



MASTER THESIS

PROMOTING SELF-COMPASSION: A SELF-HELP
COMPASSION TRAINING AND ITS EFFECTS ON STRESS

A RANDOMIZED CONTROLLED TRIAL ON THE EFFECTIVENESS OF A
COMPASSION BASED INTERVENTION AND A MEDIATION ANALYSIS OF
SELF-COMPASSION

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Table of Contents

ABSTRACT	2
SAMENVATTING	3
1. INTRODUCTION	4
1.1 STRESS	4
1.2 SELF-COMPASSION	5
1.3 STRESS AND SELF-COMPASSION	7
1.4 RESEARCH QUESTIONS	8
2. METHOD	9
2.1 PARTICIPANTS	9
2.2 PROCEDURE	10
2.3 MEASURES	11
2.4 INTERVENTION	12
2.5 DATA ANALYSIS	12
3. RESULTS	14
3.1 RELATIONSHIP BETWEEN TREATMENT CONDITION, STRESS AND SELF-COMPASSION	14
3.2 EFFECT OF THE INTERVENTION ON PERCEIVED STRESS	16
3.3 EFFECT OF THE INTERVENTION ON SELF-COMPASSION	16
3.4 MEDIATION EFFECT OF SELF-COMPASSION	17
4. DISCUSSION	19
4.1 EFFECT OF THE INTERVENTION ON PERCEIVED STRESS AND SELF-COMPASSION	19
4.2 THE MEDIATION EFFECT OF SELF-COMPASSION	21
4.3 STRENGTHS AND LIMITATIONS OF THE PRESENT STUDY	22
4.4 PRACTICAL IMPLICATIONS	23
4.5 CONCLUSION	24
REFERENCES	25

Abstract

This study explores the effect of the self-help compassion training *Compassie als sleutel tot geluk* on perceived stress and self-compassion and analyses whether self-compassion is a mechanism of change that causes the effect that the intervention has on perceived stress. The hypotheses are (1) that the self-help compassion training is effective in lowering perceived stress and (2) that it is also effective in increasing self-compassion. Furthermore, it is hypothesized that (3) self-compassion mediates the relationship between the training and perceived stress. The numerous advantages of higher self-compassion on mental health have been studied in the last two decades. However, there are few studies that analyze the effectiveness of compassion-based interventions on perceived stress and self-compassion and whether self-compassion is a mechanism of change in those interventions. The present study is the first study that analyses these questions in a self-help compassion training. The data of an RCT of 212 participants in the experimental group (self-help compassion training) or control group (wait-list) conducted by the University of Twente were analyzed. Relevant diagnostic instruments are the Self-Compassion Scale - Short Form (SCS-SF), and the Perceived Stress Scale (PSS). The results support all three hypotheses. It was found that the training significantly increased self-compassion and decreased stress compared to the control group, with self-compassion partially mediating the effect the intervention has on stress. The findings indicate the possible benefits of self-compassion and the self-help compassion training for the treatment of stress in the clinical practice in treating patients with high perceived stress. On top of that, the findings are encouraging future research on the effectiveness of self-help compassion trainings in the long-term as well as future research on how self-compassion can be increased the most.

Samenvatting

Deze studie onderzoekt het effect van de zelfhulp compassie training *Compassie als sleutel tot geluk* op waargenomen stress en zelfcompassie en of zelfcompassie een werkingsmechanisme is waardoor waargenomen stress wordt beïnvloed. De hypothesen zijn (1) dat de zelfhulp compassie training effectief is in het verminderen van waargenomen stress en (2) dat het ook effectief is in het verhogen van zelfcompassie. Verder werd de hypothese geformuleerd dat (3) zelfcompassie de relatie tussen de training en waargenomen stress medieert. De talrijke voordelen van hoger zelf-compassie op de mentale gezondheid werden in de afgelopen twintig jaren bestudeerd. Er is echter weinig onderzoek gedaan naar de effectiviteit van compassie-gebaseerde interventies op waargenomen stress en zelf-compassie en of zelf-compassie het effect van deze interventie medieert. De huidige studie is de eerste studie die deze vragen gaat analyseren in een zelfhulp compassie training. De data van een RCT met 212 deelnemers verdeelt over of de experimentele groep (zelfhulp compassie training) of de controlegroep (wachtlust) uitgevoerd bij de Universiteit Twente werd geanalyseerd. Relevante diagnostische instrumenten zijn de Self-Compassion Scale (SCS-SF), en de Perceived Stress Scale (PSS). De resultaten bevestigen alle drie hypothesen. De training verminderde waargenomen stress en bevorderde zelfcompassie vergeleken met de controlegroep. Verder laten de resultaten zien dat zelfcompassie het effect van de interventie op stress gedeeltelijk medieert. Deze bevindingen laten de mogelijke voordelen zien die zelfcompassie en de zelfhulp compassie training hebben voor de klinische praktijk in de behandeling van mensen met een hoge mate aan waargenomen stress. Bovendien moedigen de resultaten verder onderzoek naar de effectiviteit van de zelfhulp compassie training op de lange termijn aan alsook vervolgonderzoek naar hoe zelfcompassie het meeste kan worden bevorderd.

1. Introduction

The present study examines the relationship between self-compassion and stress. The goal of the study is to clarify the link between self-compassion and perceived stress in the self-help compassion training called *Compassie als sleutel tot geluk: voorbij stress en zelfkritiek* (Compassion as the key to happiness: beyond stress and self-criticism) by Hulsbergen and Bohlmeijer (2015). Self-compassion is an important concept in Buddhist philosophy (Rosenberg, 2000) that has recently entered into Western psychology. Self-compassion can be defined as the ability to be aware of one's pain and the ambition to alleviate this negative feeling. In the past, this concept has been studied extensively in relation to wellbeing (Barnard & Curry, 2011). However, the present study seeks to add to scientific knowledge by examining the effect that a self-help compassion training has on self-compassion and stress. In addition, the present study seeks to examine a new topic by exploring whether a change in self-compassion can affect levels of perceived stress. More extensive insight into the mechanisms of the compassion training can provide information about effective and affordable ways to implement self-compassion and treat stress in contemporary clinical practice. Furthermore, a more detailed understanding of the role of self-compassion in alleviating negative emotional states, in this case stress, can be of great value in the treatment of depression, burnout and anxiety and other emotional disorders. This knowledge can also be beneficial to people suffering from stress, since the intervention used in this study includes easy exercises that are not time consuming and which make the treatment of stress manageable in daily life.

