Effects of a Self-Help Compassion Training on Well-Being

A Randomized Controlled Trial with Mediation Analyses of Self-Criticism, Self-Attacking and Gratitude

Master's Thesis

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Abstract

Well-being has a protective function against psychopathology and leads to less sick leave which has advantages for the general population and the financial investment of the society in health treatments. Compassion Focused Therapy (CFT) could lead to greater well-being. Nevertheless, a gap in literature exists about the effects of CFT especially on well-being. This study attempted to investigate the effectiveness of a self-help compassion training in terms of improving well-being and the mediating role of self-criticism, self-attacking and gratitude. The data of a randomized controlled trial (RCT) was used, with an experimental group receiving the compassion training (N = 97) and a waitlist control condition (N = 101). Participants from the Dutch general population with low to moderate scores in well-being and low depression levels were included in the study. The Mental Health Continuum Short Form (MHC-SF), Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS) and Gratitude Questionnaire-Six item in Dutch (GQ-6-NL) were administered. Measurements took place at baseline (T0), three-months (T1) and six months (T2). Scores on the gratitude questionnaire were not reliable and excluded from the analysis. Analyses of repeated measures ANOVAs and mediation analyses supported that the self-help compassion training led to improvements in well-being and reductions in self-criticism and self-attacking between T0 and T1 and T0 and T2 compared to the waitlist control condition. The results further suggested that T0-T1 changes in self-criticism mediated the effect of the self-help compassion training on well-being. In contrast, changes in self-attacking did not mediate the effect of the self-help compassion training on well-being. The results indicated that using the compassion training once influences the participants positively on a longer term. To come to a conclusion, self-criticism seemed to be an important underlying process to achieve well-being. Furthermore, additional underlying processes of the effect of the self-help compassion training on well-being remain unclear and need to be explored in further research as well as the effectiveness of CFT for other target groups like clinical populations.

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1. Introduction

1.1 Importance of well-being and flourishing

Well-being was ignored for decades as a possible goal in psychological therapies (Butler, Chapman, Forman & Beck 2006). The focus in psychology has been on the reduction of psychopathology for a long time, as described by the medical model. The medical model is also used in the Diagnostic and Statistical Manual of Mental Disorders (DSM), a manual commonly used to diagnose mental disorders. Cognitive Behavior Therapy, for example, is aimed at reducing psychological distress rather than enhancing well-being. However, Butler (2006) also defined in a review of meta-analyses the effectiveness of treatment by means of the reduction in psychopathological symptoms.

In the last decades, there is a shift away from the medical model and towards the positive psychology with its focus on well-being (Linley, Joseph, Harrington & Wood, 2006). The definition of well-being is not restricted to the absence of mental illness, but also embraces a state in which the individual can cope with stress, comprehend one's own abilities, can work productively and is able to contribute to the community (WHO, 2005). This definition contains three components of well-being: 1) Emotional well-being, which involves the experience of life satisfaction and pleasant feelings, 2) psychological well-being, which involves the effective functioning of the individual in terms of, for example, self-realization, and 3) social well-being, which involves the effective functioning of the individual in a community (Keyes, 2002). When people score high on all three dimensions of well-being they are described as flourishing. People scoring moderate on well-being are characterized as moderately mentally healthy. Lastly, when people score low on the three dimensions they are considered as being languishing (Keyes, 2002).

Although well-being is barely used as the primary goal of therapy, it has an important function. The two continua model shows that mental health and mental illness are related but also distinct dimensions which suggests that well-being is not automatically addressed through a treatment of mental diseases (Westerhof & Keyes, 2010). That means that mentally ill and mentally healthy individuals can present low levels as well as moderate to high levels of well-being (Westerhof & Keyes, 2010).

The benefit of well-being as primary goal of therapy arises by looking at flourishing people. Flourishing people are shown to have a smaller risk of developing a mental illness. For instance, Keyes (2002) found that flourishing people have a six times smaller risk to

develop a major depressive episode in comparison to languishing individuals. They experience more positive emotions and can handle daily stressors and events better than people who experience well-being to a less extent. In this regard, well-being seems to protect against psychopathology. Preventing psychopathology has consequences for the health of the individual as well as for the society. Flourishing individuals have a lower risk of cardiovascular diseases and exhibit better psychological functioning. Moreover, they tend to miss fewer days at work what benefits society. Thus, it benefits not only the general population but also society regarding the reduction in financial investment for health treatment (Keyes, 2007). Therefore, investing in enhancing flourishing seems worthwhile.

