European Journal of Personality, *Eur. J. Pers.* **31**: 160–169 (2017)
Published online 20 March 2017 in Wiley Online Library (wileyonlinelibrary.com) **DOI**: 10.1002/per.2097

Old Wine in New Bottles? The Case of Self-compassion and Neuroticism

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Abstract: Research on self-compassion, which is defined as being understanding and kind to oneself when confronted with negative experiences, has produced an impressive number of articles in recent years. This research shows that individual differences in self-compassion, as measured by the Self-Compassion Scale (SCS), are positively related to life satisfaction, health and social functioning. However, a critical and systematic test of self-compassion from a personality perspective has not yet conducted so far. In the present study (N = 576), we (i) tested the factor structure of the SCS, (ii) examined the distinctiveness of self-compassion with regard to the five-factor model of personality, focusing on neuroticism, and (iii) tested the incremental predictive power of self-compassion beyond the five-factor model in the context of life satisfaction. Confirmatory factor analyses supported a two-factor plus six facets solution of self-compassion (a positive factor and a negative factor). Additional analyses revealed that the negative factor was redundant with facets of neuroticism (rs ≥ .85), whereas the positive factor had some unique variance left. However, neither the negative factor nor the positive factor could explain substantial incremental variance in life satisfaction beyond neuroticism. Recommendations for how to use the SCS are provided, and the future of research on self-compassion is discussed. Copyright © 2017 European Association of Personality Psychology

Key words: Big Five; five-factor model; jangle fallacy; neuroticism; self-compassion

INTRODUCTION

Self-compassion reflects the tendency to be understanding and kind to oneself when confronted with negative experiences (Neff, 2003). Recently, self-compassion has received much attention from social, personality and clinical psychologists, which has resulted so far in over 250 publications (Neff & Dahm, 2015). Congruently, the Self-Compassion Scale (SCS) is frequently used to measure stable individual differences in self-compassion (Barnard & Curry, 2011; Neff & Dahm, 2015), showing positive relations between self-compassion and important intrapersonal and interpersonal outcomes such as life satisfaction, happiness, adaptive coping strategies, empathy and altruism (cf. the reviews by Barnard & Curry, 2011, and Neff & Dahm, 2015).

Somewhat surprising, however, is that a critical test of trait self-compassion from a personality and assessment perspective has yet to be conducted, indicating a gap in research that is addressed in the present study. In this regard, we (i) tested whether the one-factor structure typically assumed in research on self-compassion holds true, thus contributing to a recent debate about the factor structure of the SCS (López et al., 2015; Muris, 2016; Muris, Meesters, Pierik, & de Kock, 2016; Muris, Otgaar, & Petrocchi, 2016; Neff, 2016; Neff & Whitaker, in press); (ii) examined the distinctiveness of self-compassion with regard to the five-factor model (FFM) of personality,[1] focusing on neuroticism; and (iii) tested the incremental predictive power of self-compassion beyond the FFM. This approach seems important and necessary given that research on self-compassion has neglected analyses of construct validity and incremental predictive validity.

DEFINITION AND ASSESSMENT

The concept self-compassion and the corresponding scale incorporate six dimensions that are crucial when individuals experience negative affect (cf. Barnard & Curry, 2011; Neff, 2003; Neff & Dahm, 2015; Reyes, 2012). There are three positive dimensions—self-kindness, common humanity and mindfulness—and there are three negative dimensions that reflect the absence of self-compassion or the opposite of the three positive dimensions, respectively consisting of critical self-judgement, isolation and over-identification.

Self-kindness involves being supportive, caring and understanding to oneself, especially in situations that involve failure and painful experiences. Self-kindness does not

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[1]Including openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Goldberg, 1990; McCrae & Costa, 2008)

Handling editor: Dr. Christian Kandler
Received 10 October 2016
Revised 10 February 2017, Accepted 10 February 2017

involve harsh *self-judgement*, which includes self-criticism and the rejection of one's present thoughts, feelings and behaviour. *Common humanity* involves the notion that all humans are connected and one's realization that personal failures are part of the human existence. Thus, common humanity does not involve feelings of *isolation* when negative experiences happen to individuals. *Mindfulness* reflects individuals' state to accept the present (negative) moment in a non-judging and non-reacting manner. In a mindful state, individuals merely observe present emotions and thoughts. Mindfulness does not involve *over-identification* and rumination about thoughts and emotions.

The SCS of Neff (2003) is used to measure individual differences in self-compassion, consisting of the six dimensions mentioned earlier; however, the postulated model of six factors loading on a single higher-order self-compassion factor (Neff, 2003) is typically neglected, and a total self-compassion score across all items of the scale is computed (Muris, Otgaar, et al., 2016). This approach seems problematic in light of evidence for a six-factor solution *without* a higher-order factor (Williams, Dalgleish, Karl, & Kuyken, 2014) or a two-factor solution representing a positive factor and a negative factor (López et al., 2015). With the present work, we contribute to the debate about the factor structure of the SCS (Muris, Otgaar, et al., 2016; Neff, 2016) by applying model comparisons of confirmatory factor analysis (CFA), the state-of-the-art method to test and evaluate factor structure and validity.

Self-compassion and the FFM

Although the majority of research treats self-compassion as a stable personality trait (cf. Neff & Dahm, 2015), a systematic analysis of its relation with respect to global personality models such as the FFM has not yet been made. Self-compassion is related to intrapersonal and interpersonal outcomes such as positive affect, life satisfaction and adaptive coping strategies, as well as reduced anxiety, depression, health, procrastination, empathic distress, maladaptive eating styles and physiological stress response (cf. Barnard & Curry, 2011, and Neff & Dahm, 2015). However, *all* of these relations also hold true for neuroticism, only in reverse (cf. Costa & McCrae, 1980; Heaven, Mulligan, Merrilees, Woods, & Fairooz, 2001; John, Robins, & Pervin, 2008; Kööts-Ausmees et al., 2016; Lee, 2009; Malouff, Thorsteinsson, & Schutte, 2005; Ormel et al., 2013; Saulsman & Page, 2004; Schimmack, Oishi, Furr, & Funder, 2004; Widiger, 2009).

