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The forest and the trees: Examining the association of self-compassion and its positive and negative components with psychological functioning

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ABSTRACT

This paper presents two studies focusing on the link between psychological functioning and self-compassion as measured by the Self-Compassion Scale (SCS), especially in terms of SCS components that represent increased compassionate and reduced uncompassionate behavior. Study One examined this association in seven domains – psychopathology, positive psychological health, emotional intelligence, self-concept, body image, motivation, and interpersonal functioning – and found that while reduced negative self-responding had a stronger link to negative emotionality and self-evaluation than positive self-responding, they were roughly equivalent predictors in other domains. Study Two examined the association of compassionate and reduced uncompassionate behavior with sympathetic nervous system and inflammatory activity after stress, and found they equally predicted salivary alpha amylase and interleukin-6 levels in individuals after a stressful situation. Overall, results suggest that both compassionate and reduced uncompassionate self-responding are central to self-compassion and that both help to explain its link to healthy psychological functioning.

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Self-compassion is proposed to be a healthy way of relating to oneself in times of suffering, whether suffering is caused by failure, perceived inadequacy, or general life difficulties. As defined by Neff (2003b), self-compassion represents the balance between increased positive and decreased negative self-responding to personal struggle. Self-compassion entails being kinder and more supportive toward oneself and less harshly judgmental. It involves greater recognition of the shared human experience, understanding that all humans are imperfect and lead imperfect lives, and fewer feelings of being isolated by one's imperfection. It entails mindful awareness of personal suffering, and ruminating less about negative aspects of oneself or one's life experience. Over the last few years, research on self-compassion has

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grown exponentially. There were over 1300 articles or dissertations written about self-compassion from 2003 to 2017 (based on a Google Scholar search of entries with "self-compassion" in the title), over half of which were published in the last two years. Self-compassion has been consistently linked to psychological well-being, including increased positive outcomes such as happiness and life satisfaction and lessened negative outcomes such as anxiety and depression (MacBeth & Gumley, 2012; Zessin, Dickhauser, & Garbade, 2015).

The vast majority of research has measured the construct of self-compassion with the Self-Compassion Scale (SCS; Neff, 2003a). The SCS is intended to be used as a total score to measure the overall construct of self-compassion, or else as six subscale scores to assess its constituent components. According to Neff (2016a, 2016b), the six components of the SCS are conceptually distinct and represent the compassionate and reduced uncompassionate ways individuals relate to themselves along three basic dimensions: how they emotionally respond to pain or failure (with kindness and less harsh judgment), cognitively understand their predicament (as part of the human experience and as less isolating), and pay attention to suffering (in a mindful and less over-identified manner). Items describing uncompassionate behavior are reverse-coded to indicate their relative absence. The six elements of self-compassion are separable and do not co-vary in a lockstep manner, but they do mutually impact one another and interact as a system.

Recently, there has been controversy over whether or not self-compassion should be conceptualized and measured as an overall construct, or if positive vs. reduced negative behavior toward the self should be considered distinct constructs. One issue fueling this controversy concerns the association of self-compassion with mental health: Muris and Petrocchi (2017) argue that the negative components of the SCS are more strongly linked to psychopathology than the positive components, and therefore should *not* be included in a total SCS score because they inflate the link between self-compassion and well-being. Another issue concerns the physiology of self-compassion. Social Mentality Theory (SMT; Gilbert, 1989, 2005) posits that compassionate behavior is associated with parasympathetic nervous system activity and uncompassionate behavior with sympathetic activity. The argument is that both should *not* be included in a total scale score since they have a different underlying physiology, and that "self-compassion" is better represented by the three positive components only (Gilbert, McEwan, Matos, & Rivis, 2011).

The current paper examines whether understanding self-compassion as a holistic construct that represents the balance between increased positive and reduced negative self-responding makes sense. Study One examines the link of SCS components with well-being in a variety of domains to determine if both make a significant contribution to outcomes. Study Two examines the association between increased positive and reduced negative self-responding with sympathetic nervous system reactivity as well as inflammatory reactivity, which is stimulated by the sympathetic nervous system, to determine if the positive and negative components have a different underlying physiology.

Note that some researchers have used the terms self-criticism or self-coldness to describe the three components of self-compassion representing reduced negative self-responding (Costa, Marôco, Pinto-Gouveia, Ferreira, & Castilho, 2015; Gilbert et al., 2011; López et al., 2015). However, these terms primarily describe self-judgment, or how people emotionally respond to suffering, and do not describe isolation (a way of cognitively understanding suffering) or over-identification (a way of paying attention to suffering). Therefore, we prefer the terms compassionate (self-kindness, common humanity, mindfulness) vs. reduced

uncompassionate (self-judgment, isolation, over-identification) self-responding in times of struggle to describe positive and reduced negative behavior.

The issue of whether self-compassion should be conceptualized as a holistic state of being or as two distinct states of being has important implications for understanding what self-compassion is. If self-compassion does not include reduced uncompassionate self-responding, the implication would be that the degree to which one feels self-critical, isolated, or over-identified with feelings of failure or inadequacy has little bearing on how self-compassionate individuals are. This, in turn, would have important implications for researchers' attempts to examine the link between self-compassion and well-being, for example, or clinicians' attempts to determine the self-compassion levels of their clients. From our point of view, knowing the degree to which individuals display uncompassionate behavior toward themselves in times of failure or struggle is central to the process of understanding how self-compassionate they are overall.