1.2 Compassion and Compassion Focused Therapy

Compassion Focused Therapy (CFT) aims to enhance well-being as well as relieve from distress (Gilbert, 2010). Central to CFT is the development of compassion. Compassion is defined by the Dalai Lama (2001) as a sensitivity to suffering and a commitment to prevent and alleviate it in the self and others. According to Gilbert (2014), compassion is linked to the ability of being understanding, supportive, helpful and kind. Gilbert (2014) distinguishes between three different forms of compassion: compassion for others, compassion from others to ourselves, and compassion we direct to ourselves. Evidence shows that compassion can be learnt and taught through training (Jazaieri et al., 2013; Neff, 2011; Weng et al., 2013).

CFT was founded by Gilbert (2000) and is a multi-modal therapy. This form of therapy is based on the idea that many individuals are unable to construct affiliative feelings towards themselves, like self-critical people do. CFT works by targeting the development of brain systems and competencies that are important for well-being, prosocial behavior, and threat regulation (Gilbert, 2014). This therapy is grounded in the novel focus on human affiliative behavior but also in its own evolution (Leaviss & Uttley, 2015).

Gilbert (2014) based his theory about compassion on evolutionary processes related to the structure of the brain which contains motivational and emotional systems. These motivational systems are focused on surviving by means of defending against threats and obtaining helpful sources. Emotions guide these motives. According to Gilbert (2014), three emotion systems are important. The first one aims to defend threat and is called the *threat system* which is accompanied by emotions like anxiety, sadness and anger. The second one is focused on obtaining helpful sources in case of threat as well as in achieving goals, also called *drive system*, and is accompanied by feelings of excitement and vitality. The third one is

directed towards feeling accepting, non-striving, calm, safe, and connected to others and is called the *soothing system*. Caused by the human's complex nature of the brain, an imagined threat activates the same systems a real threat does. Daily stressors and chronical illnesses are seen as real threats opposite to imagined stressors, for example negative thoughts about what could happen or what is needed to be achieved in the future (Gilbert, 2014).

The first two emotion systems are over-activated in many people due to stressors. If the threat system is activated too long, consistent strong attention and worry about possible threats like the fear to make mistakes inhibit feelings of safety. For example, the over-activation of the drive system means a constant input of much physical and psychological energy to gain more appreciation, status and power. An under-activation of the soothing system entails the lack of being friendly towards the self and to relax. Based on the over- or under-activation of the systems, many people experience a high level of arousal and feel anxious or excited instead of rested and rehabilitated. This may result in psychological and physiological complaints (Gilbert, 2014). The difference between the systems is that the calming system can be trained more easily in contrast to the other systems. The development of compassion is helpful because it strengthens the system for calming. By fostering affiliative feelings to others and the self, CFT aims to help to access and strengthen the soothing system when individuals encounter threat and help them compensate imbalances within the three affect regulation systems (Gilbert, 2014; Leaviss & Uttley, 2015).

1.3 Empirical evidence for the effectiveness of CFT on well-being

A compassionate attitude may facilitate well-being and serve as a safeguard against negative feelings such as self-criticism (Hollis-Walker & Colosimo, 2011). Furthermore, a review by Kirby (2016) concludes a positive effect of eight different compassion trainings, including CFT, on life satisfaction and happiness. The results show no long-term effects of CFT on well-being, but highlight the positive long-term effect of Mindful Self-Compassion (MSC), a form of compassion based intervention, on well-being (Kirby, 2016). A positive effect of compassion trainings on well-being is also supported by several other studies (Lucre and Corten, 2013; Hevezi, 2016; Reis, Maniaci and Rogge, 2017).

Although the results of these studies seem promising, some authors highlight the importance of further research regarding the effect of CFT and compassion interventions in general on well-being and the processes underlying this effect (Kirby, 2016; Reis, et al.,

2017). Although some long-term data exist regarding the effects on the reduction of psychopathology, long-term studies are missing for the effect of CFT on well-being.

1.4 Mediators of the effect of CFT on well-being

Whereas cultivating compassion is seen as a core mechanism of compassion trainings, it is unclear via which mechanisms compassion trainings render beneficial effects on well-being. In the context of compassion and compassion interventions, self-criticism, self-attacking, and gratitude seem to appear as processes as well as outcomes (Baker et al., 2017; Petrocchi & Couyoumdijan, 2016).