Neuroticism is described by the facets anxiety, angry–hostility, depression, self-consciousness, impulsivity and vulnerability and refers to the propensity to experience negative emotions and cognitions (Costa & McCrae, 1992; Ormel et al., 2013). Congruently, Jeronimus, Riese, Sanderman, and Ormel (2014) show that neuroticism predicts the experience of negative life events and corresponding negative states such as loneliness, sadness, worry and rumination (also John et al., 2008; Kandler & Ostendorf, 2016). Compared with their low neurotic counterparts, individuals high in neuroticism show higher levels of frustration when negative events happen (Rose, Murphy, Byard, & Nikzad, 2002; Zajenkowska, Zajenkowski, & Jankowski, 2015), and they use less adaptive coping strategies to deal with such events (Gunthert, Cohen, & Armeli, 1999).

Thus, neuroticism reflects, in contrast to self-compassion, maladaptive intrapersonal and interpersonal functioning. In fact, one can argue that the three negative and defining dimensions of self-compassion (i.e. critical self-judgement, isolation and over-identification with one's thoughts and emotions) reflect pure neurotic tendencies and are experienced by neurotic individuals (see also Barnard & Curry, 2011, for a similar argument). Empirical evidence points in this direction, as neuroticism is related to harsh self-judgement, isolation/loneliness and over-identification with one's thoughts and emotions, or rumination (Cheng & Furnham, 2002; Clara, Cox, & Enns, 2003; Dunkley, Sanislow, Grilo, & McGlashan, 2009; Wupperman & Neumann, 2006).

Turning to the positive dimensions of self-compassion, we argue that being self-kind, believing in common humanity and feeling connected to other human beings, as well as being mindful, reflect tendencies that are typically *not* experienced by neurotic individuals (Giluk, 2009; Saklofske & Yackulic, 1989; Thompson & Waltz, 2007). From this conceptual analysis and existing conclusive empirical evidence, we assumed that those who score high on measures of neuroticism score low on measures of self-compassion, and vice versa. In line with these considerations, very large correlations (rs $> .65$) of trait self-compassion and neuroticism (López et al., 2015; Neff, Rude, & Kirkpatrick, 2007), as well as trait anxiety (Neff, 2016), are documented.

Thus, one principal question is whether trait self-compassion reflects a trait different from neuroticism or whether it is just a jangle fallacy, essentially equivalent to existing constructs yet simply fitted with a different label (Kelley, 1927; see Credé, Tynan, & Harms, in press, for a recent detection of a jangle fallacy, i.e. grit and conscientiousness). The literature displays some attempts to distinguish self-compassion from global personality models (using a student sample of 177 undergraduates; Neff et al., 2007) but lacks a definite and methodologically sound statement. Therefore, as reported in the following, we first modelled the factor structure of self-compassion, then examined its relations to the dimensions of the FFM and finally tested its incremental predictive power with respect to an important personal outcome assumed to be strongly associated with self-compassion, that is, life satisfaction (Barnard & Curry, 2011; Neff & Dahm, 2015).

To prevent potential misunderstanding of the present research, we want to emphasize here that we do *not* question the meaningfulness of self-compassion *per se*. As we outline in the Discussion section, research on self-compassion can inform us how to adaptively deal with painful experiences. The present research merely examines, from a parsimonious personality perspective, the distinctiveness of self-compassion and neuroticism, as well as the construct validity and incremental validity of the SCS. Prior to presenting the study, we want to emphasize that data were conducted exactly for the purpose of testing the distinction between self-compassion and neuroticism; that is, we had the *a priori* hypothesis that self-compassion and neuroticism are highly related.

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METHODS

Participants and design

The study was conducted online via Amazon Mechanical Turk (cf. Buhrmester, Kwang, & Gosling, 2011). To determine sample size, we followed the recommendations by Wolf, Harrington, Clark, and Miller (2013) for minimum sample size in structural equation models (SEMs). Assuming very high relations (75% explained variance) and 80% statistical power, Wolf et al. (2013) recommend a minimum sample size of 440. We obtained data from 846 individuals. We excluded participants from analyses on the basis of the following *a priori* set criteria to decrease noise in data (cf. Maniaci & Rogge, 2014; Oppenheimer, Meyvis, & Davidenko, 2009): Participants (i) answered incorrectly one or more of the four attention check items (the items read like, 'This is an attention check item. Please answer: I completely agree.'); (ii) had answer latencies of fewer than 3 seconds per item on average; (iii) completed only a fraction of the questionnaire; (iv) answered every item with the same category; or (v) used answer patterns. On the basis of these criteria, we excluded $n = 270$ participants. The total sample after exclusion consisted of $N = 576$ participants (58.3% female, $M_{age} = 37.21$). Data (and syntax) are available on the Open Science Framework (https://osf.io/nft5c). In the study, participants first completed the SCS (Neff, 2003) and afterwards responded to items assessing the FFM. Finally, individuals' life satisfaction was assessed. Descriptive statistics for all items of the study as well as detailed reliability parameters of all factors and facets are provided in the Supporting Information.

Self-compassion

Individual differences in self-compassion were assessed using the 26 items of the SCS (Neff, 2003). Bivariate correlations of the items are presented in Table SM1. Three sample items of the self-compassion scale read, 'I'm kind to myself when I'm experiencing suffering' (self-kindness); 'When things are going badly for me, I see the difficulties as part of life that everyone goes through' (common humanity); and 'When something upsets me I try to keep my emotions in balance' (mindfulness). All scale endpoints of self-report items in the present work were labelled (1) *strongly agree* and (5) *strongly disagree*. Reliability parameters of the final model of the SCS are reported in the Results section.

Five-factor model of personality

Openness, conscientiousness, extraversion, agreeableness and neuroticism were assessed with the NEO-PI-R (Costa & McCrae, 1992). The NEO-PI-R contains 240 items, that is, 48 items per dimension. Acceptable reliability parameters of the five dimensions were obtained, ranging from ω total = .68 to ω total = .93 (omegas are based on shortened scales; see section on Modelling of the NEO-PI-R).

Life satisfaction

Life satisfaction was measured using the well-established and valid Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Pons, Atienza, Balaguer, & García-Merita, 2000). The scale included five items; a sample item reads, 'I am satisfied with my life.' A good reliability parameter was obtained (ω total = 0.92).

Statistical analysis

The statistical analysis was carried out using SPSS and R. Latent modelling was conducted using the R package *lavaan* (Rosseel, 2012). Maximum likelihood estimation was used in all models. Regarding CFA, we considered a comparative fit index (CFI) of >0.90 and a root mean square error of approximation (RMSEA) of <0.08 acceptable (cf. Bentler, 1990; Steiger, 1990). To take model parsimony into account when comparing confirmatory models, we calculated parsimony-adjusted CFI (PCFI) in addition to CFI and RMSEA. Higher values in PCFI indicate better model fit. Factor identification was conducted by fixing the first loading of every factor to 1. Lavaan model syntax is available on the Open Science Framework (https://osf.io/nft5c).