Study one

The question of whether self-compassion should be understood as a total construct or as separate constructs representing increased positive vs. reduced negative self-responding is integrally intertwined with the factor structure of the SCS. Although not the focus of the current study, a brief overview of the psychometrics of the SCS will be provided. (For a more detailed discussion of this issue, please see Appendix A of the supplementary materials.) The original SCS publication (Neff, 2003a) used Confirmatory Factor Analyses (CFA) and a higher-order model to justify use of a total score, but support for a higher-order model has been inconsistent (e.g., Williams, Dalgleish, Karl, & Kuyken, 2014). Some researchers have found that the positive and negative items of the SCS form two distinct factors (Costa et al., 2015; López et al., 2015), but a two-factor solution has not been consistently replicated either (e.g., Cleare, Gumley, Cleare, & O'Conner, 2017; Neff, Whittaker, & Karl, 2017). Neff, Whittaker and Karl (2017) have argued that a bifactor approach (Reise, 2012) – which models the association of SCS items with the six specific factors of self-compassion and a general factor simultaneously – is more consistent with a systems-view of self-compassion. Examining four distinct samples, these researchers found that a higher order model had poor fit across samples, while a six-factor correlated and bifactor model generally had acceptable fit. This finding was independently replicated by Cleare et al. (2017). While Brenner, Heath, Vogel, and Credé (2017) found that a two-bifactor model with six group factors and two uncorrelated general (positive and negative) factors had better fit than a single bifactor model, findings for some indicators were poor and testing an uncorrelated two factor model was not consistent with the theory underlying the SCS. More recently, Tóth-Király, Bőthe, and Orosz (2017) as well as Neff, Tóth-Király et al. (in press) have argued that a bifactor approach combined with Exploratory Structural Equation Modeling (ESEM) offers the most theoretically consistent way to examine a multidimensional scale in which items are thought to operate as an interactive system such as the SCS (see Appendix A). In a large international collaboration, Neff, Tóth-Király et al. (in press) used bifactor ESEM to examine the factor structure of the SCS in 20 diverse samples ($N = 11{,}685$), and support was found in every sample for use of six subscale factors or a total SCS score, but not separate factors representing increased positive vs. reduced negative behavior. Moreover, 95% of the reliable variance could be attributed to a general factor.

Beyond the psychometric debate, the issue of whether self-compassion should be measured as a total construct or as two separate constructs is also related to the link of SCS components to well-being, and it is this issue that will be the main focus of the current paper. Recently, Muris and Petrocchi (2017) conducted a meta-analysis of this link across 18 studies, and found the three components representing reduced negative self-responding had a stronger association with psychopathology (e.g., depression, anxiety and stress) than the positive components. They argue that "negative items … tap toxic mechanisms which may inflate the relationship with psychopathology" (p. 734), and should therefore be excluded from the SCS. This argument can be questioned, however. Given that reduced negative self-responding is defined as part of self-compassion, logically speaking it cannot "inflate" its own association with psychopathology unless the definition of self-compassion itself is changed. Muris and Petrocchi (2017) do in fact argue that the definition of self-compassion should be changed so that it does not include reduced levels of negative self-responding alongside increased levels of positive behavior. They argue the latter represents protection against psychopathology whereas the former represents vulnerability to psychopathology. An alternative point of view is that the reduced vulnerability to psychopathology offered by self-compassion (as indicated by lower scores on the negative subscales) offers increased protection: the two are flip sides of the same coin (Neff, 2016b). In her original publication Neff (2003b) suggests that reduced negative self-responding might be primarily responsible for the negative association of self-compassion with psychopathology. This does not mean that the degree to which individuals display increased positive and reduced negative behaviors cannot be considered holistically or be assessed with a total score.

It is common for measures to assess increased levels of positive and reduced levels of negative behaviors, and to find that subscales measuring negative behaviors have a stronger association with negative outcomes. For instance, healthy eating involves eating more good foods like fruits and vegetables and fewer bad foods like processed sugar, which is why scales like the Healthy Eating Index (HEI; Kennedy, Ohls, Carlson, & Fleming, 1995) contain items assessing unhealthy eating that are reverse-coded before being included in a total score. Research with the HEI shows that consumption of bad foods has a stronger association with obesity than good foods, though both make a contribution (Tande, Magel, & Strand, 2010). Using a more relevant example, the Five Factor Mindfulness Questionnaire contains items assessing judgment of one's experience (termed non-judgment) and not paying attention to one's experience (termed acting with awareness) that are reverse-coded before being combined into a total Mindfulness Score (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). These two subscales are generally found to be stronger predictors of psychopathology than the positive subscales, although the latter also make a contribution (Baer et al., 2008; Cash & Whittingham, 2010).

Using the logic of Muris and Petrocchi (2017), one could conclude that the HEI should *not* measure the consumption of bad foods or that the FFMQ should *not* measure nonjudgment or acting with awareness because they inflate the link with negative outcomes. Such an argument is potentially problematic, however, because healthy eating involves consuming fewer bad foods and mindfulness involves non-judgment and acting with awareness by definition. We would argue that reduced self-judgment, isolation and over-identification are similarly central to the construct of self-compassion, and must be included in the SCS in order to understand how self-compassion relates to well-being.

Nonetheless, it is an interesting question whether the presence of positive or absence of negative behaviors toward the self has a stronger relationship with certain types of well-being outcomes than others. There has been little research that has examined this issue systematically, especially in domains of well-being other than psychopathology. Positive and negative emotions have a different psychological function. Negative emotions tend to narrow one's focus on threat, while positive emotions tend to broaden one's focus on opportunities (Fredrickson, 2001). If increased compassionate and decreased uncompassionate self-responding are both central to self-compassion, both should significantly predict well-being across domains of functioning, although the strength of association with each may depend on the well-being outcome examined. The current study examined the association of self-compassion and its components in seven different life domains: psychopathology, positive psychological health, emotional intelligence, self-concept, body image, motivation, and interpersonal functioning.

Because of the brain's negativity bias and the tendency for negative events to be more potent than positive events (Rozin & Royzman, 2001), we expected that reduced negative self-responding would have a stronger association with self-evaluations and negative emotions than the presence of positive self-responding. In terms of other outcomes more representative of general psychological functioning, however, no specific hypotheses were advanced.

