

**In: Journal of Health Psychology 2016.**

**Sara Dunne, David Sheffield, and Joseph Chilcot**

**Brief Report: Self-compassion, physical health and the mediating role of health-promoting behaviours**

**Abstract**

To test the hypothesis that self-compassion predicts better physical health and that this is partially mediated through health-promoting behaviours, 147 adults completed self-report measures of self-compassion, health-promoting behaviours and physical health. Self-compassion and health-promoting behaviours were negatively associated with physical symptom scores. Self-compassion was positively associated with health-promoting behaviours. A bootstrapped mediation model confirmed a significant direct effect of self-compassion on physical health through health-promoting behaviours ( $R^2 = 0.13$ ,  $b = -8.98$ ,  $p = 0.015$ ), which was partially mediated through health-promoting behaviours ( $R^2 = 0.06$ ,  $b = -3.16$ , 95% CI [-6.78, -.86]). Findings underscore the potential health-promoting benefits of self-compassion.

**Keywords**

Self-compassion, physical symptoms, health behaviours, mediator, correlation

**Introduction**

Self-compassion involves directing compassion towards oneself, particularly during difficult circumstances (Terry et al., 2013a). Preliminary research indicates that self-compassion predicts better physical health (Terry et al., 2013a; Hall et al., 2013; Brown et al 2015). However, the pathways through which this relationship is mediated have yet to be directly tested. The purpose of this study is to investigate the link between self-compassion and physical health in the general population and examine if health-promoting behaviours mediate this relationship.

Self-compassion is defined as a positive self-attitude comprising three interacting components: self-kindness versus self-judgement (SK-SJ), common-humanity versus isolation (CH-ISOL) and mindfulness versus over-identification (MIND-OI) (Neff, 2003a). SK-SJ involves treating oneself with kindness and understanding in times of suffering or personal failure, without harsh self-criticisms.. CH-ISOL entails seeing one's experiences connected to a shared human experience, rather than feeling detached. MIND-OI involves holding one's thoughts and emotions in awareness without suppressing, attaching or ruminating on them (Barnard and Curry, 2011; Neff, 2003b).

The positive association between self-compassion and psychological and social well-being has been well-documented (e.g. MacBeth and Gumley, 2012; Neff, 2012; Neff and Beretvas, 2013; Yarnell and Neff, 2013)., However, studies that have directly examined the relationship between self-compassion and self-reported physical health

have yielded conflicting findings. Raque-Bogdan et al. (2011) found a significant negative correlation between self-compassion and physical health in a student sample, albeit with small effect sizes. In contrast, Terry et al. (2013a) found that self-compassion was positively correlated with self-reported health status amongst community-dwelling adults. Self-compassion was positively correlated with self-reported physical health in midlife women (Brown et al., (2015). Similarly, Hall et al. (2013) found that high levels of self-kindness coupled with low levels of self-judgement, predicted fewer physical health symptoms, suggesting that self-compassion may be health-protective.

However, Hall et al. (2013) measured the emotional impact of physical symptoms, rather than their frequency and severity. As self-compassion has been linked to better emotional and behavioural adjustment in response to persistent pain (Wren et al., 2012), HIV (Brion et al., 2014) and spina bifida (Hayter and Dorstyn, 2014), self-compassionate individuals may report feeling less distressed by common symptoms of illness, which may have inflated the negative association between self-compassion and symptoms observed by Hall et al.'s (2013). Further research is required therefore, to examine the relationship between self-compassion and physical health, while minimising the influence of psychological distress on the reporting of physical symptoms.

Such an investigation is warranted, as self-compassion is likely to positively impact health through a behavioural pathway. Theoretically, self-compassion may facilitate engagement in health-promoting behaviours through adaptive health-related cognitions (Terry et al., 2013a), the self-regulation of health-promoting behaviours and goals (Terry and Leary, 2011) and through its positive association with personal responsibility (Leary et al., 2007) and proactivity (Akin, 2014). A proactive approach to healthcare involves maintaining or adopting behaviours that promote health and well-being, even in the absence of illness (Terry et al., 2013a).

Empirical findings support a positive association between self-compassion and health-behaviours. Self-compassion was positively correlated with intuitive-eating in a sample of 322 female students (Schoenefeld and Webb, 2013) and self-compassion has been linked to an intrinsic motivation to exercise as opposed to obligatory exercise behaviour (Magnus et al., 2010). Self-compassion interventions on the self-regulation of smoking were particularly beneficial for individuals with high self-criticism and low readiness to change (Kelly et al., 2010). A recent meta-analysis from 15 independent samples found that self-compassion was positively associated with a range of health-promoting behaviours (eating habits, sleep, exercise and stress management), (Sirois et al., 2015a). However, no study to date has empirically tested if self-compassionate individuals' proclivity to engage in health-behaviours relates to better physical health outcomes.