Modelling of the NEO-PI-R

The NEO-PI-R (Costa & McCrae, 1992) is typically used as a measurement instrument for the FFM, yet psychometric problems are reported (Kano & Harada, 2000; Olaru, Witthöft, & Wilhelm, 2015; Schulze & Roberts, 2006) that centre on modelling the structure of the NEO-PI-R (e.g. Borkenau & Ostendorf, 1990; McCrae, Zonderman, Costa, Bond, & Paunonen, 1996). To obtain acceptable model fit, we used maximize main loadings (MML) technique to improve model fit (cf. Janssen, Schultze, & Grötsch, in press; Schulze & Roberts, 2006), which involves deleting items with low factor loadings (<0.40) and negative factor loadings. The MML technique is based on item selection to ensure that indicators are reliably representing the underlying construct. The selection is performed sequentially in that loadings are excluded one at a time starting with the most negative loading, continuing with non-significant loadings followed by very small loadings until a reasonable model fit is reached. Reasons for exclusion of items rest on the basic ideas of factor analysis. In theory, all indicators should be strongly positively contributing to the latent variable. Low or negative factor loadings reflect that the indicators are improper measures of the construct. Hence, the MML technique excludes items that are not reasonable indicators. Items excluded based on the MML technique are presented in the Supporting Information.

Model descriptions of self-compassion

As a contribution to the ongoing debate about the factor structure of the SCS (López et al., 2015; Muris, Otgaar, et al., 2016; Neff, 2016), we tested five competing models

DOI: 10.1002/per

of confirmatory factor structure and compared them regarding model fit (χ^2, RMSEA, CFI and PCFI). A schematic depiction of the five tested measurement models of the SCS is provided in Figure 1.

On the basis of the initial conceptualization of self-compassion (Neff, 2003) and on previous literature (López et al., 2015; Muris, Otgaar, et al., 2016), the following five models were tested. Model 1 included one factor of general self-compassion. This model, additionally with all loadings fixed to equality, is implicitly assumed when researchers simply sum across all items of the SCS, as is typically performed in research on self-compassion (e.g. Bergen-Cico & Cheon, 2014; Birnie, Speca, & Carlson, 2010; Neff & Beretvas, 2013; Neff & Faso, 2015; Schoenefeld & Webb, 2013). Model 2 included two correlated factors: a positive factor and a negative factor. This reflects the idea that half of the SCS is positively formulated whereas the other half is negatively formulated. The positive items were ascribed to the positive factor; the negative items were ascribed to the negative factor (cf. López et al., 2015). Model 3 reflected the factor structure originally proposed by Neff (2003): the six self-compassion dimensions load on a higher-order general self-compassion factor. Accordingly, Model 3 included six first-order factors and a second-order general factor. Model 4 included the six self-compassion dimensions loading on two correlated factors, a higher-order positive factor or a higher-order negative factor. This model reflected the idea that the positive items of the SCS measure the presence of self-compassion, whereas the negative items of the SCS reflect negative emotionality and harsh self-judgements (see Muris & Petrocchi, in press, for this suggestion). Finally, Model 5 was a six-factor model with correlated factors representing six self-compassion dimensions (but without a higher-order factor of self-compassion), having empirical support from Muris, Otgaar, et al. (2016; also Williams et al., 2014).

RESULTS

SCS factor structure

A comparison of the competing models is given in Table 1. Neither general factor solution (Model 1 and Model 3) had an acceptable fit; therefore, the two single-factor models for the SCS were rejected. This finding counters the approach typically applied, which is to simply sum across all items of the SCS. We discuss this important finding in the Discussion section.

Model 2 also had no acceptable fit and was rejected. Only Model 4 and Model 5 reached the previously defined thresholds for acceptable model fit. Model 5 resulted in the best fit. However, considering regular fit criteria of Model 4 and Model 5, the differences were negligible. We therefore investigated the fit relative to model parsimony by calculating PCFI. Here, Model 4 had a slightly higher value than Model

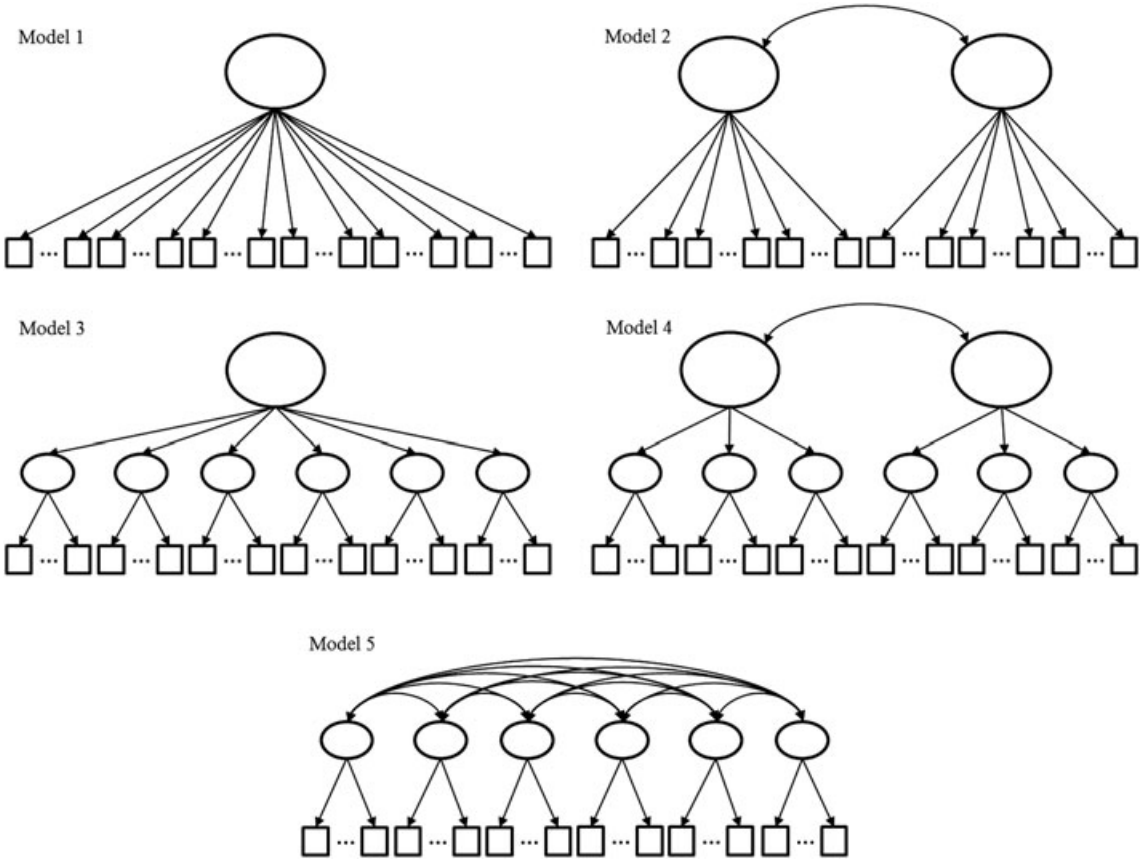

Figure 1. Schematic depiction of the five tested measurement models of Self-Compassion Scale.