General method

Participants

Seven samples of participants were collected, one representing each domain of functioning. Note that all samples were collected after obtaining approval from an Institutional Review Board. Initially, a total of 1519 participants filled out survey questionnaires on Mechanical Turk. Participants needed to meet specified criteria (18 years or older and a U.S. citizen) and were paid $1.00 for completion of the study. After providing consent, participants filled out a demographic questionnaire, the SCS, and a set of well-being measures (not numbering more than 100 items). Participants with excessive missing data and/or who took on average less than two seconds per question to respond were dropped from the final data-set. In total, 1355 participants were retained. Participants were 37% male and 63% female. They ranged in age between 19 and 80 years old (M_{age} = 37.26, SD = 12.64). Seventy-six percent identified as White, 9% as Black/African-American, 7% as Asian American, 6% as Latino/Hispanic, and 3% other. Thirty-six percent had a college degree, 27% completed some college, 13% had a professional degree, 12% had a 2-year degree, 11% had a high school education or lower, and 2% had a doctorate. The demographic makeup for each individual sample was highly similar, so only results for the total sample are reported. Note that due to a clerical error Mechanical Turk workers were not blocked from participating in multiple studies.

Measures

All participants completed the 26-item Self-Compassion Scale (Neff, 2003a), which assesses six different components of self-compassion: Self-Kindness (e.g., "I try to be understanding and patient toward aspects of my personality I don't like"), reduced Self-Judgment (e.g., "I'm disapproving and judgmental about my own flaws and inadequacies"), Common Humanity

(e.g., "I try to see my failings as part of the human condition"), reduced Isolation (e.g., "When I think about my inadequacies it tends to make me feel more separate and cut off from the rest of the world"), Mindfulness (e.g., "When something painful happens I try to take a balanced view of the situation"), and reduced Over-identification (e.g., "When I'm feeling down I tend to obsess and fixate on everything that's wrong"). Responses are given on a 5-point scale ranging from 1 = "Almost Never" to 5 = "Almost Always." Scores for negative items representing uncompassionate self-responding are reverse-coded to indicate their absence. To calculate a total self-compassion score (TSC), a grand mean of all six subscales is taken. To calculate a positive self-responding score (POS) a mean was taken of the self-kindness, common humanity and mindfulness subscales, and to calculate a reduced negative self-responding score (RNEG), a mean was taken of the self-judgment, isolation and over-identification subscales after items were reverse-coded.

In addition to the SCS, a number of outcome measures were included in different domains of psychological functioning (see Appendix B). Table 1 presents the measures, number of items, and Cronbach's alphas obtained for the 50 different outcomes examined in the seven samples of Study One. References for all measures can be found in a supplementary document online. Cronbach's alphas for TSC, POS, RNEG, and the six subscales of the SCS are presented in Table 2.

Analyses

Although Neff, Tóth-Király et al. (in press) did not find support for the use of two separate factors for the SCS, we planned to examine self-compassion using TSC, POS and RNEG scores so that the association of positive and reduced negative self-responding with well-being could be more easily compared. We also examined the associations of each subscale separately. We decided to examine the link between self-compassion components and well-being outcomes with zero order correlations rather than regression analyses. We did not use regressions to assess the relative strength of predictors because we felt doing so would distort findings given that almost all of the reliable variance in item responding on the SCS is explained by the system of self-compassion as a whole (Neff, Tóth-Király et al., in press; Neff, Tóth-Király & Colisomo, in press; Neff, Whittaker & Karl, 2017). Given the deep intertwining of the various components in the definition, operation, and measurement of self-compassion, we felt that to separate out their shared variance would change the meaning of components in a way that would render findings less interpretable.

Effect sizes were evaluated according to Cohen's (1988) benchmarks: correlations of $r = .10–.30$ were considered small, .30–.50 were considered medium, and over .50 were considered large. The size of the correlations found between POS and RNEG with outcomes were also statistically compared using Lee and Preacher's (2013) web utility, in which each correlation coefficient is converted into a *z*-score and an asymptotic *z*-test is conducted using Steiger's (1980) method. Because of the large number of tests conducted, 2-tailed tests of significance were set at $p < .001$ to reduce Type I error.

Results

Table 2 below the diagonal presents the zero-order correlations between TSC, POS, RNEG, and the six subscale scores of the total sample in Study One ($N = 1355$). These

Table 1. Psychological outcome measures used in Study One ($N = 1355$).

Outcome	Measure	Items	Alpha
Sample 1: Psychopathology ($N = 192$)			
Depression	Depression, Anxiety, Stress Scales	7	.92
Anxiety	Depression, Anxiety, Stress Scales	7	.89
Stress	Depression, Anxiety, Stress Scales	7	.92
Self-criticism	Depressive Experiences Questionnaire	5	.92
Rumination	Ruminative Responses Scale	22	.94
Thought suppression	White Bear Suppression Inventory	15	.93
Worry	Penn State Worry Questionnaire	16	.96
Negative affect	Positive and Negative Affect Schedule	10	.92
Sample 2: Positive emotional well-being ($N = 188$)			
Hope	Trait Hope Scale	12	.92
Optimism	Revised Life Orientation Test	10	.91
Happiness	Subjective Happiness Scale	4	.90
Life Satisfaction	Satisfaction with Life Scale	5	.92
Gratitude	Gratitude Questionnaire	6	.87
Savoring	Savoring Beliefs Inventory	24	.95
Positive affect	Positive and Negative Affect Schedule	10	.91
Sample 3: Emotional intelligence ($N = 192$)			
Affective wisdom	Three-Dimensional Wisdom Scale	14	.82
Cognitive wisdom	Three-Dimensional Wisdom Scale	13	.80
Reflective wisdom	Three-Dimensional Wisdom Scale	12	.85
Emotional reappraisal	Emotional Regulation Questionnaire	6	.92
Goal-directed behavior	Difficulties in Emotion Regulation Scale	5	.92
Emotional awareness	Difficulties in Emotion Regulation Scale	6	.87
Emotional clarity	Difficulties in Emotion Regulation Scale	5	.86
Emotion regulation	Difficulties in Emotion Regulation Scale	8	.93
Impulse control	Difficulties in Emotion Regulation Scale	6	.92
Non-acceptance	Difficulties in Emotion Regulation Scale	6	.93
Sample 4: Self-concept ($N = 200$)			
Self-esteem	Self-Esteem	10	.93
Approval	Contingent Self-Worth Scale	5	.87
Appearance	Contingent Self-Worth Scale	5	.86
Competition	Contingent Self-Worth Scale	5	.89
Self-acceptance	Unconditional Self-Acceptance Scale	20	.86
Fear of negative evaluation	Brief Fear of Negative Evaluation Scale	12	.95
Fear of positive evaluation	Fear of Positive Evaluation Scale	10	.79
Sample 5: Body image ($N = 193$)			
Body appreciation	Body Appreciation Scale-2	10	.96
Body dissatisfaction	Body Shape Questionnaire	8	.93
Body image flexibility	Body Image Acceptance and Action Question.	12	.95
Body shame	Objectified Body Consciousness Scale	8	.87
Body surveillance	Objectified Body Consciousness Scale	8	.88
Sample 6: Motivation ($N = 191$)			
Grit	Short Grit Scale	8	.86
Maladaptive Perfectionism	Almost Perfect Scale	12	.93
Goal disengagement	Goal Disengagement/Reengagement Scale	4	.81
Goal reengagement	Goal Disengagement/Reengagement Scale	6	.92
Fear of failure	Success/Failure Questionnaire II	7	.84
Personal growth	Personal Growth Initiative Scale	9	.93
Self-efficacy	New General Self-Efficacy Scale	8	.95
Sample 7: Interpersonal functioning ($N = 199$)			
Compassion	Compassion Scale	24	.94
Forgiveness	Heartland Forgiveness Scale	6	.86
Altruism	Self-Report Altruism Scale	20	.87
Empathy	Interpersonal Reactivity Index	7	.86
Perspective taking	Interpersonal Reactivity Index	7	.88
Personal distress	Interpersonal Reactivity Index	7	.85