1.1 Stress

Stress is conceptualized by Lazarus (1966) as occurring “when there are demands on a person which tax or exceed his adjustive resources” (as cited in Siddique & D’Arcy, 1984). This definition of stress emphasizes the importance of a person's role in evaluating a stressful situation. It has been widely acknowledged that several consequences are associated with stress. First, chronic stress has been described as a trigger for mental illnesses (Siddique & D’Arcy, 1984). Chronic stress reduces the vitality and resilience of people. They are no longer able to find joy in their daily live (Hulsbergen & Bohlmeijer, 2015). Furthermore, stress that is not managed correctly can lead to family conflict, insomnia, drug abuse (Quick, Horn, & Quick, 1987), and loneliness (Lushington & Luscri, 2001). Various studies have demonstrated that stressful life events are part of the etiology of common mental illnesses such as depression, anxiety, and burnout (Kessler, 1997; Spinhoven et al., 2011; Tennant, 2002).

Secondly, stress also places a significant financial burden on society because many people suffering from stress are not able to participate in the working world. In 2005 the Netherlands spent €4 billion to pay for lost working days, disability benefits, and medical costs that were stress related (Blatter, Houtman, van den Bosche, Kraan, & van den Heuvel, 2005).

Of all of the possible factors that contribute to stress, work related stress seems to be the most documented. The European Agency for Safety and Health at Work conducted an opinion poll in Europe, and also especially in the Netherlands, in which 51% of European workers and up to 60% of Dutch workers claimed that they commonly encountered stress in their work (EU-OSHA, 2013a, 2003b). Unfortunately, no numerical data is available regarding stress experienced in other aspects of life.

It is obvious that stress has several negative consequences and that it affects many people. For these reasons, research into what factors can alleviate stress is important. Adding to scientific knowledge about how stress can be eliminated can have positive a positive impact on clinical practice, employers, health insurance costs, and people suffering from stress. It has been hypothesized that self-compassion may be a mechanism through which perceived stress can be changed. The present study seeks to expand on the reach of this thus far theoretical formulation and analyze the effectiveness of the newly developed self-help compassion training called *Compassie als sleutel tot geluk* in the context of stress.

1.2 Self-compassion

According to Neff (2003a), self-compassion consists of the three components: self-kindness, common humanity, and mindfulness. Self-kindness is having a nonjudgmental understanding of one's own pain and the desire to ease one's pain rather than be overly critical of oneself. Common humanity refers to the perception that one is part of a larger human experience, and thus, that one is not alone in one's suffering. This concept recognizes that other people experience similar difficulties. Mindfulness involves having an awareness of one's pain and not disconnecting from it while also balancing this awareness so that one does not over-identify with it. These three components of self-compassion are all distinct, but they also interact with and enhance one another (Neff, 2003a).

Neff (2003a) suggests that being self-compassionate is not the same as being self-centered. She emphasizes that self-compassion also enhances compassion toward others because it reminds people that failure and suffering are part of the human condition. In addition to enhancing compassion toward others, studies have demonstrated that self-compassion has other advantages. Various studies have indicated that self-compassion is

related to positive mental health outcomes such as reduced depression and anxiety (Barnard & Curry, 2011; MacBeth & Gumley, 2012; Neff, 2003a) and that it increases wellbeing (MacBeth & Gumley, 2012; Neff, Rude, & Kirkpatrick, 2007b; Neff, 2011). During or after a stressful encounter, people with high levels of self-compassion address the encounter thoughtfully and maintain a more positive outlook. On the other hand, people with low levels of self-compassion are preoccupied with the negativity of the situation and cannot regulate their emotions (Brown & Ryan, 2003). In addition, people with high levels of self-compassion are less likely to catastrophize, to ruminate on the negative aspects of a situation, and to avoid tasks due to a fear of failure. They take a more proactive approach to life and experience less anxiety following stressful events (Allen & Leary, 2010; Krieger, Altemstein, Baettig, Doerig, & Grosse Holtforth, 2013; Neff, Kirkpatrick, & Rude, 2007a; Raes, 2010).

Numerous studies have noted that self-compassion can be learned through the cultivation of skills and practices such as mindfulness meditation (Baer, 2010; Gilbert & Procter, 2006; Lykins & Baer, 2009; Neff, 2003b). Evidence suggests that interventions like mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT) increase self-compassion (Birnie, Speca, & Carlson, 2010; Kuyken et al., 2010; Lee & Bang, 2010; Rimes & Wingrove, 2011; Shapiro, Astin, Bishop, & Cordova, 2005; Shapiro, Brown, & Biegel, 2007). Some researchers also state that self-compassion may be an important factor through which these mindfulness-based interventions are able to increase the wellbeing of their participants (Baer, 2010). Neff and Germer (2013) propose that an intervention specifically targeted at improving self-compassion would be valuable in expanding the benefits of interventions like MBSR and MBCT, which have been revealed to increase self-compassion and positive affect and decrease perceived stress, negative affect, and state and trait anxiety (Shapiro et al., 2007).

Self-compassion is a highly promising new concept that has been connected to numerous positive effects. It is valuable to conduct further research on how self-compassion may act as a mechanism of change in the self-help compassion training *Compassie als sleutel tot geluk* which is designed to decrease stress and self-criticism. In conducting such research, further insight can be gained into whether and how self-help compassion training can be effective in increasing self-compassion and whether the self-help compassion training can succeed in decreasing people's levels of perceived stress.