The aim of this study is to bridge this gap in research by examining the relationship between self-compassion and physical health symptoms in the general population. Symptoms will be measured using the Symptoms of Illness Checklist (SIC) (Stowell et al., 2009), which aims to reduce the impact of psychological factors on the reporting of physical symptoms. The study also aims to examine the direct relationship between self-compassion and health-promoting behaviours and thus test the replicability of Sirois et al.'s findings (2015a). Finally, the study aims to provide a unique contribution to self-compassion research by investigating if health-promoting behaviours mediate the relationship between self-compassion and physical symptoms. It is hypothesised that self-compassion will be positively correlated with health-promoting behaviours and negatively correlated with physical symptoms. It is also hypothesised that health-promoting behaviours will be negatively correlated with physical symptoms. Finally, it is hypothesised that health-promoting behaviours will partially mediate the relationship between self-compassion and physical symptoms.

## **Method**

### *Design*

A cross-sectional design was employed using meditation analyses. Initial attention focused on the prediction of physical symptoms (frequency x severity of physical symptoms experienced over the past two months) by total self-compassion scores and

health-promoting behaviour scores. To test if health-promoting behaviours mediated the relationship between self-compassion and physical symptoms, mediational analyses were conducted with physical symptoms as the outcome variable, total self-compassion scores as the predictor variable and health-promoting behaviours as the mediator variable.

### *Participants*

Participants were recruited using opportunistic sampling via email, social-networking websites and participant recruitments websites. Participants were recruited on the basis they were 18 years of age or older and able to provide informed consent. 147 participants completed the survey (male  $n = 28$ , female  $n = 119$ ; students  $n = 46$ , employed  $n = 95$  and unemployed  $n = 6$ ). Respondents ranged in age from 21 to 60 years ( $M = 32.28$  years,  $SD = 9.6$  years).

### *Materials and procedure*

Data was collected using the online survey tool, Qualtrics. Participants answered demographic questions before completing the measures below:

*Self-compassion.* The 26-item Self-Compassion Scale (SCS; Neff, 2003a) measures how people typically act towards themselves in difficult times. It comprises six sub-scales SK, SJ, CH, ISOL, MIND and OI. Participants rated each item on a 5-

pointscale from 1 (almost never) to 5 (almost always). Total self-compassion scores were computed by reverse-scoring negative subscale items and calculating a total mean, with higher scores indicating higher self-compassion. Internal reliability in the present study was high ( $\alpha = .94$ ) and so subscales were not used..

*Physical health symptoms.* The 33-item Symptoms of Illness Checklist (SIC; Stowell et al., 2009) asks participants to rate how often they experienced common symptoms of illness over the past two months on a 6-point scale, from 0 (Did not have the symptom) to 6 (50-60 days (daily) during the past 2 months). For symptoms present at least once in the past two months, a severity rating for that symptom was also obtained.

Participants rated the impact of the symptom on their daily activities on a 4-point scale, from 1 (Symptom present, but didn't interfere with daily activities) to 4 (Symptom severely interfered with daily activities). In line with Stowell et al.'s (2009) recommendations, only 31-items of the 33-items were scored. Items related to blood pressure and 'other symptoms' were not included. Total SIC scores were computed by multiplying frequency and severity scores for each symptom and summing individual symptom values. Higher scores indicated poorer health. Internal-consistency in the present study was high ( $\alpha = .87$ ).

*Health-promoting behaviours.* The 10-item Wellness Behaviours Inventory (WBI; Sirois, 2001) measure how often health-promoting behaviours (e.g. eating breakfast and getting adequate sleep) are performed on a weekly basis. Participants

rated their weekly performance of each behaviour over the past three months on a 5-point scale from 1 (less than once a week or never) to 5 (every day of the week). Mean WBI scores were calculated after reversing two scale items. Higher WBI scores indicated more frequent health-promoting behaviours. In the present study, internal-consistency for the scale was below adequate ( $\alpha = .64$ ). Removal of one of the reverse-scored items (“I drink two or more caffeinated beverages...”) increased  $\alpha$  to .71. However, as removal of this item did not significantly alter the overall results, the item was reported in the final analysis.