Table 2. Cronbach's alphas and Inter-correlations for a total SCS score, a positive and reduced negative score, and all six subscales for Study One (S1, $N = 1355$) and Study Two (S2, $N = 43$).

	TSC	POS	RNEG	SK	SJ	CH	IS	MI	OI
S1 α	.96	.94	.95	.91	.90	.86	.88	.87	.87
S2 α	.92	.83	.93	.74	.85	.77	.83	.61	.81
TSC	–	.80*	.91*	.78*	.82*	.43	.86*	.73*	.82*
POS	.91*	–	.47	.83*	.37	.77*	.50*	.82*	.44
RNEG	.93*	.70*	–	.57*	.94*	.09	.91*	.51*	.89*
SK	.88*	.93*	.70*	–	.50*	.37	.57*	.61*	.49*
SJ	.88*	.67*	.95*	.70*	–	.04	.81*	.37	.75*
CH	.77*	.88*	.55*	.70*	.51*	–	.14	.45	.09
IS	.85*	.63*	.92*	.62*	.80*	.51*	–	.51*	.71*
M	.85*	.92*	.65*	.80*	.60*	.72*	.60*	–	.52*
OI	.86*	.65*	.93*	.62*	.82*	.51*	.79*	.64*	–

Notes: TSC = Total Self-Compassion score; POS = Positive self-responding; RNEG = Reduced Negative self-responding; SK = Self-Kindness; SJ = Self-Judgment (reduced); CH = Common Humanity; IS = Isolation (reduced); MI = Mindfulness; OI = Over-Identification (reduced); Note that items in the negative subscales are reverse-coded.
Study One correlations are presented below the diagonal, and Study Two correlations are presented above the diagonal.
*$p < .001$.

inter-correlations were all large. Table 3 presents the correlations of SCS components with outcomes in seven samples, each focusing on a different domain of well-being. Note that scores for the negative subscales are reverse-coded, so that higher scores on these subscales represent reduced levels of these behaviors.

Sample 1 examined psychopathology. TSC had large negative correlations with most outcomes examined. All six SCS components also significantly predicted psychopathology. The correlation of POS with outcomes tended to be medium to large, and correlations with RNEG tended to be large. As expected, RNEG had a significantly stronger link than POS with all outcomes: depression, anxiety, stress, self-criticism, rumination, thought suppression, worry, and negative affect, replicating the findings of Muris and Petrocchi (2017).

Sample 2 examined positive psychological health, and found TSC had large correlations with all outcomes. All six SCS components significantly predicted positive psychological health. The correlation of POS and RNEG with outcomes both tended to be large. When comparing the size of correlations between POS and RNEG, they were equal predictors of hope, happiness, life satisfaction, gratitude, savoring, and positive affect. Only optimism evidenced a significant difference, with RNEG being a stronger predictor.

Sample 3, which examined emotional intelligence, found that TSC had a medium to large association with outcomes. All six SCS components tended to significantly predict emotional intelligence. The correlation of POS and RNEG with outcomes tended to be medium to large. There was no difference between POS and RNEG for four of the ten outcomes examined: affective, cognitive and reflective wisdom and emotional clarity. POS was a stronger predictor for emotional reappraisal and emotional awareness, while RNEG was a stronger predictor for emotional non-acceptance, difficulties in goal-directed behavior, impulse control and emotion regulation.

Sample 4, which examined self-concept, found that TSC had a medium to large correlation with outcomes. All six SCS components tended to significantly predict positive self-concept. The correlation of POS and RNEG with outcomes tended to be medium to large. RNEG was a stronger predictor than POS of global self-esteem, self-worth contingent on competition and appearance, unconditional self-acceptance and fear of negative evaluation. No

Table 3. Zero-order correlations between a total SCS score, a positive and negative SC score, the six subscale scores and various outcomes.

