in OP.

Appendix A references


Appendix A references (cont.)


## Multidimensional Perfectionism Scale

Factor key: CM = Concern over Mistakes; SE = Striving for Excellence; D = Discrepancy

<table>
<thead>
<tr>
<th>Q.</th>
<th>Item</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If someone points out a mistake I've made, I feel like I've lost that person's respect in some way</td>
<td>CM</td>
</tr>
<tr>
<td>2</td>
<td>The fewer mistakes I make, the more people will like me</td>
<td>CM</td>
</tr>
<tr>
<td>3</td>
<td>If I make a serious mistake, I feel like I'm less of a person</td>
<td>CM</td>
</tr>
<tr>
<td>4</td>
<td>If I mess up on one thing, people might start questioning everything I do</td>
<td>CM</td>
</tr>
<tr>
<td>5</td>
<td>I should be upset if I make a mistake</td>
<td>CM</td>
</tr>
<tr>
<td>6</td>
<td>If I fail at work, I am a failure as a person</td>
<td>CM</td>
</tr>
<tr>
<td>7</td>
<td>If I do not do well all the time, people will not respect me</td>
<td>CM</td>
</tr>
<tr>
<td>8</td>
<td>To me, a mistake equals failure</td>
<td>CM</td>
</tr>
<tr>
<td>9</td>
<td>If I fail partly, it is as bad as being a complete failure</td>
<td>CM</td>
</tr>
<tr>
<td>10</td>
<td>If I make mistakes, people might think less of me</td>
<td>CM</td>
</tr>
<tr>
<td>11</td>
<td>Making mistakes is a sign of stupidity</td>
<td>CM</td>
</tr>
<tr>
<td>12</td>
<td>One of my goals is to be perfect in everything I do</td>
<td>SE</td>
</tr>
<tr>
<td>13</td>
<td>I demand nothing less than perfection of myself</td>
<td>SE</td>
</tr>
<tr>
<td>14</td>
<td>I must achieve excellence in everything I do</td>
<td>SE</td>
</tr>
<tr>
<td>15</td>
<td>I strive to be as perfect as I can be</td>
<td>SE</td>
</tr>
<tr>
<td>16</td>
<td>I am perfectionistic in setting my goals</td>
<td>SE</td>
</tr>
<tr>
<td>17</td>
<td>I do not have to be the best at whatever I am doing</td>
<td>SE</td>
</tr>
<tr>
<td>18</td>
<td>When I am working on something, I cannot relax until it is perfect</td>
<td>SE</td>
</tr>
<tr>
<td>19</td>
<td>I have to be the best in every task I do</td>
<td>SE</td>
</tr>
<tr>
<td>20</td>
<td>My work needs to be perfect in order for me to be satisfied</td>
<td>SE</td>
</tr>
<tr>
<td>21</td>
<td>All my energy is put into achieving a flawless result</td>
<td>SE</td>
</tr>
<tr>
<td>22</td>
<td>I rarely live up to my high standards</td>
<td>D</td>
</tr>
<tr>
<td>23</td>
<td>My performance rarely measures up to my standards</td>
<td>D</td>
</tr>
<tr>
<td>24</td>
<td>I am never satisfied with my accomplishments</td>
<td>D</td>
</tr>
<tr>
<td>25</td>
<td>Doing my best never seems to be enough</td>
<td>D</td>
</tr>
<tr>
<td>26</td>
<td>I often worry about not measuring up to my own expectations</td>
<td>D</td>
</tr>
<tr>
<td>27</td>
<td>I am hardly ever satisfied with my performance</td>
<td>D</td>
</tr>
<tr>
<td>28</td>
<td>I hardly ever feel that what I've done is good enough</td>
<td>D</td>
</tr>
<tr>
<td>29</td>
<td>I am not satisfied even when I know I have done my best</td>
<td>D</td>
</tr>
<tr>
<td>30</td>
<td>I often feel disappointment after completing a task because I know I could have done better</td>
<td>D</td>
</tr>
</tbody>
</table>
## Table 2.1: Scales capturing perfectionistic strivings and perfectionistic concerns

<table>
<thead>
<tr>
<th>Measures</th>
<th>Reference</th>
<th>Subscales recommended as indicators of…</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Perfectionistic strivings</td>
<td></td>
</tr>
<tr>
<td>F-MPS</td>
<td>Frost et al. (1990)</td>
<td>Personal Standards</td>
<td></td>
</tr>
<tr>
<td>APS-R</td>
<td>Slaney et al. (2001)</td>
<td>High Standards</td>
<td></td>
</tr>
<tr>
<td>PI</td>
<td>Hill et al. (2004)</td>
<td>Striving for Excellence</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perfectionistic concerns</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concern over Mistakes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Socially Prescribed Perfectionism</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Discrepancy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concern over Mistakes</td>
<td></td>
</tr>
</tbody>
</table>