#### *Analytic strategy*

Correlation analyses were conducted to test the proposed associations between total self-compassion scores, health-promoting behaviours and physical symptoms. A bootstrapped mediation model then tested the conceptual model outlined in Figure 1 (INSERT FIGURE 1 HERE). All hypotheses were tested simultaneously using the “Process” macro for SPSS (Hayes, 2012), with 1,000 bootstrapping re-samples and bias-corrected 95% confidence intervals (CI’s) for each indirect effect. In bootstrapping analyses, bias-corrected CIs which do not contain 0 signify a significant mediational effect (Preacher and Hayes, 2004, 2008). Direct effects estimate how much two cases differing on the independent variable (self-compassion) also differ on the dependent variable (symptoms), independent of the effect of the mediator variable (health-behaviours) on the dependent variable. Total effects are the sum of the indirect and

direct effects of the independent variable (self-compassion) on the dependent variable (symptoms) (Hayes, 2012).

## Results

Mean scores and standard deviations (*SD*) for self-compassion, health-promoting behaviours and physical health were 2.97 (*SD* = .72, range = 1 – 5), 3.54 (*SD* = 3.54, range = 1-5) and 41.59 (*SD* = 32.88, range = 0-620) respectively. Total self-compassion scores were positively associated with health-promoting behaviours ( $R^2 = .26, p < 0.01$ ) and negatively associated with physical symptoms ( $R^2 = -.27, p < 0.01$ ). Health-promoting behaviours were also negatively associated with physical symptoms ( $R^2 = -.32, p < 0.01$ ).

### *Mediation model*

There was a significant indirect effect of self-compassion on physical symptoms through health-promoting behaviours,  $b = -3.16, p = 0.02$ , BCa CI [-6.78, -.86], which explained 6.6% of the variance in physical symptoms and accounted for 26% of the total effect. This represents a small/medium effect,  $\kappa^2 = 0.07$ , 95% BCa CI [0.018, 0.14] based on Preacher and Kelley's guidelines (2011). The direct effect of self-compassion on physical symptoms, controlling for health-promoting behaviours, was significant,  $b = -8.98, t = -2.46, p = 0.02$ , with 13.7% of the variance in physical symptoms explained by health-promoting behaviours and self-compassion combined. The total effect of self-

compassion on physical symptoms, including health-promoting behaviours, was also significant  $b = -12.14$ ,  $t = -3.33$ ,  $p = 0.02$ , indicating that health-promoting behaviours partially mediated the relationship between self-compassion and physical symptoms. 7.1% of the variance in physical symptoms was explained by self-compassion, controlling for health-promoting behaviours. The full model of self-compassion as a predictor of physical symptoms, mediated through health-promoting behaviours is outlined in Figure 1. **Discussion**

The purpose of this study was to investigate if self-compassion predicts better physical health and test if health-promoting behaviours mediate this relationship. All hypotheses were confirmed. Higher self-compassion was associated with more frequent health-promoting behaviours and lower physical symptom scores. Greater engagement in health-promoting behaviours was also associated with lower physical symptom scores. Results of the mediation analyses indicated that health-promoting behaviours partially mediated the relationship between self-compassion and physical symptoms.

The results suggest that self-compassionate people are more likely to engage in health-promoting behaviours, such as exercising, eating healthily, sleeping well and relaxing. Results replicate the findings of Sirois et al. (2015a) and other studies which found self-compassion to be associated with healthier behaviours in general population samples (e.g. Kelly et al., 2010; Schoenefeld and Webb, 2013).

Health-promoting behaviours were also associated with fewer and less severe physical symptoms. These findings contribute to a relatively small body of research (e.g. Eriksen et al., 2015; Khaw et al., 2008), which indicates that global engagement in health-promoting behaviours has a positive effect on physical health.

Mediation analysis results indicate that self-compassion has a significant indirect effect on physical health through health-promoting behaviours. However, the total effect results suggest that health-promoting behaviours only partially mediate this relationship, consistent with the hypothesis. Further research is required to examine other mechanisms through which self-compassion may enhance physical health, such as through improving psychological functioning (Terry et al., 2013b), building healthier social relationships (Neff and Beretvas, 2013), attenuating stress-responses (Breines et al., 2014) and facilitating adaptive-coping to the onset of physical illness (Sirois et al., 2015b).

The finding that self-compassionate people report better physical health, supports the findings of Hall et al. (2013), who also found that higher self-compassion was associated with fewer self-reported physical symptoms. The results conflict with the results of Raque-Bogdan et al. (2011), who found self-compassion to be negatively associated with self-reported physical health. This discrepancy may be due to the fact that the two studies measured different dimensions of physical health. The present study assessed the frequency and severity of symptoms of illness, whereas Raque-Bogdan et

al. (2011) measured physical health using the Medical Outcomes Short Form Health Survey (SF-12v2; Ware et al., 1996), which predominantly assesses physical functioning. However, a recent study of 517 midlife women (Brown et al., 2015) reported that self compassion was positively related to scores on SF12.