Outcome	TSC	POS	RNEG	SK	SJ	CH	IS	MI	OI
Sample 1 ($N = 192$): Psychopathology									
Depression	−.69*	−.56*	−.71*,[a]	−.52*	−.62*	−.49*	−.68*	−.51*	−.67*
Anxiety	−.47*	−.33*	−.54*,[a]	−.35*	−.48*	−.20*	−.46*	−.35*	−.55*
Stress	−.65*	−.48*	−.71*,[a]	−.49*	−.64*	−.35*	−.60*	−.47*	−.74*
Self-criticism	−.80*	−.65*	−.81*,[a]	−.63*	−.75*	−.51*	−.73*	−.63*	−.76*
Rumination	−.60*	−.38*	−.71*,[a]	−.40*	−.64*	−.28*	−.62*	−.36*	−.70*
Thought suppression	−.58*	−.42*	−.64*,[a]	−.41*	−.58*	−.30*	−.56*	−.44*	−.64*
Worry	−.74*	−.59*	−.76*,[a]	−.59*	−.66*	−.48*	−.69*	−.54*	−.77*
Negative affect	−.51*	−.37*	−.56*,[a]	−.36*	−.52*	−.28*	−.49*	−.38*	−.54*
Sample 2 ($N = 188$): Positive emotional well-being									
Hope	.68*	.66*	.60*	.62*	.57*	.57*	.57*	.64*	.58*
Optimism	.78*	.68*	.76*,[a]	.67*	.72*	.57*	.71*	.64*	.71*
Happiness	.73*	.64*	.72*	.62*	.68*	.54*	.68*	.61*	.67*
Life satisfaction	.59*	.53*	.57*	.53*	.55*	.47*	.57*	.45*	.49*
Gratitude	.55*	.52*	.51*	.48*	.48*	.45*	.51*	.50*	.47*
Savoring	.62*	.59*	.56*	.57*	.52*	.47*	.53*	.60*	.53*
Positive affect	.52*	.49*	.47*	.50*	.44*	.40*	.43*	.45*	.45*
Sample 3 ($N = 192$): Emotional intelligence									
Affective wisdom	.44*	.40*	.40*	.38*	.37*	.38*	.40*	.35*	.36*
Cognitive wisdom	.36*	.31*	.34*	.32*	.32*	.21	.32*	.31*	.33*
Reflective wisdom	.75*	.71*	.69*	.66*	.63*	.59*	.61*	.69*	.70*
Emo reappraisal	.60*	.61*,[a]	.51*	.54*	.47*	.54*	.42*	.60*	.54*
Emo non acceptance	−.64*	−.50*	−.68*,[a]	−.48*	−.65*	−.37*	−.60*	−.51*	−.65*
Diff. goal behav.	−.60*	−.48*	−.63*,[a]	−.42*	−.57*	−.41*	−.56*	−.49*	−.66*
Lack impulse control	−.58*	−.48*	−.59*,[a]	−.42*	−.52*	−.39*	−.47*	−.51*	−.67*
Lack emo awareness	−.46*	−.55*,[a]	−.32*	−.58*	−.32*	−.38*	−.27*	−.52*	−.29*
Lack emo regulation	−.79*	−.63*	−.82*,[a]	−.58*	−.76*	−.51*	−.75*	−.63*	−.81*
Lack emo clarity	−.55*	−.51*	−.50*	−.49*	−.44*	−.39*	−.45*	−.53*	−.51*
Sample 4 ($N = 200$): Self-concept									
Global self-esteem	.75*	.63*	.74*,[a]	.62*	.72*	.46*	.68*	.62*	.69*
CSW – competition	−.36*	−.26*	−.39*,[a]	−.29*	−.40*	−.19*	−.32*	−.23	−.36*
CSW – approval	−.50*	−.45*	−.43*	−.43*	−.44*	−.34*	−.42*	−.43*	−.45*
CSW – appearance	−.52*	−.41*	−.55*,[a]	−.37*	−.53*	−.34*	−.47*	−.39*	−.53*
Unconditional SA	.71*	.61*	.70*,[a]	.60*	.66*	.45*	.64*	.59*	.67*
Fear of neg. eval.	−.63*	−.53*	−.63*,[a]	−.50*	−.57*	−.41*	−.57*	−.52*	−.63*
Fear of pos. eval.	−.34*	−.31*	−.31*	−.35*	−.29*	−.17	−.30*	−.31*	−.29*

(*Continued*)

Table 3. (*Continued*).

Outcome	TSC	POS	RNEG	SK	SJ	CH	IS	MI	OI
Sample 5 ($N = 193$): Body image									
Body shame	−.52*	−.38*	−.56*,[a]	−.38*	−.53*	−.26*	−.54*	−.39*	−.49*
Body surveillance	−.42*	−.34*	−.41*	−.34*	−.41*	−.25*	−.35*	−.34*	−.40*
Body appreciation	.69*	.65*	.61*	.65*	.60*	.50*	.56*	.61*	.55*
Body dissatisfaction	−.46*	−.29*	−.53*,[a]	−.31*	−.51*	−.18	−.50*	−.31*	−.47*
BodyImage flexibility	.45*	.27*	.55*,[a]	.28*	.51*	.13	.52*	.31*	.51*
Sample 6 ($N = 191$): Motivation									
Grit	.60*	.52*	.59*	.47*	.56*	.45*	.50*	.51*	.60*
Pers growth initiative	.61*	.55*	.58*	.52*	.54*	.45*	.55*	.54*	.54*
Self-efficacy	.55*	.50*	.52*	.44*	.49*	.44*	.46*	.47*	.51*
Fear of failure	−.61*	−.50*	−.63*,[a]	−.44*	−.57*	−.42*	−.59*	−.52*	−.62*
Goal re-engagement	.25*	.32*,[a]	.15	.31*	.16	.28*	.13	.28*	.12
Goal Dis-engagement	−.33*	−.28*	−.33*	−.25*	−.31*	−.21	−.28*	−.29*	−.33*
Mal. perfectionism	−.70*	−.58*	−.71*,[a]	−.56*	−.69*	−.45*	−.60*	−.55*	−.70*
Sample 7 ($N = 199$): Interpersonal functioning									
Compassion	.29*	.34*,[a]	.19	.31*	.16	.28*	.22	.34*	.14
Forgiveness	.41*	.43*	.34*	.36*	.25*	.37*	.38*	.44*	.34*
Altruism	.27*	.27*	.23	.19	.18	.25*	.19	.30*	.25*
Empathy	.20	.26*,[a]	.10	.27*	.11	.18	.07	.25*	.10
Perspective taking	.43*	.49*,[a]	.32*	.39*	.25*	.46*	.29*	.46*	.34*
Personal distress	−.51*	−.41*	−.54*,[a]	−.36*	−.44*	−.31*	−.47*	−.45*	−.58*

Notes: TSC = Total Self-Compassion score; POS = Positive self-responding; RNEG = Reduced Negative self-responding; SK = Self-Kindness; SJ = Self-Judgment (reduced); CH = Common Humanity; IS = Isolation (reduced); MI = Mindfulness; OI = Over-Identification (reduced); Emo = Emotional; CSW = Conditional Self-Worth; SA = Self-Acceptance; Note that items in the negative subscales are reverse-coded.