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Table 1. Model comparisons of competing factor structures of the SCS ordered by declining degrees of freedom

No.	Model type	χ^2 model test	RMSEA	CFI	χ^2 difference test to previous no.	PCFI
1	One-factor model of general SC	$\chi^2(299) = 2645, p < .001$	.12	.77	—	.65
2	Two factors: positive and negative SC	$\chi^2(298) = 1445, p < .001$	.08	.89	$\chi^2(1) = 1200, p < .001$	.75
3	Higher order; six plus one factor model of general SC	$\chi^2(293) = 1300, p < .001$	.08	.90	$\chi^2(5) = 145, p < .001$	.75
4	Higher order; six plus two factors	$\chi^2(292) = 959, p < .001$	.06	.93	$\chi^2(1) = 341, p < .001$	.78
5	Six factors: SC dimensions	$\chi^2(284) = 826, p < .001$	.06	.95	Not nested	.77

Note: χ^2 difference tests were always conducted in contrast to the previous model.
SC, self-compassion; SCS, Self-Compassion Scale; RMSEA, root mean square error of approximation; CFI, comparative fit index; PCFI, parsimony-adjusted CFI.

5. This indicates, considering both regular fit and parsimony, that Model 4 was superior to Model 5.

Evaluating Model 4 and Model 5 on a theoretical level, Model 4 is also far more parsimonious than Model 5 (also indicated by Model 4's greater number of degrees of freedom). Note that Model 5 has *no* higher-order factor of general self-compassion, speaking against a common basis (i.e. self-compassion) of the six dimensions, thus contradicting the theoretical work on self-compassion (Neff, 2003; Neff & Dahm, 2015). From a theoretical perspective and emphasizing the principle of parsimony, it seems reasonable to work with two dimensions (a positive factor and a negative factor) as more parsimonious solution. Model 4 is the more parsimonious model as it incorporates the six self-compassion dimensions loading on a higher-order positive factor or on a higher-order negative factor. In fact, the positive factor reflects the presence of self-compassion, which is well in line with theoretical work on self-compassion (Neff, 2003; Neff & Dahm, 2015); the negative factor, on the other hand, reflects negative emotionality and harsh self-judgements and, as shown in the following, pure neurotic tendencies. For reasons of theoretical clarity and parsimony, we chose Model 4 to conduct the following analyses (see Figure 2 for SEM of Model 4). Good reliability parameters of the negative self-compassion factor (ω total = .95) and the positive self-compassion factor (ω total = .93) were obtained.

Relations to the five-factor model

Owing to well-known problems in modelling the FFM (Kano & Harada, 2000; Olaru et al., 2015; Schulze & Roberts, 2006), we first optimized single-facet CFAs with the MML technique; that is, CFAs were conducted separately for each factor (see also Methods section). The fit indices for all factors (openness, conscientiousness, extraversion, agreeableness and neuroticism) based on the MML technique are presented in the Supporting Information. We then correlated the latent factor of a facet with the higher-order factors of Model 4 (i.e. the latent positive self-compassion factor and

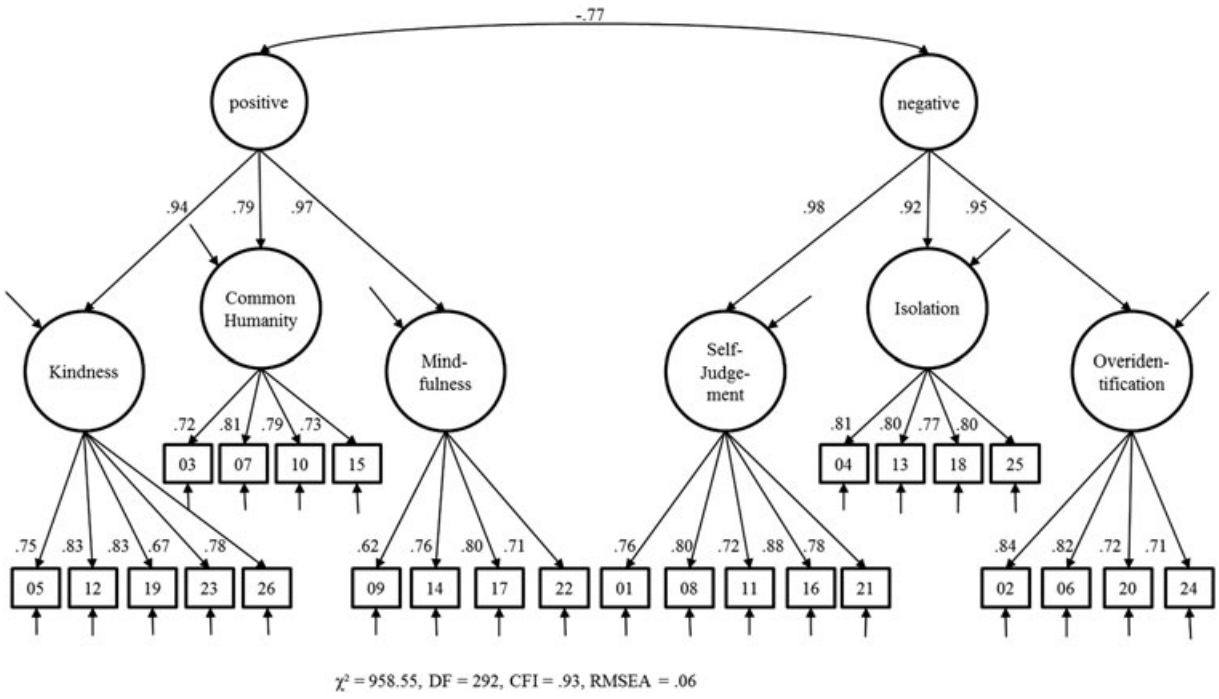

Figure 2. Structural equation modelling of Model 4 (loadings are standardized values; two-sided arrows are correlations).