Considerations also must be made for the fact that variables were only measured using self-report methods, which depend on participants' perceptions and thus may be susceptible to reporting bias. This is particularly relevant, as self-compassion was found to be negatively associated with hypochondriasis and health anxiety (Terry et al., 2013a). Therefore, self-compassionate people may underestimate and thus under-report the frequency and severity of their physical symptoms, potentially inflating the correlations observed here. Future studies should consider including objective measures of health such as medical reports, longevity and physiological markers of health and illness, when investigating the link between self-compassion and health.

Furthermore, the directionality of the relationship between self-compassion and physical health cannot be inferred based on the study's cross-sectional design. Indeed, the onset of physical ill-health may trigger a decrease in self-compassion which would potentially explain the negative association between self-compassion and physical symptoms. For example, research suggests that people may respond to ill-health with feelings of isolation (Casati et al., 2000). Prospective studies are required to inform the temporal nature of the relationship between self-compassion and physical health by

investigating the impact of self-compassion on health at different time-points and in response to changing life-circumstances. This is important, as health is best understood from a lifespan perspective (Smith and Spiro, 2002).

In addition to the future research recommendations above, it is also important to test if the current findings can be generalised to other populations. This may involve replicating the study in a clinical population to examine if self-compassion predicts slower disease progression and better treatment responses and testing if this is mediated through psychoneuroimmunological or health-responsive behavioural pathways (e.g. seeking treatment, treatment adherence). This model is plausible, as in a hypothetical illness situation, self-compassionate people stated they would wait less time before seeking medical interventions than those with lower self-compassion (Terry et al., 2013a). Furthermore, self-compassion was positively associated with efforts to adhere to medical recommendations amongst people experiencing physical illness.

To conclude, this study highlights how self-compassion may lead to better physical health through a health-behavioural pathway. However, prospective testing is required to examine the directionality of the relationship between self-compassion and physical health. The results highlight the need for further empirical testing of interventions designed to increase self-compassion. Such interventions may be a cost-effective and sustainable solution to increase individuals' engagement in health-promoting behaviours and improve their physical health. Self-compassion appears to be

a healthy and positive self-attitude related to, and with potential to enhance a range of health dimensions.

### **Declaration of Conflicting Interests**

The Authors declare that there is no conflict of interest.

### **References**

- Akin U (2014) Self-compassion as a predictor of proactivity. *International Online Journal of Educational Sciences* 6(1): 103-111.
- Barnard LK and Curry JF (2011) Self-compassion: Conceptualizations, correlates and interventions. *Review of General Psychology* 15(4): 289-303.
- Brion JM, Leary MR and Drabkin AS (2014) Self-compassion and reactions to serious illness: The case of HIV. *Journal of Health Psychology* 19(2): 218-229.
- Brown L, Bryant C, Brown V, Bei B and Judd F (2015) Self-compassion, attitudes to ageing and indicators of health and well-being among midlife women. *Aging and Mental Health*: 1-9.
- Casati J, Toner BB, De Rooy EC, Drossman DA and Maunder RG (2000) Concerns of patients with inflammatory bowel disease: a review of emerging themes. *Digestive Diseases and Sciences* 45(1), 26-31.

Cohen S and Hoberman H (1983) Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology* 13: 99-125.

Eriksen A, Tillin T and O'Connor L et al. (2015) The impact of health behaviours on incident cardiovascular disease in Europeans and South Asians – A prospective analysis in the UK SABRE Study. *PLoS ONE* 10(3): 1-15.

Galante J, Galante I, Bekkers M-J and Gallache J (2014) Effect of kindness-based meditation on health and well-being: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology* 82(6): 1101-1114.

Hall CW, Row KA, Wuensch KL and Godley KR (2013) The role of self-compassion in physical and psychological well-being. *The Journal of Psychology* 147(4): 311-323.

Hayes AF (2012) PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modelling. Available at: <http://imaging.mrc-cbu.cam.ac.uk/statswiki/FAQ/SobelTest?action=AttachFile&do=get&target=process.pdf> (accessed 10 April 2015).

Hayter MR and Dorstyn DS (2014) Resilience, self-esteem and self-compassion in adults with spina bifida. *Spinal cord* 52(2): 167-71.

Kelly AC, Zuroff DC, Foa CL and Gilbert P (2010) Who benefits from training in self-compassionate self-regulation? A study of smoking reduction. *Journal of Social and Clinical Psychology* 29: 727-755.