[a]Size of correlations between positive and negative subscales are significantly different at $p < .001$ (not taking valence into account).

*$p < .001$.

differences were found for contingent self-worth based on approval or fear of positive evaluation.

Sample 5, which examined body image, found that TSC had medium to large correlations with outcomes. All six SCS components tended to significantly predict healthy body image. The correlation of POS and RNEG with outcomes tended to be medium to large. RNEG had a significantly stronger association than POS with body shame, body dissatisfaction, and body image flexibility, but no differences were found for body surveillance or body appreciation.

Sample 6, which examined motivation, found that TSC had a large correlation with most outcomes, but only small to medium correlations with goal disengagement and reengagement. All six SCS components tended to significantly predict motivation. The correlation of POS and RNEG with outcomes tended to be small to large. RNEG had a stronger link with fear of failure and maladaptive perfectionism, and POS had a stronger association with goal reengagement. No differences were found for grit, personal growth, self-efficacy, or goal disengagement.

Sample 7, which examined interpersonal functioning, found that TSC had small to medium associations with most of the outcomes examined. The significance of correlations in this domain were more varied. Self-kindness, common humanity, and mindfulness tended to significantly predict interpersonal functioning while self-judgment, isolation and over-identification were more inconsistent. The correlation of POS and RNEG with outcomes tended to be small to large. POS had a significantly stronger association with compassion for others, empathy and perspective-taking than RNEG, which had a significantly stronger link with personal distress. They were equally strong predictors of forgiveness and altruism.

Discussion

The inter-correlations between the various components of self-compassion found in Study One were generally large (Cohen, 1988), supporting the notion that the components of self-compassion interact as a system. While the size of the correlation between POS and RNEG was substantial ($r = .70$), it was not so large as to indicate they are measuring the exact same thing (only half of their variance was overlapping), or that individuals' tendency to be more compassionate and less uncompassionate is completely consistent across situations. In different contexts, individuals tend to respond in similar but not identical ways in terms of the degree to which they display positive or negative behavior toward the self. The SCS measures general response tendencies across situations, so this correlation should be expected to be high, but not extremely so. Note that Neff, Tóth-Király and Colosimo (in press) found a similarly strong correlation of POS and RNEG in two different Mechanical Turk samples ($N = 576$, $r = .68$; $N = 581$, $r = .74$), suggesting stability in this finding.

Results indicated that TSC significantly predicted well-being in all areas of functioning: psychopathology, positive psychological health, emotional intelligence, self-concept, body image, motivation, and interpersonal functioning. Of the 50 specific outcomes examined, the only one that self-compassion did not significantly predict was empathy. As discussed in Neff and Pommier (2013), many people low in self-compassion are still high in empathy for others, and the two do not necessarily go hand in hand. Moreover, when the six components were examined individually or combined to create a mean POS and RNEG score, both significantly predicted almost all outcomes, generally displaying medium to large

associations with well-being. For roughly half of the outcomes examined (24 out of 50), RNEG was a stronger predictor of well-being than POS, although POS was still a significant predictor and contributed substantially to the link between self-compassion and well-being. A similar percentage of correlations (20 out of 50) evidenced an equal contribution of POS and RNEG, whereas POS was a stronger predictor for a smaller number of outcomes (6 out of 50).

In general, RNEG tended to be more strongly associated with outcomes reflecting negative affect or self-evaluation such as depression, self-esteem, body shame, fear of failure, and personal distress. This finding does not necessarily mean that the reduced uncompassionate behavior measured by the SCS "inflates" the link between self-compassion and psychopathology, however, as claimed by Muris and Petrocchi (2017). Rather, we interpret these findings to mean that RNEG more powerfully "explains" the link between self-compassion and psychopathology. If the link between self-compassion and psychopathology was inflated, it would imply that this association was to some degree an artifact of measurement. However, this association is the same whether it is examined with the SCS or through experimental manipulations: studies designed to increase self-compassion through mood induction (i.e., using writing prompts) or through intervention also show that increased self-compassion is linked to reduced negative outcomes such as depression, anxiety, shame, stress, rumination, self-criticism, perfectionism, body shame, and fear of failure (Albertson, Neff, & Dill-Shackleford, 2015; Diedrich, Hofmann, Cuijpers, & Berking, 2016; Johnson & O'Brien, 2013; Leary et al., 2007; Mosewich, Crocker, Kowalski, & DeLongis, 2013; Neff & Germer, 2013; Odou & Brinker, 2015; Shapira & Mongrain, 2010; Smeets, Neff, Alberts, & Peters, 2014). This adds robustness to evidence regarding the link between self-compassion and psychopathology as measured by a total score on the SCS.

Given the negativity bias and the tendency for negative events to be more potent than positive events (Rozin & Royzman, 2001), it makes sense that reduced levels of negative self-responding would be more strongly associated with psychopathology and have a stronger influence on self-evaluation. Because self-compassionate individuals are less harshly self-critical, feel less isolated, and over-identify less with their negative thoughts and emotions, they are less likely to experience pathological states or feel badly about themselves. The fact that they are also kinder, experience more common humanity and are more mindful helps buttress this relationship, and POS had substantial correlations with most outcomes as well. Self-compassion represents the balance of increased positive and decreased negative responding to oneself in times of struggle, and both interact to reduce psychopathology and negative self-evaluations.