1.4.1 Self-criticism and self-attacking

Self-criticism is defined as negative self-evaluation and self-judgment directed towards aspects of the self, like behavior, physical appearance, personality or emotions (Longe, Maratos, Gilbert, Evans & Volker, 2010). Two forms of self-criticism can be distinguished, namely the *inadequate self*, which means self-criticizing, and the *hated self*, which means self-attacking. The first one addresses a sense of frustration and irritation, and feelings of inadequacy towards oneself. The latter is defined as a desire to hurt the self, and a feeling of self-repugnance in response to failures. Hence, self-attacking is a more extreme form of self-criticism (Gilbert et al., 2004; Petrocchi and Couyoumdjian, 2016).

The evolutionary theory underlying Gilbert's (2014) CFT model assumes that self-criticism and -attacking activate the threat system and disrupt the stimulation of inner affiliative systems which are important for well-being (Gilbert, 2014; Longe et al., 2010). This can result in submissive and defensive behavior or in a sense of defeat, which can be observed by a slumped body mode and a sense of hopelessness (Gilbert, 2014).

People scoring higher on self-compassion are shown to have less problems with self-criticism and -attacking (Beaumont & Hollins Martin, 2016). By counteracting self-criticism, self-attacking is resisted as well, since self-attacking is expected to occur only when self-criticism is already present (Beaumont & Hollins, 2016). On the one hand, Beaumont and Hollins (2016) found no evidence for a reduction in self-criticism or self-attacking after a three-day intervention of CFT. On the other hand, they show that self-critical judgement was significantly reduced after the intervention. This may suggest that a part of self-criticism may be reduced after a CFT intervention (Beaumont & Hollis Martin, 2016). Other studies show, that self-criticizing and self-attacking scores were reduced after CFT (Gilbert & Procter, 2006; Lucre & Corton, 2013). A possible explanation for the different findings may be the

length of the compassion interventions. The effect of compassion trainings on self-criticism and self-attacking is to some extent explored. Evidence is also found for a negative relationship of self-criticism on well-being (Duarte, 2017), but the mediating role of self-criticism and -attacking on well-being remains unclear. Although it is presumed that, by counteracting the function of self-criticism to encourage individuals to experience self-liking and self-soothing, CFT may enhance well-being (Gilbert and Procter, 2006). Thus far, there is no evidence that effects of CFT on well-being are mediated through self-criticism and self-attacking.

1.4.2 Gratitude

Another possible mediator of the effect of CFT on well-being is gratitude. Gratitude is described by McCoulloug, Tsang and Emmons (2004) as both a personality trait and a state. It is defined as an emotion that arises when help is obtained from others. Furthermore, it is described as appreciating and a habitual focus on positive life aspects (Wood, Froh & Geraghty, 2010). According to Petrocchi and Couyoumdjian (2016), gratitude is related to well-being and mental health, and can be seen as a protective characteristic against psychopathology. This is reasonable since an orientation towards positive events suggests an incompatibility with negative beliefs about the world, the future, and the self. Grateful individuals are more likely to be reassuring, kind, and compassionate towards themselves in case of setbacks (Petrocchi & Couyoumdjian, 2016). The literature suggests a relationship between compassionate behavior, gratitude, and well-being (Baker et al., 2017). Baker et al. (2017) focused on the impact of compassion-focused reappraisal – as an emotion regulation strategy – in a sample that went through an interpersonal offense. Compassion-focused reappraisal is conceptualized as a coping strategy that enables emotional forgiveness. Baker et al. (2017) found that the usage of compassion-focused reappraisal increases happiness, joy and gratitude compared to offense rumination. Summarized, although there is no direct evidence that the effect of CFT on well-being is mediated by gratitude, this seems plausible.

1.5 Research Question and Hypotheses

Although the short-term outcomes of compassion trainings on well-being are examined to some extent, there is only little evidence for the processes underlying its effectiveness in improving well-being (Leaviss & Uttley, 2015). This study serves to explore self-criticism, self-attacking, and gratitude as possible mediators of the effect of a compassion training on well-being. If a treatment is aimed at improving well-being, for example, it is

necessary to know what processes affect this change and are useful to achieve the given goal and for the appropriate construction of treatments. Improving well-being should be an important goal for the general population and the society to prevent sick leave and hence financial investment in it.