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the latent negative self-compassion factor). All models had an acceptable model fit.

Three facets correlated extremely high ($r \geq .85$) with the negative self-compassion factor. These facets were anxiety ($r = .85$), depression ($r = .90$) and self-consciousness ($r = .85$), all belonging to neuroticism. These three facets also correlated very strongly with the positive self-compassion factor (anxiety, $r = -.58$; depression, $r = -.75$; self-consciousness, $r = -.62$). See Table 2 for all latent correlations between the two factors with facets of the FFM. All correlations, apart from the three mentioned earlier, were below $|r| = .65$.

Next, we examined how much variance in self-compassion could be explained by the facets of the FFM. Here, we focused on the three facets that showed the highest correlations with self-compassion (i.e. the traits anxiety, depression and self-consciousness). Self-consciousness showed a strong correlation with depression ($r = .95$), indicating redundancy of the two facets. Thus, for reasons of multicollinearity and to prevent problems in SEM, self-consciousness was excluded from the model. Results were the same when depression instead of self-consciousness was excluded. Anxiety was set to not predict the positive factor of self-compassion, as there was nearly no incremental explanatory power ($\Delta R^2 = .015$). The final SEM is displayed in Figure 3.

Table 2. Latent correlations between SCS and facets of the NEO-PI-R

	SCS	
	Positive	Negative
Neuroticism		
Anxiety	−.58***	.85***
Depression	−.75***	.90***
Self-consciousness	−.62***	.85***
Impulsivity	−.43***	.65***
Extraversion		
Assertiveness	.37***	−.29***
Activity	.55***	−.48***
Excitement seeking	.13*	.08
Openness		
Openness to fantasy	−.07	.25***
Openness to actions	.06	−.24***
Openness to values	−.04	.08
Agreeableness		
Trust	.41***	−.34***
Straightforwardness	.01	−.02
Compliance	.31***	−.36***
Modesty	−.04	.03
Tender mindedness	.17**	.02
Conscientiousness		
Order	.20***	−.24***
Dutifulness	.38***	−.30***
Achievement striving	.49***	−.33***
Self-discipline	.46***	−.48***
Deliberation	.33***	−.21***

Note: This table does not list all facets of every dimension in the NEO-PI-R. Facets were excluded when maximize main loadings optimization did not lead to acceptable model fit. SCS, Self-Compassion Scale.
*$p < .05$; **$p < .01$; ***$p < .001$.

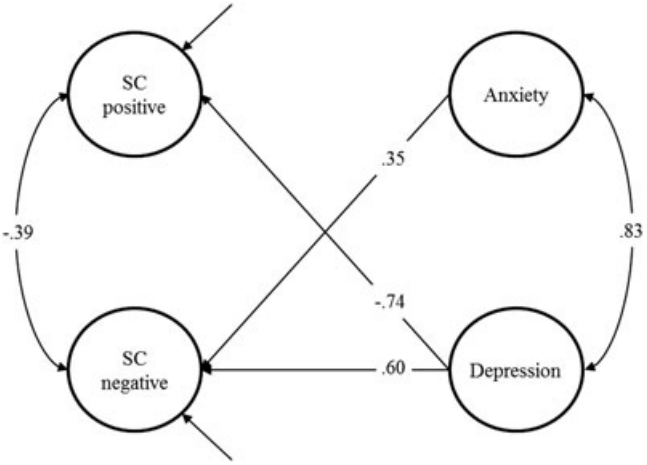

Figure 3. Final structural equation modelling including anxiety, depression, the positive self-compassion (SC) factor and the negative self-compassion factor (regression weights are standardized values; two-sided arrows are correlations).

The final SEM had an acceptable fit ($\chi^2(618) = 1761$, $p < .001$; RMSEA = 0.06; CFI = 0.92). Anxiety and depression explained 83.2% of variance (as indicated by latent R^2) in the negative self-compassion factor. This can be considered extremely high, as there is almost no specific variance left. Furthermore, depression explained 54.9% of variance in the positive self-compassion factor, which can be considered high.

We want to note that the MML technique applied on the models can be criticized as possibly changing the original factor meaning (Olaru et al., 2015). To address this limitation, we compared the final SEM (Figure 3) to an equivalent model containing all items for the facets anxiety and depression. The model fit for this model decreased slightly (ΔRMSEA = 0.00; ΔCFI = −0.03), but all the other results remain absolutely the same in terms of effect size, direction and significance levels. In sum, we conclude that the negative self-compassion factor is actually redundant to facets of neuroticism, while the positive self-compassion factor is very closely related but not completely redundant.

Incremental predictive power

As neuroticism is a strong predictor of life satisfaction (Schimmack et al., 2004), as is self-compassion (Neff & Dahm, 2015), and as self-compassion can be explained to a great extent by neuroticism (see preceding texts), we examined whether the predictive power of self-compassion regarding life satisfaction is actually due to individual differences in neuroticism.

We first tested a single-factor model of life satisfaction (cf. Pavot & Diener, 1993). A single-factor CFA with all five life satisfaction items resulted in a good model fit ($\chi^2(5) = 15$, $p = .011$; RMSEA = 0.06; CFI = 1.00). Next, we tested three stepwise SEMs with nested latent regressions to predict life satisfaction. As trait anxiety and depression showed to be the central facets of neuroticism when it comes to explaining variance in self-compassion, only those were included as

DOI: 10.1002/per

predictors of life satisfaction. In the first model, life satisfaction was predicted by trait anxiety and depression only. In the second model, the negative self-compassion factor was added; in the third model, the positive self-compassion factor was added. With these nested latent regressions, we could examine the change of R^2 as indicator of incremental predictive validity of self-compassion over central facets of neuroticism, that is, anxiety and depression.

Table 3 lists latent regressions, fit indices and ΔR^2 as compared with those of the previous model. All models had an acceptable fit. Anxiety and depression explained 47.4% of variance in life satisfaction, which is quite substantial. In contrast, self-compassion could not explain a noteworthy portion of variance beyond the two facets of neuroticism. The negative factor of self-compassion only added 0.5% of explained variance. The positive factor of self-compassion, although it was more distinct than the negative facet from the two facets of neuroticism, only added another 0.7% of explained variance. In sum, the incremental predictive validity of self-compassion on life satisfaction is negligible.