1.3 Stress and self-compassion

The idea that self-compassion may be a mechanism for reducing stress is based on several different theories. Gilbert (2005) suggests that the three components of self-compassion defined by Neff (2003a) act as a buffer against the body's natural stress reactions. Usually, when faced with a physically or psychologically stressful situation, the body reacts by activating the threat- and self-protection system, which launches processes activating the body to respond to the threat. When a physical threat is encountered, the body can respond in one of three ways: fighting, flying, or freezing (Gilbert, 2001). When faced with a psychological threat, such as a fear of not being able to complete a task, Gilbert (2005) states that the brain transforms physical reactions into psychological ones: self-judgment (fight), self-isolation (flight) and over-identification (freeze). These responses occur because the human brain has evolved functions that notice threats rapidly and transforms them into bursts of feelings, such as anxiety, fear or anger (Gilbert, 2009). Taking this psychological reaction into account, Gilbert (2014) developed compassion-focused therapy (CFT) which is based on the idea that the affect regulation system is poorly developed and unbalanced in some people, leading them to overreact to stressors. Gilbert (2014) proposes that self-compassion reinforces the system that contributes to soothing, when confronted with negative feelings and experiences. The soothing system enables people to permit themselves to experience emotions, and to be kind and accepting of themselves when faced with stressful situations. Compassion-focused therapy trains the mind to facilitate soothing and a sense of safety by developing people's sense of compassion and self-compassion (Gilbert, 2009). The three components of self-compassion can act as a countermeasure against psychological stress reactions. Gilbert (2005) and Neff (2003a, 2003b) argue that self-kindness prevents self-judgment, knowledge of common humanity helps when individuals feel isolated when in pain, and mindfulness counteracts over-identification with a negative emotional state. Another theory of Allen and Leary (2010) that relates to the previous hypotheses is that self-compassion helps people to keep their emotions balanced. The researchers suggest that self-compassion can be used as a coping strategy that improves positive psychological functioning by giving people the tools needed to manage stress effectively (Allen & Leary, 2010). These theories suggest that self-compassion may be a mechanism that helps people to combat perceived stress.

Related to all of these theories, high levels of self-compassion have been found to be associated with lower levels of perceived stress (Krieger, Hermann, Zimmermann, & Grosse

Holtforth, 2015). Studies suggest that self-compassion acts as a buffer against the effects of stress on negative affect and anxiety after a stressful experience (Krieger et al., 2015; Neff, Rude, & Kirkpatrick, 2007b). Two studies analyzing the effectiveness of mindfulness-based stress reduction (MBSR) found that the experimental groups, who were assigned to an 8-week MBSR intervention, had a significant increase in self-compassion and a greater reduction in perceived stress compared to a waitlist control group (Shapiro et al., 2005; Shapiro et al., 2007), and that self-compassion mediated the reduction in stress (Shapiro et al., 2005). According to Shapiro et al. (2005), these results provide reason to conduct future research on self-compassion as a mediating mechanism.

These results indicate that self-compassion may indeed be a mechanism through which mindfulness interventions can lead to a reduction in perceived stress. However, because full mediation analyses were not conducted, firm conclusions cannot be drawn about mediation. Much research indicates that a person's level of self-compassion may influence their perceived level of stress. Based on these findings, the present study explores whether self-compassion is a mediating factor in the self-help compassion training *Compassie als sleutel tot geluk* based on CFT, which presumably leads to a reduction in perceived stress.

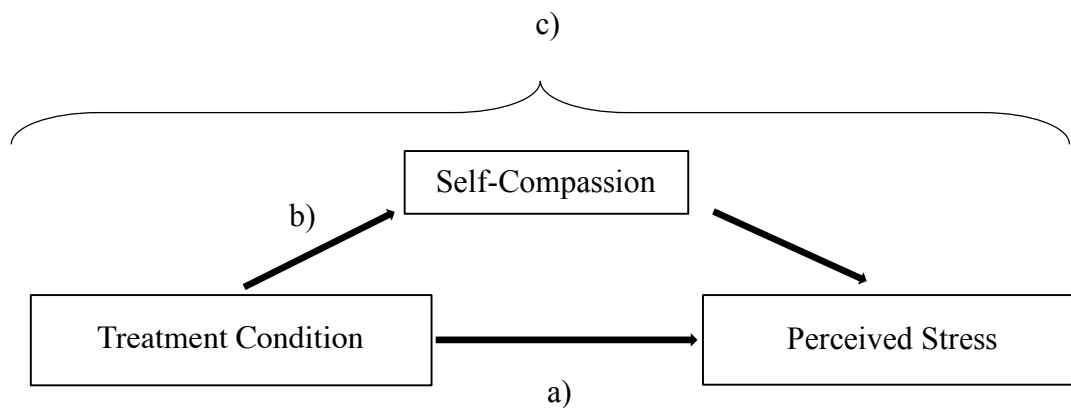


Figure 1. Relationship between Treatment Conditions, Self-Compensation, and Perceived Stress.

1.4 Research questions

“What is the influence of the self-help compassion training ‘Compassie als sleutel tot geluk’ on stress, and which role does self-compassion play in this relationship?”

To clarify the effectiveness of the self-help compassion training on perceived stress and whether self-compassion has a mediating role in this relationship, the present study analyzes different ways that the concepts may relate to one another (see Figure 1).

- 1) *“What will the effect of the intervention be on perceived stress in the experimental group compared to the control group?”*

Hypothesis 1: *“After the intervention, the level of perceived stress of the experimental group will be lower than that of the control group.”*

- 2) *“What will the effect of the intervention be on self-compassion in the experimental group compared to the control group?”*

Hypothesis 2: *“After the intervention, the level of self-compassion of the experimental group will be higher than that of the control group.”*

- 3) *“How does self-compassion influence the effect of the intervention on perceived stress?”*

Hypothesis 3: *“Self-compassion mediates the relationship between the intervention and perceived stress.”*

2. Method

The current study is analyzing data of a RCT of the compassion training *Compassie als sleutel tot geluk*. This section will only refer to information and outcomes relevant to the current study.

2.1 Participants

In total, a number of 243 participants took part in the present study that was ethically approved by the Ethical Commission of the University of Twente. After checking for missing data 30 participants without T1 measures were removed from the dataset. One outlier was removed from the dataset based on Mahalanobis, Cook's and Leverage values, which eventually leaves 212 participants in the present study. 74,5% of these participants were female. The participants age ranged from 20 to 73 ($M = 53,16$ years; $SD = 9,95$). The level of education was high ($M = 7,23$; $SD 1,03$) with “1” being no finished education and “8” being university education. 57,1% of the participants were in wage labor, 14,6% were self-employed and 3,8% were volunteering without payment. 6.6% of the sample was unemployed, 4.7% not able to work, 5,7% retired, 1,9% were housewives, 1,4% were students and 4,2% were doing other work. The majority of the participants lived together with a partner (66,5%), with the biggest group of these people having no children (40,1%). 25,9% were living alone, 6.6% alone with children and 0.9% lived together with other people.