The research question of this paper is: Do changes in self-criticism, self-attacking and gratitude mediate the effects of a self-help compassion training on well-being at three-month follow-up compared to a waitlist control condition? To answer this question, the following hypotheses are tested: 1) The experimental condition shows a significantly greater increase in well-being at post-measurement (T1) and at three-month follow-up (T2) compared to the waitlist control condition. 2) The experimental condition shows a significantly greater decrease in self-criticism and self-attacking at post-measurement (T1) and at three-month follow-up (T2) compared to the waitlist control condition. 3) The experimental condition shows a significantly greater increase in gratitude at post-measurement (T1) and at three-month follow-up (T2) compared to the waitlist control condition. 4) The change in self-criticism and self-attacking between T0 (baseline-measurement) and T1 mediates the effect of the compassion training on changes in well-being between T0 and T2. 5) The change in gratitude between T0 and T1 mediates the effect of the compassion training on changes in well-being between T0 and T2.

2. Methods

2.1 Design

In order to investigate the previously listed research question and test the corresponding hypotheses, a randomized control trial (RCT) was adopted with two conditions: an experimental condition, who received CFT, and a waitlist control condition. Participants knew in which condition they were. Ethical approval was obtained from the ethics commission of the University of Twente. In total, the study lasted 12 months in which four measurement took place. The first three were used for this study: the baseline measure took place before the intervention (T0), the measure at the end of the intervention which took place three months after baseline (T1), and the three-month follow-up measurement which took place six months after the baseline (T2).

2.2 Intervention

The experimental group worked through the self-help compassion training *Compassion as key to happiness, beyond stress and self-criticism* (*Compassie als sleutel tot*

geluk, voorbij stress en zelfkritiek). The experimental group received the self-help book in their mail during the week after the randomization. The compassion training was developed by Hulsbergen and Bohlmeijer (2015). This training is based on CFT and consists of seven lessons. Each week the focus lied on a different subject. The subjects are: develop friendliness, emotion systems, self-criticism and self-compassion, addressing resources, working on adolescent experiences, changing the circumstances, and compassion for others. The goal of the seven lessons is to enhance participants' well-being by helping them to develop self-compassion. Every lesson starts with information about a specific topic related to compassion in which the scientific underpinning and the importance of the subject are explained. Thereafter, different exercises follow like reflection exercises, mindfulness, writing exercises and imagery exercises. At the end of the chapter, experience stories are given. The experimental group was advised to do the mandatory exercise of the week and was free to decide in which pace they wanted to continue. Furthermore, the experimental group received weekly procedural and contextual e-mail support. The goal of the support was to stimulate the working process and to solve problems regarding this process. The e-mails were written by two graduated psychologists, two psychology grad students and one PhD student supervised by health psychologists from the University of Twente.

2.3 Procedure and participants

2.3.1 Sampling.

Participants were recruited in the Dutch population via advertisements in daily newspapers. The advertisement was positively formulated and set the focus on the need for more enjoyment and relaxing in life that was disrupted through stress and self-criticism. At the same time, the book of the compassion training was available on the market, therefore the name was not mentioned to prevent that people in the control condition would buy it.

Interested people were referred to a website where they could find an information letter and registration form. With the latter, the participants also gave approval to participate in this study. Afterwards, they were asked to fill in some screening questions and were informed about the results within five working days. The baseline measurement followed and the randomization was undertaken. The participants were informed via e-mail whether they could start immediately with the self-help compassion training or were placed on the waitlist. Those people belonged to the control condition and received the training after six months

(after T2). At the end of the experiment, the participants could win one of 75 vouchers when they filled in all questionnaires.

2.3.2 Inclusion- and exclusion criteria.

Inclusion criteria were a minimum age of 18 years and a low to moderate score of well-being measured by the Mental Health Continuum-Short Form (MHC-SF; Keyes, 2002). The possession of a computer or tablet with a good internet connection and an e-mail address were necessary because the professional support and the measurements took place online. Furthermore, a sufficient mastery of the Dutch language was required for the participants to fill in the questionnaires and to work through the training. Lastly, the participant had to sign the informed consent.

Two exclusion criteria were also applied. Flourishing participants who had a high score (four or five) on one or more items on the emotional-well-being subscale and a high score (four or five) on six or more items on the social and psychological well-being subscales of the MHC-SF (Keyes, 2002) were excluded. Furthermore, people with an average to high score on depressive or anxiety symptoms (11 or more) on the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) were excluded. When excluded based on the second criterion, they were advised to contact their general practitioner.