DISCUSSION

Neff's seminal paper introducing the Buddhist-oriented concept of self-compassion (Neff, 2003) has inspired many researchers in recent years, resulting in a large number of articles showing relations of self-compassion with positive intrapersonal and interpersonal functioning (Barnard & Curry, 2011; Neff & Dahm, 2015). However, a critical and systematic test of trait self-compassion from a personality and assessment perspective has so far not been conducted. We have addressed this gap in research. Specifically, we (i) tested the factor structure of the self-compassion scale (SCS); (ii) examined the distinctiveness of self-compassion with regard to the FFM, focusing on neuroticism; and (iii) tested the incremental predictive power of self-compassion beyond facets of neuroticism in the context of life satisfaction.

SUMMARY OF RESULTS AND IMPLICATIONS

Regarding the factor structure of the SCS, results revealed an important finding. Specifically, none of the solutions in CFA with a *single* factor of general self-compassion had an acceptable fit. This is, however, implicitly assumed when researchers sum across all items of the SCS, as is typically performed in research on self-compassion (Muris, Otgaar, et al., 2016). Our results indicate that this typical approach is inappropriate and should be avoided (see later texts for a suggestion how to deal with this issue).

Two possible factor structure solutions were obtained in CFA: the first solution (Model 4) included the six self-compassion dimensions loading on a higher-order positive self-compassion factor or a higher-order negative self-compassion factor. The positive factor reflected the presence of self-compassion, whereas the negative factor reflected negative emotionality and harsh self-judgements. The second solution (Model 5) was a six-factor model with factors representing the six self-compassion dimensions. Note that Model 5 had no higher-order factor of general self-compassion, implying that a common basis (self-compassion) is not present. This contradicts theoretical work on self-compassion (Neff, 2003; Neff & Dahm, 2015). However, Model 5 is inadequate in terms of parsimony, as it suggests six correlated but conceptually different constructs. Thus, for reasons of theoretical clarity and parsimony, we suggest Model 4 as the model on which future research can build.

To more precisely render these considerations, we suggest excluding the negative items from the SCS, as these purely reflect neuroticism. In fact, the correlations between facets of neuroticism (i.e. anxiety, depression and self-consciousness) and the negative self-compassion factor were extremely high. The picture was slightly different for the positive self-compassion factor, as there was some variance remaining that could not be attributed to neuroticism. This finding strengthens the suggestion for future research to work exclusively with the positive items of the SCS.

Yet future research still needs to show that self-compassion, specifically the positive self-compassion factor, can explain substantial incremental variance beyond the FFM. In the present study, this was not the case. Both the negative and positive self-compassion factors explained less than 1% of variance in life satisfaction not explained by trait anxiety and trait depression. However, life satisfaction is one of the most important constructs in psychology and is suggested as one of the most important outcomes of self-compassion. Yet we acknowledge that even small effects, particularly in the context of well-being, can be important to consider. Overall, we encourage self-compassion researchers to abandon the path of merely showing that self-

Table 3. Stepwise latent regression in three SEMs to evaluate incremental predictive validity of SC over depression and anxiety on life satisfaction

No.	Latent predictors of LS	χ^2 model test	RMSEA	CFI	R^2	ΔR^2 to previous model
1	A + D	$\chi^2(101) = 242$, $p < .001$	.05	.97	.474	—
2	A + D + negative SC	$\chi^2(368) = 968$, $p < .001$	.05	.95	.479	.005
3	A + D + negative SC + positive SC	$\chi^2(803) = 2034$, $p < .001$	.05	.93	.486	.007

Note: LS, life satisfaction; A, anxiety; D, depression; SC, self-compassion; SEM, structural equation model; RMSEA, root mean square error of approximation; CFI, comparative fit index.

DOI: 10.1002/per

compassion is related to positive intrapersonal and interpersonal functioning while neglecting what is already known from research on broad personality models. What is needed is research that critically tests the incremental validity of self-compassion. The present work can provide a meaningful foundation in this regard.

We once more wish to emphasize that we do not question the meaningfulness of self-compassion *per se*. In fact, research on self-compassion can inform us how to adaptively deal with painful experiences. The strength of self-compassion is that it reflects a differentiated construct emphasizing different strategies for dealing with negative emotions and experiences (i.e. being self-kind, believing in common humanity and engaging in mindfulness). In contrast, neuroticism encompasses individual differences in emotional reactivity to environmental stimuli and in the perception, reaction to or coping with them, but the definition of neuroticism does not include explicit coping strategies. These considerations speak to the possibility that neuroticism and self-compassion largely overlap on a personality level in that neuroticism can substitute for the trait self-compassion, especially the negative factor. Yet on a strategic level (i.e. how individuals deal exactly with negative events), self-compassion is more specific than neuroticism, as self-compassion includes explicit strategies for how to deal with negative incidences (e.g. being self-kind or believing in common humanity).

Research on self-compassion can build on this strength and test how and under which conditions the implementation of self-compassionate strategies results in positive intrapersonal and interpersonal functioning. Thus, the investigation of self-compassion strategies, for instance, in experimental settings (e.g. Adams & Leary, 2007; Breines & Chen, 2012; Leary, Tate, Adams, Batts Allen, & Hancock, 2007; Rockliff, Gilbert, McEwan, Lightman, & Glover, 2008) and self-compassion trainings (Gilbert & Procter, 2006; Neff & Germer, 2013), seems to reflect a promising approach.

LIMITATIONS AND CONCLUSION

In critically reflecting the current work, we want to acknowledge and discuss limitations of the study. First, our conclusions are based on a specific, non-representative sample. As such, one cannot exclude the possibility that the results are sample specific. Yet there is such a high conceptual overlap between self-compassion and neuroticism that very high associations between the two constructs can be expected in other samples; moreover, it can be expected that the findings also hold in the general population. Second, we want to acknowledge the possibility that some complex model analyses may be statistically underpowered (e.g. the model including the negative and positive self-compassion factors, two facets of neuroticism and life satisfaction). Future research can address this point including bigger (representative) samples. Third, analysis of whether self-compassion predicted substantial incremental variance beyond neuroticism was restricted to the case of life satisfaction. Thus, we cannot conclude that self-compassion is also a weak predictor in other domains. In this regard, self-compassion researchers may feel challenged and inspired to show incremental variance beyond broad personality models, for instance, by focusing on constructs that show large correlations with self-compassion (e.g. self-esteem or optimism; Neff, 2003; Neff, Pisitsungkagarn, & Hsieh, 2008), or by focusing on constructs that are less likely to be associated with neuroticism (e.g. interdependent/independent self-construal; Neff et al., 2008). Fourth, we want to acknowledge the possibility that the two negatively correlated factors of self-compassion may reflect method factors underlying positive and negative item formulations. This could be tested in future multimethod studies (e.g. studies using both self-reports and peer reports). Fifth, our research remains silent regarding the relation of self-compassion with other broad personality models, such as the HEXACO model (Ashton & Lee, 2007). As the dimension Emotionality of the HEXACO has a large overlap with neuroticism from the Big Five, we expect that self-compassion is also well represented by the Emotionality dimension. This, however, needs to be tested in future research.