Inclusion criteria were that participants had to be 18 years of age or older. Furthermore, they had to score low or average on well-being during the online screening

measured by the Mental Health Continuum-Short Form (MHC-SF; Keyes, 2002). Due to the participants having to take the self-help training online, they also had to own a computer or tablet and have good internet access and an e-mail address. To be able to fill in the questionnaires and work through the self-help training on their own participants had to be fluent in Dutch. An exclusion criterion for potential participants was when they scored average on depressive symptoms and/or anxiety, which was detected by a score of 11 or higher on either the anxiety- or depression scale of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). Potential participants that were excluded from the study due to this criterion were advised to seek help from their general practitioner.

2.2 Procedure

Participants were recruited from the general Dutch population via advertisement in national newspapers (e.g. Volkskrant, Trouw). They voluntarily decided to take part in the self-help compassion training. Those who were interested could register on a website (www.utwente.nl/zelfcompassie) where they also found more information about the self-help training and were asked to fill in a short screening questionnaire.

Several baseline (T0) and post-intervention (T1: 9 weeks after baseline) measures were taken on both the experimental and control group. Well-being was assessed with the MHC-SF (Keyes, 2002) during the online screening at the time of recruitment, before the intervention started (T0) and after the intervention was finished (T1). Furthermore, clinically significant depression and anxiety was measured with the HADS (Zigmond & Snaith, 1983) during an online screening, at T0 and T1. Stress was measured with the Perceived Stress Scale (PSS; Cohen, Kamarack, & Mermelstein, 1983) at T0 and T1 as well as Self-compassion which was assessed with the short form of the Self-Compassion Scale (SCS-SF; Neff & Vonk, 2009; Raes, Pommier, Neff, & Van Gucht, 2011). Various other measures were taken, that are of no relevance to the present study (see Bohlmeijer, Spijkerman, Elfrink, 2015).

Those people who were found to be eligible to participate in the study during the screening (n=243) were then randomly assigned to one of the two groups. Those who were assigned to the experimental condition (n=121) received the self-help compassion training via mail within a week. The participants in the wait-list control group (n=122) received the training six months later.

2.3 Measures

Well-being. The MHC-SF consists of 14 items describing mental well-being. The present study made use of the Dutch version (Lamers, Westerhof, Bohlmeijer, Klooster, & Keyes, 2010; Westerhof & Keyes, 2008). The psychometric properties of the Dutch version are established and it is found to be a valid and reliable measure for mental well-being (Lamers et al., 2010). The internal consistency in the present study was good ($\alpha = .85$). The MHC-SF asks the participant to state the frequency of particular feelings during the last four weeks and by doing so it measures emotional (3 items), psychological (6 items), and social well-being (5 items). An example item is “How often did you feel that you liked most parts of your personality?”. Each item has to be rated on a 6-point Likert scale from 0 (*never*) to 6 (*every day*). A high score shows a high level of well-being.

Depression. The HADS is a self-assessment questionnaire by Zigmond and Snaith (1983) and was found to be a reliable and valid instrument to discover depressive and anxious states and to evaluate the severity of those mood disorders. The internal consistency of the HADS in the present study was acceptable ($\alpha = .78$). It consists of a depression subscale with seven items and an anxiety subscale also with seven items which are rated on a 4-point Likert scale from 0 to 3. The anxiety subscale contains items such as “Do you ever feel tensed up?” and the depression subscale asks questions like “Do you take as much interest in things as you used to?”. A score of 11 or higher on one scale indicates a possible depressive or anxiety disorder.

Stress. The PSS is designed to measure to what extent participants judge situations in their life as stressful. This measure has been shown to be reliable and valid in the past (Cohen et al., 1983). The present study has found an acceptable internal consistency ($\alpha = .79$). The questionnaire consists of 14 items concerning the amount of stress one has experienced during the last month, such as “In the last month, how often have you found yourself thinking about things that you have to accomplish?”. The statements have to be answered on a 5-point Likert scale from 0 (*never*) to 4 (*very often*). A higher score indicates a higher level of stress (Cohen et al., 1983).

Self-compassion. The SCS was originally established by Neff (2003b) to measure the ability of being self-compassionate. The SCS-SF utilized in the present study consists of a total of 12 items. These items are spread over six subscales that are made up of the three components of self-compassion and their opposite facets: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification (Neff, 2016). Each of these subscales contains two items. Raes et al. (2011) have found that the SCS-SF has

a good psychometric quality. In the present study a good internal consistency was found ($\alpha = .88$). Participants are asked to evaluate to what extent specific statements apply to them on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*), for example “When I’m going through a very hard time, I give myself the caring and tenderness I need.”. A high score shows a high level of self-compassion.

2.4 Intervention

Participants in the experimental group were chosen to take part in the self-help training *Compassie als sleutel tot geluk* that they got sent to their home address. The training consisted of seven lessons based on CFT and various exercises developed by Neff with a different subject every week: (1) compassion for other people; (2) changing the circumstances; (3) working on experiences from adolescence; (4) addressing resources; (5) establishing friendliness; (6) emotion systems; and (7) self-criticism and self-compassion. The aim of every lesson was to help the participants to develop more compassion for themselves and for other people and as a result experience more well-being. Every lessons started with information over one component of compassion, after that various exercises follow, such as a body scan, mindful breathing, imagining a certain future, writing exercises and ‘the smallest possible smile’-exercises. There were different exercises every week, but certain exercises were done daily (see Hulsbergen & Bohlmeijer, 2015). The participants had nine weeks to finish the training, which could also be finished in minimally seven weeks, if that is desired. They were advised to train for two to four hours every week. These training sessions could be done where- and whenever they want.