*Note. Table is a partial reproduction of that found in Stoeber and Madigan (2016), p.33.*
Table 3.1: Descriptive statistics for perfectionism and self-compassion scores

<table>
<thead>
<tr>
<th></th>
<th>Skew</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
<td>SE</td>
</tr>
<tr>
<td>Concern over Mistakes</td>
<td>3.05</td>
<td>0.06</td>
</tr>
<tr>
<td>Striving for Excellence</td>
<td>3.10</td>
<td>0.08</td>
</tr>
<tr>
<td>Discrepancy</td>
<td>3.22</td>
<td>-0.11</td>
</tr>
<tr>
<td>Overall self-compassion</td>
<td>2.62</td>
<td>0.59</td>
</tr>
<tr>
<td>Self-kindness</td>
<td>2.73</td>
<td>0.25</td>
</tr>
<tr>
<td>Self-judgement</td>
<td>3.64</td>
<td>-0.58</td>
</tr>
<tr>
<td>Common Humanity</td>
<td>2.91</td>
<td>0.14</td>
</tr>
<tr>
<td>Isolation</td>
<td>3.54</td>
<td>-0.54</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>3.14</td>
<td>0.01</td>
</tr>
<tr>
<td>Over-identification</td>
<td>3.69</td>
<td>-0.69</td>
</tr>
</tbody>
</table>

* Significant at p <.01
Table 3.2: Correlations between perfectionism, self-compassion, and age

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Overall self-compassion</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Self-kindness</td>
<td>.84***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Self-judgment</td>
<td>-.85***</td>
<td>-.73***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Common Humanity</td>
<td>.78***</td>
<td>.66***</td>
<td>-.54***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Isolation</td>
<td>-.79***</td>
<td>-.54***</td>
<td>.67***</td>
<td>-.54***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Mindfulness</td>
<td>.80***</td>
<td>.69***</td>
<td>-.56***</td>
<td>.67***</td>
<td>-.47***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Over-identification</td>
<td>-.77***</td>
<td>-.50***</td>
<td>.67***</td>
<td>-.45***</td>
<td>.66***</td>
<td>-.55***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Concern over Mistakes</td>
<td>-.73***</td>
<td>-.60***</td>
<td>.69***</td>
<td>-.52***</td>
<td>.57***</td>
<td>-.54***</td>
<td>.59***</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Discrepancy</td>
<td>-.68***</td>
<td>-.58***</td>
<td>.65***</td>
<td>-.47***</td>
<td>.57***</td>
<td>-.48***</td>
<td>.54***</td>
<td>.71***</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Striving for Excellence</td>
<td>-.08*</td>
<td>-.05*</td>
<td>.17***</td>
<td>-.02*</td>
<td>.03*</td>
<td>.01*</td>
<td>.07*</td>
<td>.60***</td>
<td>.71***</td>
<td>-</td>
</tr>
<tr>
<td>11.</td>
<td>Age</td>
<td>.12*</td>
<td>.10*</td>
<td>-.09</td>
<td>.12*</td>
<td>-.06</td>
<td>.10</td>
<td>-.12*</td>
<td>-.03</td>
<td>-.10</td>
<td>-.05</td>
</tr>
</tbody>
</table>

* Controlling for Concern over Mistakes and Discrepancy

* Significant at \( p < .05 \)  
*** Significant at \( p < .001 \)
### Table 3.3: Model fit indices

<table>
<thead>
<tr>
<th>Model fit indices</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA</th>
<th>Lower</th>
<th>Upper</th>
<th>WRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Multidimensional perfectionism on overall self-compassion</td>
<td>0.97</td>
<td>0.97</td>
<td>0.05</td>
<td>0.05</td>
<td>0.06</td>
<td>1.25</td>
</tr>
<tr>
<td>Model 2: Multidimensional perfectionism on multidimensional self-compassion</td>
<td>0.97</td>
<td>0.96</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>1.13</td>
</tr>
</tbody>
</table>
Fig. 1. Standardized regression paths for Model 1, relating the 3-factor model of perfectionism to overall self-compassion.

Note: Correlations between all perfectionism factors were significant at \( p < .001 \).

Key: *** denotes significance at \( p < .001 \)
Fig. 2. Standardized estimates for Model 2, relating the hierarchical 3-factor model of perfectionism to the six factors of self-compassion.

Note: (i) The measurement models for CM, SE and D have been omitted; (ii) Age and Sex were controlled for in the regression paths; (iii) Correlations between all self-compassion factors were significant at $p < .01$.

Key: *** denotes significance at $p < .001$, ** denotes significance at $p < .01$