Khaw KT, Wareham N, Bingham S, Welch A, Luben R and Day N (2008) Correction: Combined impact of health behaviours and mortality in men and women: The EPIC-Norfolk prospective population study. *PLoS Med* 5(3): e70.

Leary MR, Tate EB, Adams CE, Allen A and 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(5): 887-904.

MacBeth A and Gumley A (2012) Exploring compassion: a meta-analysis of the association between self-compassion and psychopathology. *Clinical Psychology Review* 32(6): 545-552.

Magnus CMR, Kowalski KC and McHugh TLF (2010) The role of self-compassion in women's self-determined motives to exercise and exercise-related outcomes. *Self and Identity* 9: 363-382.

Neff KD (2003a) The development and validation of a scale to measure self-compassion. *Self and Identity* 2: 223-250.

- Neff KD (2003b) Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity* 2: 85–102.
- Neff KD (2012) The science of self-compassion. In: Germer C and Siegel R (eds) *Compassion and Wisdom in Psychotherapy*. New York: Guilford Press, pp. 79-92.
- Neff KD and Beretvas SN (2013) The role of self-compassion in romantic relationships. *Self and Identity* 12(1): 78-98.
- Neff KD and Germer CK (2013) A pilot study and randomized controlled trial of the mindful self-compassion program. *Journal of Clinical Psychology* 69: 28–44.
- Neff KD, Rude S and Kirkpatrick K (2007) An examination of self-compassion in relation to positive psychological functioning and personality traits. *Journal of Research in Personality* 41: 908–916.
- Preacher KJ and Hayes AF (2004) SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers* 36: 717-731.
- Preacher KJ and Hayes AF (2008) Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods* 40: 879–891.

Preacher KJ and Kelley K (2011) Effect size measures for mediation models:

Quantitative strategies for communicating indirect effects. *Psychological Methods* 16(2): 93-115.

Raque-Bogdan TL, Ericson SK, Jackson J, Martin HM and Bryan NA (2011)

Attachment and mental and physical health: Self-compassion and mattering as mediators. *Journal of Counseling Psychology* 58: 272-278.

Schoenefeld SJ and Webb JB (2013) Self-compassion and intuitive eating in college

women: Examining the contributions of distress tolerance and body image acceptance and action. *Eating behaviours* 14(4): 493-496.

Sirois FM (2001) *The Wellness Behaviors Inventory* (Unpublished manuscript).

Carleton University, Ottawa, Canada.

Sirois FM (2007) “I’ll look after my health, later”: A replication and extension of the

procrastination–health model with community-dwelling adults. *Personality and Individual Differences* 43: 15–26.

Sirois FM, Melia-Gordon ML and Pychyl TA (2003) “I’ll look after my health, later”:

An investigation of procrastination and health. *Personality and Individual Differences* 35(5): 1167–1184.

- Sirois FM, Kitner R and Hirsch JK (2015a) Self-compassion, affect, and health-promoting behaviors. *Health Psychology* 34(6): 661-669.
- Sirois FM, Molnar DS and Hirsch JK (2015b) Self-Compassion, stress, and coping in the context of chronic illness. *Self and Identity* 14(3): 334-347.
- Smith TW and Spiro A (2002) Personality, health, and aging: Prolegomenon for the next generation. *Journal of Research in Personality* 36: 363–394.
- Stowell JR, Hedges DW, Ghambaryan A, Key C and Bloch GJ (2009) Validation of the symptoms of illness checklist (SIC) as a tool for health psychology research. *Journal of Health Psychology* 14(1): 68–77.
- Terry ML and Leary MR (2011) Self-compassion, self-regulation, and health. *Self and Identity* 10(3): 352–362.
- Terry ML, Leary MR, Mehta S and Henderson K (2013a) Self-compassionate reactions to health threats. *Personality and Social Psychology Bulletin* 39: 911–926.
- Terry ML, Leary MR and Mehta S (2013b) Self-compassion as a buffer against homesickness, depression, and regret in the transition to college. *Self and Identity* 12: 278-290.
- Ware JE, Kosinski M and Keller SD (1996) A 12-item short-form health survey. *Medical Care* 34: 220–233.

Wren AA, Somers TJ, Wright MA, Goetz MC, Leary MR, Fras AM, Huh BK and Rogers LL (2012) Self-Compassion in patients with persistent musculoskeletal pain: Relationship of self-compassion to adjustment to persistent pain. *Journal of Pain and Symptom Management* 43(4), 759-770.

Yarnell LM and Neff KD (2013) Self-compassion, interpersonal conflict resolutions, and well-being. *Self and Identity* 2(2):146-159.