By e-mail participants in the experimental condition were offered support from a supervisor every week. The supervisors were two graduated Psychologists and two psychology grad students under supervision of an experienced health psychologist. At the end of every week, when a lesson was finished, the supervisor send an e-mail with questions concerning the process of the last week and also asked about possible troubles and problems which a participant might have encountered. It was expected from the participant to respond to this e-mail on the agreed upon day. The supervisor in turn gave feedback during the following two to three days and a new appointment for the next week was made. This e-mail supervision was aimed at supporting the process while participants went through the training.

2.5 Data Analysis

All statistical analyses were performed using SPSS 22 (IBM SPSS Statistics). Missing cases at T0 or T1 of the SCS-SF and PSS were analyzed with the missing completely at

random test which examines the distribution of the missing data and checks if the data misses randomly (Little, 1988). Due to this being the case, the missing cases were removed from the data set by listwise deletion. Furthermore, the reliability of the questionnaires was assessed by determining the Cronbach's alpha, a coefficient of internal consistency. Normality was measured with the Shapiro-Wilk test.

Correlation analysis was conducted to assess the correlations between the treatment condition, and the mean difference scores of the PSS and SCS-SF. Pearson's r is interpreted following Moore and McCabe (2006), defining a correlation as negligible ($.01 < r < .19$), weak ($.20 < r < .29$), moderate ($.30 < r < .39$), strong ($.40 < r < .69$) or very strong ($r \geq .70$). To test hypothesis one, a mixed design ANOVA was conducted with the pre- and posttest scores of the PSS as the Within-Subjects variables and the treatment condition as the Between-Subjects variable to test how the interventions accounted for variance in perceived stress and if this differed from the control group. The same was done to test hypothesis two, but this time the pre- and posttest scores of the SCS-SF was used as the Within-Subjects variable. For the mixed ANOVA effect sizes are given using partial eta squared. According to Cohen (1988) partial eta squared can be interpreted as follows: $.01 =$ small effect, $.06 =$ moderate effect and $.14 =$ large effect.

To test for self-compassion as a mediator of the relationship between treatment condition and change in perceived stress (hypothesis three), linear regression analyses were conducted (see Figure 2) by the PROCESS plug-in for SPSS by Andrew Hayes (Field, 2013).

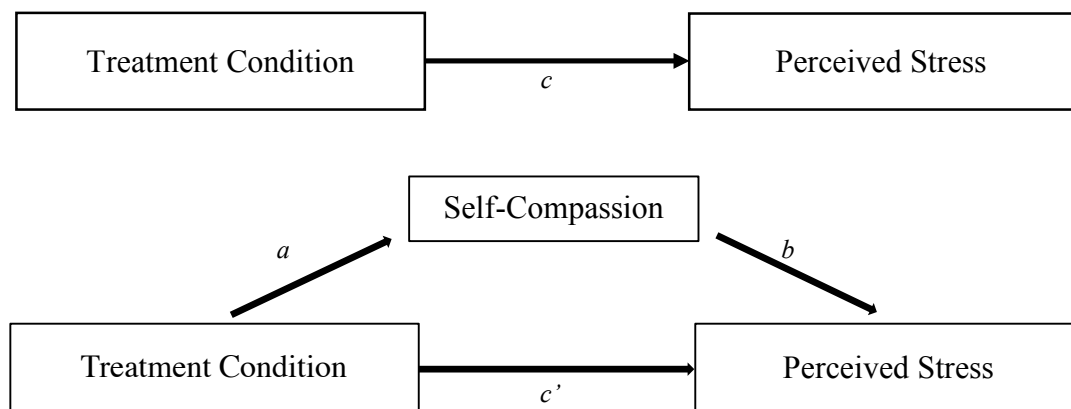


Figure 2. A conceptual model for Self-Compassion as the mediator of the relationship between the Treatment Conditions and Perceived Stress.

The Treatment Condition was used as the independent variable (Iacobucci, 2012) and the mean difference score of the PSS was used as the depended variable. The mean difference score of the SCS-SF was used as the mediator. This mediation analysis is based on the conceptual model showed in Figure 2. Path *a* depicts the effect of the treatment condition on self-compassion. Path *b* displays the effect of self-compassion on perceived stress and path *c'* depicts the direct effect of the treatment condition on perceived stress controlling for the indirect effect of self-compassion. Path *c* illustrates the total effect of the treatment condition on perceived stress. The PROCESS analysis also computes the indirect effect ($a \times b$) of the treatment condition on perceived stress.

3. Results

Table 1 gives an overview of how the participants in the experimental and control group scored on the diagnostic instruments that were used in the present study before and after the self-help compassion training was given. For the SCS-SF the six subscales are also listed.

3.1 Relationship Between Treatment Condition, Stress and Self-Compassion

In Table 2 the correlations between the treatment condition, perceived stress and self-compassion and its subscales are shown. All the correlations were significant ($p < .01$). The treatment condition had a weak negative relationship with perceived stress ($r = -.27, p < .01$) and a moderate positive relationship with self-compassion ($r = .36, p < .01$). The relationship between treatment condition and SCS-SF subscales ranges between .16 and .30, with over-identification and common humanity having only a negligible positive relationship with the treatment condition and self-judgement being the only subscale having a moderate relationship with treatment condition. Self-compassion has a moderate negative relationship with perceived stress ($r = -.39, p < .01$). The relationship between the SCS-SF subscales and perceived stress are weak to moderate ($-.18 \leq r \leq .30$).

Table 1

Comparison of mean and standard deviation of dependent measures over time by group

Measure	Experimental group (n = 106)		Control group (n = 106)		F	ES
	Pre <i>M</i> (<i>SD</i>)	Post <i>M</i> (<i>SD</i>)	Pre <i>M</i> (<i>SD</i>)	Post <i>M</i> (<i>SD</i>)		
PSS	19.51 (5.15)	15.34 (5.24)	19.34 (5.18)	18.06 (5.54)	16.68***	.07
SCS-SF	43.52 (11.07)	54.48 (11.11)	43.97 (12.95)	48.09 (12.97)	30.32***	.13
Self-Kindness	7.50 (2.36)	9.44 (2.22)	7.84 (2.34)	8.58 (2.48)		
Self-Judgment	6.43 (2.88)	9.00 (2.70)	6.70 (3.08)	7.59 (3.11)		
Common Humanity	7.75 (2.52)	9.58 (2.26)	7.61 (2.92)	8.47 (2.80)		
Isolation	6.58 (2.89)	8.20 (3.04)	6.42 (3.00)	6.66 (3.00)		
Mindfulness	9.05 (2.36)	10.47 (2.14)	9.23 (2.42)	9.79 (2.12)		
Over-Identification	6.20 (2.83)	7.81 (2.18)	6.18 (2.95)	7.00 (3.21)		

Note. *M* = Mean; *SD* = Standard Deviation; n = number of participants; ES = effect size partial eta squared. Scores on the SCS-SF subscales Self-Judgement, Isolation and Over-Identification are recoded.