To conclude, the present research reflects a cautionary note on current conceptualization and measurement of self-compassion. The presented findings demonstrate that it is important to take existing global personality models into account to have a better understanding of newly introduced constructs. As such, the current contribution hopefully inspires future research on self-compassion.

SUPPORTING INFORMATION

Additional Supporting Information may be found online in the supporting information tab for this article.

REFERENCES

Adams, C. E., & Leary, M. R. (2007). Promoting self-compassionate attitudes toward eating among restrictive and guilty eaters. *Journal of Social and Clinical Psychology*, *26*, 1120–1144.

Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review*, *11*, 150–166.

Barnard, L. K., & Curry, J. F. (2011). Self-compassion: Conceptualizations, correlates, & interventions. *Review of General Psychology*, *15*, 289–303.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238–246.

Bergen-Cico, D., & Cheon, S. (2014). The mediating effects of mindfulness and self-compassion on trait anxiety. *Mindfulness*, *5*, 505–519.

Birnie, K., Speca, M., & Carlson, L. E. (2010). Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). *Stress and Health*, *26*, 359–371.

Borkenau, P., & Ostendorf, F. (1990). Comparing exploratory and confirmatory factor analysis: A study on the 5-factor model of personality. *Personality and Individual Differences*, *11*, 515–524.

Breines, J. G., & Chen, S. (2012). Self-compassion increases self-improvement motivation. *Personality and Social Psychology Bulletin*, *38*, 1133–1143.

DOI: 10.1002/per

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk a new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science*, *6*, 3–5.

Cheng, H., & Furnham, A. (2002). Personality, peer relations, and self-confidence as predictors of happiness and loneliness. *Journal of Adolescence*, *25*, 327–339.

Clara, I. P., Cox, B. J., & Enns, M. W. (2003). Hierarchical models of personality and psychopathology: The case of self-criticism, neuroticism, and depression. *Personality and Individual Differences*, *35*, 91–99.

Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology*, *38*, 668–678.

Costa, P. T., & McCrae, R. R. (1992). Four ways five factors are basic. *Personality and Individual Differences*, *13*, 653–665.

Credé, M., Tynan, M. C., & Harms, P. D. (in press). Much ado about grit: A meta-analytic synthesis of the grit literature. *Journal of Personality and Social Psychology*.

Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*, 71–75.

Dunkley, D. M., Sanislow, C. A., Grilo, C. M., & McGlashan, T. H. (2009). Self-criticism versus neuroticism in predicting depression and psychosocial impairment for 4 years in a clinical sample. *Comprehensive Psychiatry*, *50*, 335–346.

Gilbert, P., & Procter, S. (2006). Compassionate mind training for people with high shame and self-criticism: Overview and pilot study of a group therapy approach. *Clinical Psychology & Psychotherapy*, *13*, 353–379.

Giluk, T. L. (2009). Mindfulness, Big Five personality, and affect: A meta-analysis. *Personality and Individual Differences*, *47*, 805–811.

Goldberg, L. R. (1990). An alternative "description of personality": The Big-Five factor structure. *Journal of Personality and Social Psychology*, *59*, 1216–1229.

Gunthert, K. C., Cohen, L. H., & Armeli, S. (1999). The role of neuroticism in daily stress and coping. *Journal of Personality and Social Psychology*, *77*, 1087–1100.

Heaven, P. C., Mulligan, K., Merrilees, R., Woods, T., & Fairooz, Y. (2001). Neuroticism and conscientiousness as predictors of emotional, external, and restrained eating behaviors. *International Journal of Eating Disorders*, *30*, 161–166.

Janssen, A. B., Schultze, M., & Grötsch, A. (in press). Following the ants: Development of short scales for proactive personality and supervisor support by ant colony optimization. *European Journal of Psychological Assessment*.

Jeronimus, B. F., Riese, H., Sanderman, R., & Ormel, J. (2014). Mutual reinforcement between neuroticism and life experiences: A five-wave, 16-year study to test reciprocal causation. *Journal of Personality and Social Psychology*, *107*, 751–764.

John, O. P., Robins, R. W., & Pervin, L. A. (2008). *Handbook of personality: Theory and research* (3rd ed.). New York, NY: Guilford.

Kandler, C., & Ostendorf, F. (2016). Additive and synergetic contributions of neuroticism and life events to depression and anxiety in women. *European Journal of Personality*, *30*, 390–405.

Kano, Y., & Harada, A. (2000). Stepwise variable selection in factor analysis. *Psychometrika*, *65*, 7–22.

Kelley, E. L. (1927). *Interpretation of educational measurements*. Yonkers, NY: World Press.

Kööts-Ausmees, L., Schmidt, M., Esko, T., Metspalu, A., Allik, J., & Realo, A. (2016). The role of the five-factor personality traits in general self-rated health. *European Journal of Personality*, *30*, 492–504.

Leary, M. R., Tate, E. B., Adams, C. E., Batts Allen, A., & Hancock, J. (2007). Self-compassion and reactions to unpleasant self-relevant events: The implications of treating oneself kindly. *Journal of Personality and Social Psychology*, *92*, 887–904.

Lee, S. A. (2009). Does empathy mediate the relationship between neuroticism and depressive symptomatology among college students? *Personality and Individual Differences*, *47*, 429–433.

López, A., Sanderman, R., Smink, A., Zhang, Y., van Sonderen, E., Ranchor, A., & Schroevers, M. J. (2015). A reconsideration of the Self-Compassion Scale's total score: Self-compassion versus self-criticism. *PloS One*, *10*, e0132940.

Malouff, J. M., Thorsteinsson, E. B., & Schutte, N. S. (2005). The relationship between the five-factor model of personality and symptoms of clinical disorders: A meta-analysis. *Journal of Psychopathology and Behavioral Assessment*, *27*, 101–114.