POS tended to have a stronger association with outcomes like emotional awareness, goal re-engagement, compassion for others and perspective-taking than RNEG. It may be that the positive emotions entailed by compassionate self-responding help to broaden one's perspective (Fredrickson, 2001), explaining why POS had a stronger link to these outcomes. For many aspects of psychological functioning, however, such as happiness, wisdom, contingent self-esteem based on approval, body appreciation, or grit, POS and RNEG appeared to make an equal contribution to well-being. In summary, findings suggest that both the presence of the compassionate and absence of uncompassionate behavior toward the self made an important contribution to psychological functioning, supporting the idea that they operate together as a holistic system.

Study two

Social Mentality Theory (SMT; Gilbert, 1989, 2005) posits that self-compassion is a state of mind that emerges from mammalian bio-social roles involving care-giving and care-seeking. This system is associated with the relaxation response and affiliation through the parasympathetic nervous system and physiological processes involving soothing. Self-criticism is thought to emerge from evolved social roles that protect us from social threats, and is linked to the threat defense system, activating the amygdala, sympathetic nervous system and related neurological processes. Gilbert and colleagues have suggested that items measuring positive and negative behavior toward the self *should not* be combined in a total SCS score (Gilbert et al., 2011), as they are associated with two different physiological systems. Porges (2001) makes it clear, however, that the two types of autonomic nervous system responding continuously interact and co-vary: sympathetic activation suppresses parasympathetic functioning, while parasympathetic activation dampens sympathetic responses. Few researchers have compared how scores on the positive vs. negative subscales of the SCS are linked to physiological responses (for an exception, see Parrish et al. in this special issue). Breines and colleagues (Breines et al., 2014, 2015) found that total scores on the SCS predicted lower levels of sympathetic (alpha-amylase) and inflammatory responding (interleukin-6) after a stressful situation, but did not examine SCS components. Therefore, we reanalyzed these data examining the components of self-compassion to address this question.

Method

We provide general information about the methods here, but for a more detailed description please see Breines et al. (2015, 2014).

Participants

A sample of forty-three healthy young adults were recruited from the Greater Boston area. Measurements of salivary alpha amylase (sAA) were available for 33 participants, and measurements of interleukin-6 (IL-6) were available for 41 participants.

Procedure

Following a telephone screening, participants visited the laboratory for three hours on two consecutive days. Self-compassion was assessed at the beginning of day 1, using the SCS. On both days, participants were exposed to the Trier Social Stress Test (TSST), a standardized laboratory stress paradigm involving public speaking and mental arithmetic (Kirschbaum, Pirke, & Hellhammer, 1993).

Saliva samples were taken at baseline and at 1, 10, 30, and 60 min following the TSST. Blood was collected at baseline and at 30 and 120 min following the TSST using a peripheral venous catheter. An enzyme kinetic method was used to measure sAA in saliva (Bosch et al., 2003; Rohleder & Nater, 2009). IL-6 was measured in plasma using a commercial high sensitivity ELISA (R&D Systems, Oxford, U.K.).

For a majority of participants, peak sAA levels occurred at 1 or 10 min post-TSST, and peak IL-6 occurred at 120 min post-TSST, consistent with prior research. Therefore, sAA responses

were operationalized as peak (1 or 10 min post-TSST) sAA minus baseline sAA on each day. IL-6 responses were operationalized as IL-6 at 120 min minus baseline IL-6 on each day. Log transformations were applied to both measures to correct violations of normality. One participant had sAA measurements for day 1 but not day 2. Six participants had IL-6 data for day 1 but not day 2, and two participants had IL-6 data for day 2 but not day 1.

Analyses

Analyses for examining the link between self-compassion and sympathetic nervous system responding followed the same general pattern as those used in Study One.

Results and discussion

Table 2 presents Cronbach's alphas and inter-correlations for TSC, POS, RNEG, and the six subscale scores for Study Two above the diagonal. As can be seen, inter-correlations were generally smaller for the second sample, although this may be due to the smaller sample size. Moreover, the reliability of items in the mindfulness subscale was lower in this smaller sample (α = .60), suggesting that results using this subscale should be interpreted with caution.

We next calculated zero-order correlations between self-compassion and its components with the markers of sympathetic nervous system and inflammatory activity, shown in Table 4. Results were highly similar for both SAA and IL-6 in terms of responses on the first day following the stress test. There was a significant moderate correlation of TSC, POS and RNEG with SAA and IL-6 of about the same magnitude (no significant differences were found between POS and RNEG). When examining correlations between specific subscales and sympathetic/inflammatory response, it was found that self-kindness, isolation, mindfulness and over-identification were significant predictors of both markers, while self-judgment and common humanity were not significantly linked to either. In terms of responses on the second day, findings were only significant for SAA. It was found that TSC, POS and RNEG all had moderate correlations with SAA. Although the correlation of RNEG with SAA did not reach significance, differences between POS and RNEG as predictors were not significant either. Moreover, when examining the six subscales separately, isolation was the only significant predictor. These results suggest that there is little difference between the positive and

Table 4. Zero-order correlations between a total SCS score, a positive and negative score, the six subscale scores and markers of sympathetic nervous system activity.

Outcome	TSC	POS	RNEG	SK	SJ	CH	IS	MI	OI
sAA									
Day 1 response	−.46**	−.42*	−.37*	−.53**	−.23	−.12	−.40*	−.35*	−.38*
Day 2 response	−.38*	−.35*	−.31	−.28	−.22	−.27	−.47**	−.30	−.15
IL6									
Day 1 response	−.40*	−.38*	−.33*	−.33*	−.22	−.07	−.32*	−.61**	−.37*
Day 2 response	.03	.16	−.07	.03	−.12	.24	−.01	.11	−.04

Notes: TSC = Total Self-Compassion score; POS = Positive self-responding; RNEG = Reduced Negative self-responding; SK = Self-Kindness; SJ = Self-Judgment (reduced); CH = Common Humanity; IS = Isolation (reduced); MI = Mindfulness; OI = Over-Identification (reduced).
Note that items in the negative subscales are reverse-coded:
*$p < .05$; **$p < .001$.

negative components of self-compassion in terms of their link to sympathetic nervous system or inflammatory activity.