*** $p < .001$.

Table 2

Correlation Matrix for the Treatment Condition, Self-Compassion, and Perceived Stress,

Variable	2	3	a.	b.	c.	d.	e.	f.
1. Treatment Condition	-.27**	.36**	.29**	.30**	.18**	.26**	.20**	.16*
2. Perceived Stress		-.39**	-.18**	-.21**	-.22**	-.28**	-.28**	-.30**
3. Self-Compassion			.66**	.68**	.67**	.63**	.58**	.66**
a. Self-Kindness				.28**	.51**	.28**	.41**	.20**
b. Self-Judgment					.27**	.36**	.15*	.50**
c. Common Humanity						.16*	.45**	.24**
d. Isolation							.16*	.42**
e. Mindfulness								.19**
f. Over-Identification								

^an = 212.* $p < .05$; ** $p < .01$

3.2 Effect of the Intervention on Perceived Stress

Mixed ANOVA found a significant main effect of time on the score of perceived stress, $F(1, 210) = 61.95, p < .001$, partial eta squared = .23 (large effect size). This effect tells us that both treatment conditions did improve in perceived stress from pre- to posttest. There also was a significant main effect of treatment condition, $F(1, 210) = 4.13, p < .05$, partial eta squared = .02 (small effect size), showing that the experimental group scored lower on perceived stress than the control group did. Furthermore, mixed ANOVA analysis found that there was a statistical significant interaction effect between which group participants were in and how they scored on perceived stress at pre- and posttest, $F(1, 210) = 16.68, p < .001$, partial eta squared = .07 (moderate effect size). Participants in the experimental group scored significantly lower on perceived stress after the intervention than participants in the control group did, as was hypothesized in Hypothesis one.

3.3 Effect of the Intervention on Self-Compassion

A second mixed ANOVA analysis found that there was a significant main effect of time on the score of self-compassion, $F(1, 210) = 147.5, p < .001$, partial eta squared = .41 (large effect size). Both treatment conditions did improve in their level of self-compassion from pre- to posttest. However, the main effect of treatment condition is not significant, $F(1, 210) = 3.73, p = .06$, partial eta squared = .02 (small effect size). However, there was a statistical significant interaction effect between which group participants were in and how they scored on self-compassion at pre- and posttest, $F(1, 210) = 30.32, p < .001$, partial eta

squared = .13 (moderate effect size). Consequently, the second hypothesis that participants in the experimental group scored higher on self-compassion after the intervention compared to the participants in the control group can be confirmed.

3.4 Mediation Effect of Self-Compassion

See Figure 3 for a visual diagram of the mediated relationship. Mediation analysis found that treatment condition was a significant predictor of perceived level of stress (path c), as shown in Table 3, $t(210) = -4.08, p < .001$. Furthermore, it was investigated whether self-compassion mediates the effect of the treatment on perceived stress. Results indicated that the treatment condition was a significant predictor of self-compassion, path a: $t(210) = 5.51, p < .001$, and that self-compassion was a significant predictor of perceived stress, path b: $t(209) = -4.76, p < .001$. This indicates that for every point a participant scored higher on the SCS-SF scale there was an -0.176 decrease on the PSS scale (see Figure 3). These results support the mediational hypothesis. The treatment condition is lessened in predicting perceived level of stress after controlling for the mediator, self-compassion, path c': $t(209) = -2.32, p < .05$, but it is still significant, pointing to a partial mediation. The sobel test shows that there is indeed a difference between the two paths c and c', $Z = -3.57, p < .001, K^2 = .11$.

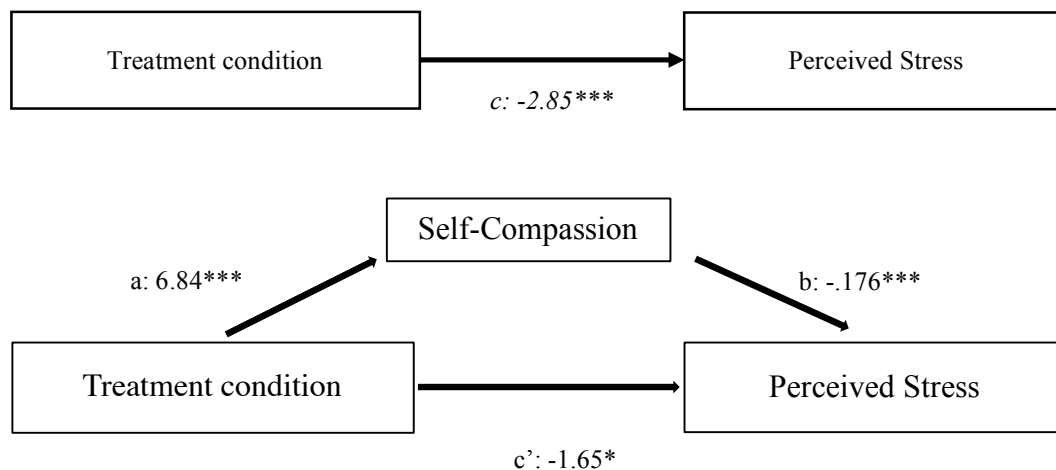


Figure 3. The mediated relationship between treatment condition and perceived stress with self-compassion as the mediator, given are the unstandardized coefficients.

* $p < .05$; *** $p < .001$.