Maniaci, M. R., & Rogge, R. D. (2014). Caring about carelessness: Participant inattention and its effects on research. *Journal of Research in Personality*, *48*, 61–83.

McCrae, R. R., & Costa, P. T. (2008). The five-factor theory of personality. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality psychology: Theory and research* (pp. 159–181). New York, NY: Guilford Press.

McCrae, R. R., Zonderman, A. B., Costa, P. T. Jr., Bond, M. H., & Paunonen, S. V. (1996). Evaluating replicability of factors in the Revised NEO Personality Inventory: Confirmatory factor analysis versus Procrustes rotation. *Journal of Personality and Social Psychology*, *70*, 552–566.

Muris, P. (2016). A protective factor against mental health problems in youths? A critical note on the assessment of self-compassion. *Journal of Child and Family Studies*, *25*, 1461–1465.

Muris, P., Meesters, C., Pierik, A., & de Kock, B. (2016). Good for the self: Self-compassion and other self-related constructs in relation to symptoms of anxiety and depression in non-clinical youths. *Journal of Child and Family Studies*, *25*, 607–617.

Muris, P., Otgaar, H., & Petrocchi, N. (2016). Protection as the mirror image of psychopathology: Further critical notes on the self-compassion scale. *Mindfulness*, *7*, 787–790.

Muris, P., & Petrocchi, N. (in press). Protection or vulnerability? A meta-analysis of the relations between the positive and negative components of self-compassion and psychopathology. *Clinical Psychology & Psychotherapy*.

Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity*, *2*, 223–250.

Neff, K. D. (2016). The Self-Compassion Scale is a valid and theoretically coherent measure of self-compassion. *Mindfulness*, *7*, 264–274.

Neff, K. D., & Beretvas, S. N. (2013). The role of self-compassion in romantic relationships. *Self and Identity*, *12*, 78–98.

Neff, K. D., & Dahm, K. A. (2015). Self-compassion: What it is, what it does, and how it relates to mindfulness. In B. D. Ostafin, M. D. Robinson, & B. P. Meier (Eds.), *Handbook of mindfulness and self-regulation* (pp. 121–137). New York, NY: Springer.

Neff, K. D., & Faso, D. J. (2015). Self-compassion and well-being in parents of children with autism. *Mindfulness*, *6*, 938–947.

Neff, K. D., & Germer, C. K. (2013). A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology*, *69*, 28–44.

Neff, K. D., Pisitsungkagarn, K., & Hsieh, Y. P. (2008). Self-compassion and self-construal in the United States, Thailand, and Taiwan. *Journal of Cross-Cultural Psychology*, *39*, 267–285.

Neff, K. D., Rude, S. S., & Kirkpatrick, K. L. (2007). An examination of self-compassion in relation to positive psychological functioning and personality traits. *Journal of Research in Personality*, *41*, 908–916.

Neff, & Whitaker (in press). Examining the factor structure of the Self-Compassion Scale in four distinct populations: Is the use of a total scale score justified? *Journal of Personality Assessment*.

Olaru, G., Witthöft, M., & Wilhelm, O. (2015). Methods matter: Testing competing models for designing short-scale Big-Five assessments. *Journal of Research in Personality*, *59*, 56–68.

Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology*, *45*, 867–872.

Ormel, J., Jeronimus, B. F., Kotov, R., Riese, H., Bos, E. H., Hankin, B., … Oldehinkel, A. J. (2013). Neuroticism and

DOI: 10.1002/per

common mental disorders: Meaning and utility of a complex relationship. *Clinical Psychology Review*, *33*, 686–697.
Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment*, *5*, 164–172.
Pons, D., Atienza, F. L., Balaguer, I., & García-Merita, M. L. (2000). Satisfaction with life scale: Analysis of factorial invariance for adolescents and elderly persons. *Perceptual and Motor Skills*, *91*, 62–68.
Reyes, D. (2012). Self-compassion: A concept analysis. *Journal of Holistic Nursing*, *30*, 81–89.
Rockliff, H., Gilbert, P., McEwan, K., Lightman, S., & Glover, D. (2008). A pilot exploration of heart rate variability and salivary cortisol responses to compassion-focused imagery. *Clinical Neuropsychiatry*, *5*, 132–139.
Rose, C. L., Murphy, L. B., Byard, L., & Nikzad, K. (2002). The role of the Big Five personality factors in vigilance performance and workload. *European Journal of Personality*, *16*, 185–200.
Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*, 1–36.
Saklofske, D. H., & Yackulic, R. A. (1989). Personality predictors of loneliness. *Personality and Individual Differences*, *10*, 467–472.
Saulsman, L. M., & Page, A. C. (2004). The five-factor model and personality disorder empirical literature: A meta-analytic review. *Clinical Psychology Review*, *23*, 1055–1085.
Schimmack, U., Oishi, S., Furr, R. M., & Funder, D. C. (2004). Personality and life satisfaction: A facet-level analysis. *Personality and Social Psychology Bulletin*, *30*, 1062–1075.
Schoenefeld, S. J., & Webb, J. B. (2013). Self-compassion and intuitive eating in college women: Examining the contributions of distress tolerance and body image acceptance and action. *Eating Behaviors*, *14*, 493–496.
Schulze, R., & Roberts, R. D. (2006). Assessing the Big Five. *Journal of Psychology*, *214*, 133–149.
Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research*, *25*, 173–180.
Thompson, B. L., & Waltz, J. (2007). Everyday mindfulness and mindfulness meditation: Overlapping constructs or not? *Personality and Individual Differences*, *43*, 1875–1885.
Widiger, T. A. (2009). Neuroticism. In M. R. Leary, & R. H. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 129–146). New York, NY: Guilford Press.
Williams, M. J., Dalgleish, T., Karl, A., & Kuyken, W. (2014). Examining the factor structures of the five facet mindfulness questionnaire and the self-compassion scale. *Psychological Assessment*, *26*, 407–418.
Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models an evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement*, *73*, 913–934.
Wupperman, P., & Neumann, C. S. (2006). Depressive symptoms as a function of sex-role, rumination, and neuroticism. *Personality and Individual Differences*, *40*, 189–201.
Zajenkowska, A., Zajenkowski, M., & Jankowski, K. S. (2015). The relationship between mood experienced during an exam, proneness to frustration and neuroticism. *Learning and Individual Differences*, *37*, 237–240.

DOI: 10.1002/per