The finding that reduced self-judgment was not a significant predictor of inflammatory and sympathetic response was surprising, given that Social Mentality Theory posits that self-criticism is rooted in the threat-defense system (Gilbert, 2005). Further research will need to be conducted with larger samples to determine if this finding is stable. Still, overall results suggest that compassionate and reduced uncompassionate self-responding do not have a different underlying physiology in terms of nervous system response – both predict sympathetic nervous system responding and associated inflammatory activity to roughly the same degree.

Having said this, there is also evidence that each of the six individual components of self-compassion have distinct neural correlates even if their association with sympathetic nervous system responding are similar. For instance, Longe et al. (2009) found that self-critical thinking (similar to self-judgment) and self-reassurance (similar to self-kindness) were associated with different regions of brain activity. Engen and Singer (2016) found that kindness and mindfulness also mapped on to different patterns of brain activity. This would suggest that the six components of self-compassion are not one unitary thing, nor are the positive and negative components two unitary things. Rather, self-compassion is comprised of six distinct but interrelated things that can be measured in terms of their system-level balance.

General discussion

The current studies examined the association between the components of self-compassion representing POS and RNEG with psychological and physiological functioning to shed light on whether self-compassion is best understood as a holistic construct. Results support this conclusion. First, both increased compassionate and reduced uncompassionate self-responding significantly predicted psychological functioning in all domains examined in Study One. Levels of negative self-behavior tended to have a stronger association with well-being for outcomes focusing on negative emotionality or self-evaluation, as expected. For many outcomes there was no difference, however, and for a few outcomes positive behavior was a stronger predictor. Moreover, Study Two found that POS and RNEG were equally strong predictors of sympathetic nervous system activity and associated inflammatory responses. These results suggest that increased compassionate and decreased uncompassionate responding are both necessary to our understanding of what self-compassion is and how it impacts functioning. Although different aspects of self-compassion may predict particular outcomes more powerfully than others, all play a key role in understanding how self-compassion engenders psychological well-being.

When considering those outcomes for which some components were found to be a stronger predictor than others, it may be tempting to conclude that these findings have important implications for intervention. Such a conclusion would be unwarranted, however. As an ever-growing body of research indicates, all six components change as a result of intervention at the same time. The vast majority of intervention studies examining change in self-compassion have documented a simultaneous increase in positive and decrease in negative SCS subscale scores of roughly the same magnitude. This is true for a wide variety of methodologies such as self-compassion meditation training (e.g., Albertson et al., 2015);

online psycho-education (e.g., Krieger, Martig, van den Brink, & Berger, 2016); Affect Training (Hildebrandt, McCall, & Singer, 2017); Compassion Focused Therapy (e.g., Kelly & Carter, 2015); and Mindful Self-Compassion (e.g., Neff, 2016a). These findings support the idea that the presence of positive and absence of negative self-behaviors are part and parcel of self-compassion, because when individuals learn to be more self-compassionate, both change simultaneously.

Moreover, in interventions specifically designed to teach self-compassion such as the Mindful Self-Compassion program (MSC; Germer & Neff, in press), compassionate and uncompassionate self-responding are targeted holistically rather than separately. For instance, if a participant is hard on themselves because their mind wandered during a meditation, the teacher does not instruct them to stop being uncompassionate to themselves, but rather the participant is helped to have compassion for the discomfort of the experience, thus reducing uncompassionate responding in the moment. This effect is echoed in experimental research showing that activation of the three positive components decrease emotional responses closely tied to the three negative components, such as anxiety, depression, shame, negative affect, and self-criticism (Diedrich et al., 2016; Johnson & O'Brien, 2013; Leary, Tate, Adams, Allen, & Hancock, 2007; Mosewich et al., 2013; Odou & Brinker, 2015; Przezdziecki & Sherman, 2016). Such findings highlight why we feel it is problematic to separate increased positive and decreased negative self-responding in measurement, as it creates an artificial split in what is experienced as a holistic state of being in real life.

No matter which components of self-compassion have the strongest association with particular outcomes, therefore, implications for intervention are the same. The way to increase compassionate self-responding is to teach self-compassion. The way to decrease uncompassionate self-responding is to teach self-compassion. One serious consequence of excluding the negative items from the SCS as some have suggested, therefore, is that it would seriously underrepresent the impact that self-compassion has in terms of reducing psychopathology. This body of intervention findings also highlight why there is so much excitement about the construct of self-compassion in the field of psychology. It is a skill that can be learned.

In summary, findings suggest that self-compassion is best understood as a holistic construct that represents the balance of increased compassionate and decreased uncompassionate self-responding in times of distress. To use an analogy from nature, findings support the idea that one can examine the particular tree species (i.e. the six components) that make up the "forest" of self-compassion or else the forest as a whole. For most researchers, use of a total SCS score will be the most straightforward way to understand the link between self-compassion and well-being, as it reflects most directly implications for intervention. For those more interested in unpacking the mechanisms of how self-compassion enhances well-being, however, it may be useful to examine the six constituent components themselves.

Limitations and future directions

One limitation of Study One was that Mechanical Turk workers were not blocked from participating in multiple studies, although given that analyses were conducted within samples this is unlikely to have impacted results in a substantive manner. Also, while this paper was focused on the SCS as a measure of self-compassion, it must be remembered that research

with self-report scales is always limited because findings are cross-sectional and cannot answer questions of causality. The fact that findings based on experimental methodologies tend to converge with those obtained with the SCS are promising, but the field would benefit from relying less on the SCS and more on behavior-based interventions to understand causal relationships between self-compassion and well-being. Moreover, the development of a valid measure of state self-compassion would be useful for determining exactly how the various components interact when experimentally inducing self-compassion, and how changes in the elements of state self-compassion impact well-being in the moment.

Disclosure statement

No potential conflict of interest was reported by the authors.

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