Table 3

Model Summaries for Mediation Analysis

Model	<i>F</i>	<i>p</i>	<i>R</i> ²
Treatment Condition predicting Perceived Stress	(1, 210) = 16.68	<.001	.07
Treatment Condition predicting Self-Compassion	(1, 210) = 81.77	<.01	.13
Treatment Condition and Self-compassion predicting Perceived Stress	(1, 209) = 20.53	<.001	.16

In addition to that, the present study analyzed the six subscales of the SCS-SF to further clarify which component of self-compassion might be the working mechanism in lowering perceived stress. It was found that treatment condition significantly predicted all of the SCS-SF subscales, as shown in Table 4. When looking at which subscales could predict perceived stress on their own, only mindfulness and its counterpart over-identification were able to do so, (Mindfulness: $b = -.41$, $t(204) = -2.35$, $p < .05$, Over-Identification: $b = -.37$, $t(204) = -2.29$, $p < .05$). All subscales and the treatment condition taken together were predicting perceived stress significantly. The treatment condition is lessened in predicting perceived stress after controlling for the six mediators, $t(204) = -2.58$, $p < .05$, but the sobel test for each subscale is not significant, pointing to there being no difference between the path c and c' .

Table 4

Model Summaries for Mediation Analysis with the six subscales of the SCS-SF as mediators

Model	<i>F</i>	<i>p</i>	<i>R</i> ²
Treatment Condition predicting Self-Kindness	(1, 210) = 18.52	<.001	.08
Treatment Condition predicting Self-Judgment	(1, 210) = 20.77	<.001	.09
Treatment Condition predicting Common Humanity	(1, 210) = 7.14	<.01	.03
Treatment Condition predicting Isolation	(1, 210) = 15.19	<.001	.07
Treatment Condition predicting Mindfulness	(1, 210) = 8.51	<.05	.03
Treatment Condition predicting Over-Identification	(1, 210) = 5.45	<.05	.03
Treatment Condition and Self-compassion subscales predicting Perceived Stress	(7, 204) = 6.94	<.001	.19

4. Discussion

The aim of the present study was to analyze the effect of the self-help compassion training called *Compassie als sleutel tot geluk* on perceived stress and self-compassion and assess whether self-compassion is responsible for the effect of the training on stress. One goal of this study was to gain insight into the effectiveness of the newly developed training based on promoting self-compassion and to gain an understanding of the working mechanisms of this training. The last goal is based on the question of whether self-compassion is a mechanism through which this training changes participants' level of perceived stress. Other studies, such as those examining MBSR, have hypothesized that self-compassion is a mechanism of change (Baer, 2010; Hölzel et al., 2011; Shapiro et al., 2005). In the present study, it was hypothesized that the experimental group would have a lower level of perceived stress after the intervention than the control group. Furthermore, it was also hypothesized that the experimental group's level of self-compassion would be more enhanced than that of the control group. The third hypothesis was that the effect that the compassion training had on perceived stress would be caused by an increase in self-compassion that would in turn lead to a decrease in perceived stress. The results present significant evidence that suggests that the self-help compassion training has an effect on perceived stress and that this effect is partially mediated by self-compassion.

4.1 Effect of the Intervention on Perceived Stress and Self-Compassion

The intervention was found to be effective in lowering levels of perceived stress. The experimental group experienced a significantly larger decrease in levels of perceived stress compared to the control group. Thus, the present study succeeded in demonstrating that the self-help compassion training *Compassie als sleutel tot geluk* is an effective method of treatment for lowering perceived stress levels. The participants in the experimental group seemed to benefit from the self-help compassion training and reported feeling less stressed afterwards. Neff and Germer (2013), who developed the mindful self-compassion program (MSC), found similar results in a pilot study and random controlled trial (RCT) analyzing the effects of this program designed to train people to be more self-compassionate. Participants in the experimental group also experienced significantly less stress. This program differs slightly from the present training. The first and most important difference is that the MSC program is not a self-help training; it involves a two-hour meeting every week. Another difference is the advised length of time of self-compassion practice. The MSC program asks participants to

practice for 40 minutes each day whereas the training in the present study only asked the participants to practice for two to four hours every week. With regards to the content, the two programs do not differ greatly as far as can be judged from the article by Neff and Germer (2013).

In addition to lowering stress, the compassion training in the present study successfully increased levels of self-compassion. Participants in the experimental group displayed a greater increase in self-compassion than participants in the control group. These results suggest that the self-help compassion training is effective in teaching participants to become more compassionate towards themselves. The MSC program has been found to increase self-compassion as well (Neff & Germer, 2013). It can be concluded that the self-help compassion training, like the MSC program, is an effective instrument through which to potentially maximize the benefits of self-compassion by devoting more time in the training to teaching skills of self-compassion. Considering that both trainings are effective in lowering levels of perceived stress and increase self-compassion, it can be argued that a training that is less time consuming but just as effective as a more time consuming one has a significant advantage from the point of view of participants.

MBSR has also been found to decrease stress and increase self-compassion (Shapiro et al., 2005; Shapiro et al., 2007), but this program is based more on mindfulness, teaching the participants to become more attuned to their body, to develop acceptance, and to purge themselves of internal conflicts. The present study and the MSC program, both concentrating on the promotion of self-compassion, add to this technique by combining certain mindfulness skills with self-compassion skill. These trainings teach participants to be less critical of themselves and others and instead to encourage themselves through “loving self-correction”. (Hulsbergen & Bohlmeijer, 2015). Research suggests that both types of training are effective. The present study reaffirms the idea that a decrease in stress and an increase in self-compassion can be achieved through an intervention focused on self-compassion. Participants will likely prefer one training over the other depending on what they most want or need to learn. However, future research should analyze which program is more effective, so that empirically based conclusions can be made.

Similar to earlier studies, the present study has found that self-compassion has a significant negative relationship with perceived stress (Krieger et al., 2015; Shapiro et al., 2005; Shapiro et al., 2007). Higher levels of self-compassion after the intervention were related to lower levels of perceived stress. The experimental group scored significantly higher on self-compassion and significantly lower on perceived stress compared to the control group.

These findings suggest, that higher levels of self-compassion may indeed be a buffer against stress because self-compassion provides people with the necessary tools to handle stress. Self-compassion teaches participants to be less critical of themselves and to manage difficult emotions. Furthermore, these findings reaffirm the idea hypothesized by studies of interventions that promote increased mindfulness (Shapiro et al., 2005) that found the similar results and suggest that self-compassion may be an important mediating factor.

4.2 The Mediation Effect of Self-Compassion

The present study uniquely expands on previous self-compassion research by analyzing the role of self-compassion as a mediator. The results indicate that self-compassion partially mediates the effect of the treatment tested in the present study on perceived stress. When self-compassion was controlled for, the treatment was less effective in predicting perceived stress levels. The effectiveness of the treatment and the ability to predict levels of perceived of stress was more than two times greater when self-compassion was included in the analysis. Thus, self-compassion played an important role in the treatment and was a working mechanism in lowering perceived stress. Unfortunately, only one known previous MBSR study has analyzed self-compassion as a mediator of changes in perceived stress (Shapiro et al., 2005). The study found that changes in self-compassion did significantly predict changes in perceived stress. However, these results should be interpreted with caution, as the previous study had a very small sample size.

In analyzing how self-compassion mediates this process, it was found that only the subscales of mindfulness and, its opposite, over-identification were significant predictors of perceived stress. This result is interesting because it is possible to argue that mindfulness and self-compassion are highly correlated, as mindfulness is a component of self-compassion (Neff, 2003a). MacBeth and Gumley (2012) warn that the role of self-compassion as a mechanism of change in interventions that have several mindfulness components must be considered carefully. In the present study, the self-help compassion training consisted of numerous mindfulness components. It is unclear whether self-compassion or mindfulness is the mechanism of change in the present study. However, mindfulness seems to be a central component of self-compassion. This indication may be interesting to analyze in future research.

Neff and Germer (2013) on the other hand argue that although mindfulness is also a component of self-compassion, the two constructs of mindfulness are not entirely the same. They point out that the type of mindfulness that is part of self-compassion is more specific

than the construct of mindfulness in general. The type of mindfulness connected to self-compassion is more focused on negative thoughts and feelings of personal sufferings. People soothing themselves when distressed and remembering that suffering is part of common humanity are examples of the type of mindfulness connected to self-compassion. Mindfulness in general focuses more on internal experiences and being conscious and accepting of these experiences. The personal suffering of the person having the experiences is not the focus of this mindfulness (Neff & Germer, 2013). Considering that the effectiveness of the treatment predicting self-compassion is more than four times larger than the effectiveness of the treatment, predicting the SCS-SF subscale of mindfulness, it can be concluded that the variance in perceived stress explained by self-compassion is more meaningful than the variance explained by only the subscale mindfulness. The results of the present study highlight relevant findings that future research should examine. It may also be interesting to measure mindfulness scores using an instrument such as the mindfulness attention awareness scale (MAAS; Brown & Ryan, 2003) and compare the effect of the self-help compassion training on mindfulness and self-compassion and also the mediational performance of the two. Such comparisons will provide a clearer understanding of the differences between mindfulness and self-compassion and their contribution to the effectiveness of the self-help compassion training *Compassie als sleutel tot geluk*.

4.3 Strengths and limitations of the present study

During the preparation of the data, 30 participants did not complete all of the questionnaires. These missing values occurred post-intervention (T1), which suggests that the participants dropped out before all of the questionnaires were finished. This may have impaired the reliability and validity of the conclusions. The 30 participants that dropped out were evenly distributed over the experimental and control groups. Of the participants who failed to complete the questionnaires, 73.3% were women. At the same time, 74.5% of the participants who did complete the T1 measure were women. The participants' level of education was the same as that of those who finished the questionnaire. The scores on the PSS and SCS-SF at T0 of the participants who dropped out did not differ from those of the participants who remained in the study. The only difference between the participants who completed all of the questionnaires and those who did not was their employment status. Of the group who did not complete all of the questionnaires, 66.7% worked for wages, and 16.7% were self-employed. The group who did complete all of the questionnaires, 57.1% worked for wages and 14.6% were self-employed. These statistics may indicate that those who did not

complete the second measure had less free time, and because of this, they did not succeed in completing all of the required questionnaires. Future research should attempt to reduce the number of questionnaires to be completed in order to make the study less time consuming for participants.

Another limitation of the study was that the sample consisted mostly of highly educated people. Additionally, 40% of the women in the study did not have children. These characteristics of participants in the present study may have affected the external validity of the findings because the sample may not have been representative of the general population. However, no strong reason exists to believe that the self-help compassion training would affect other groups of people differently. The exercises in the training were described in detail, and the instructions were written so that they could be easily understood by anyone. However, this limitation of the present study should be the subject of further studies on the self-help compassion training because the concept of self-compassion may be inaccessible for less educated people.

While some limitations do exist, the present study also has several strengths. First, the present study is an RCT; this study design can provide strong evidence that a given study design is effective. The randomization of the participants also helped to prevent selection bias and eliminate confounding of other variables. Additionally, the measurements used in the present study were reliable measures of the specific concepts. Furthermore, the dropout rate was fairly low, and the number of total participants was sufficient.

4.4 Practical Implications

The findings of the present study demonstrate the benefits of the self-help compassion training *Compassie als sleutel tot geluk* for the healthcare system. It has successfully been demonstrated that an inexpensive and easily accessible compassion training can lead to an increase in self-compassion that in turn can serve as a buffer against perceived stress and its negative effects on mental health. Trainings like the training in the present study can be beneficial in many different settings. Such trainings are likely to heighten self-kindness, mindfulness, and feelings of a common humanity and to lower feelings of self-judgment, over-identification, and isolation. The present study provides evidence that such trainings enable participants to view their stressors from a more balanced perspective, to be kind to themselves, and to acknowledge that other people experience similar suffering.

4.5 Conclusion

The present study provides new analysis of self-compassion as a mediator of the effectiveness of the newly development compassion training *Compassie als sleutel tot geluk* on perceived stress. Having identified self-compassion as a partial mechanism of change in the relationship of the training on perceived stress offers new insights about possible relationships between mindfulness and self-compassion and underlines the relevance of self-compassion in the field of positive psychology. The present study succeeds in providing evidence for self-compassion as a buffer against perceived stress. This result is of particular importance because it provides a basis for future studies of self-compassion in this regard and provides evidence for the need to increase self-compassion in people who suffer from stress.

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