2.3.3 Description of the study population.

In total, 243 participants took part in the study. The data of 198 participants were used after removing the missing data of 30 participants on the T1 measures and 41 participants on the T2 measures. The experimental condition consisted of 97 randomly assigned participants and the control condition consisted of 101 participants. The participants mean age was 53.05 years (SD = 9.87) and ranged from 20 to 78 years, indicating a high diversity in age. Overall, 149 women and 49 men took part. All participants were Dutch. The level of education was high in 88.4 % of the sample. Regarding differences in the characteristics of the participants between the conditions, a significant association was indicated between the conditions and the participant's gender $\chi^2 = 3.91$, $p = .048$. It was indicated that more women and less men took part in the experimental condition compared to the control condition. Beside the difference between the conditions regarding the participants' gender, no further significant differences regarding demographics and baseline scores existed (Table 1). Table 1 presents further baseline characteristics of the participants.

Table 1.

Baseline characteristics of study participants per condition (N = 198)

	Experimental (N = 97)		Waitlist (N = 101)			
	Frequency (%)	M (SD)	Frequency (%)	M (SD)	χ^2	t (SE)
Gender					3.91*	
Male	18 (18.6)		31 (30.7)			
Female	79 (81.4)		70 (69.3)			
Family Status					3.78	
Married or Registered Relationship	48 (49.5)		60 (59.4)			
Divorced	22 (22.7)		14 (13.9)			
Widowed	4 (4.1)		2 (2.0)			
Never been married	23 (23.7)		25 (24.8)			
Living Situation					2.19	
Alone	28 (28.9)		23 (22.8)			
With Partner and Chil(dren)	25 (25.8)		25 (24.8)			
With Partner without Child(ren)	35 (36.1)		46 (45.5)			
Alone with Chil(dren)	8 (8.2)		6 (5.9)			
With Others	1 (1.0)		1 (1.0)			
Education					7.48	
Lower Educational Level	4 (4,1)		0 (0)			
Middle Educational Level	8 (8,2)		3 (3,0)			
High Educational Level	81 (83.5)		94 (93)			
Age		52.60 (9.64)		53.49 (10.10)		0.63 (1.41)
Baseline Scores						
Well-Being		2.37 (0.63)		2.52 (0.65)		1.70 (0.09)
Self-Criticism		2.07 (0.81)		2.04 (0.76)		-0.32 (0.11)
Self-Attacking		0.75 (0.65)		0.73 (0.56)		-0.30 (0.09)

Note. M = Mean, SD = Standard Deviation, SE = Sdt. Error Difference * $p < .05$, n = 198

2.4 Measures

The Mental Health Continuum Short Form (MHC-SF; Keyes, 2002) was used to measure well-being and consists of 14 items. The MHC-SF (Keyes, 2002) measures emotional (three items), psychological (six items) and social well-being (five items) by asking the participant to state the frequency of particular feelings during the last four weeks. This is done by a six-point Likert scale from "never" (0) to "every day" (5). A high score reflects a high level of well-being. An example of an item is: "During the last month, how often did you feel happy?" (Lamers et al., 2010). The psychometric properties of this scale were found to be good (Lamers, Westerhof, Bohlmeijer, Klooster, & Keyes, 2011; Keyes et al., 2008). In the present study, the internal consistency was good for the measurements T0 ($\alpha = .84$), T1 ($\alpha = .89$) and T2 ($\alpha = .90$).

Self-criticism and self-attacking were measured by the Forms of Self-Criticising/Attacking and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004). The participants had to indicate to which degree the statements reflect them. The questionnaire was scored on a five-point Likert scale ranging from "Not at all like me" (0) to "Extremely like me" (4). The questionnaire comprises three subscales. Two were used in this study. The first scale measures the inadequate self (9 items). For example, "I am easily disappointed with myself". The second scale reflects the hated self (5 items) and is directed at the wish of a person to harm him- or herself. An example of this scale is: "I have become so angry with myself that I want to hurt or injure myself". The subscales are summarized independently to subtotal scores. A high total score reflects a high level of self-criticism or -attacking. The psychometric properties were found to be good for both subscales (Gilbert et al., 2004). Relating to the internal consistency, the scale for the inadequate self was found to have high scores in this study. Cronbach's alpha for the subscale inadequate self was high: $\alpha = .84$, $\alpha = .86$ and $\alpha = .89$ for the measurement moments T0, T1 and T2 respectively. The subscale for hated self showed a lower but still sufficient Cronbach's alpha with $\alpha = .74$ and $\alpha = .74$ for the measures T1 to T2. For moment T0, Cronbach's alpha was found to be on the line to be sufficient for the hated self subscale with $\alpha = .65$.

Gratitude was measured by the Gratitude Questionnaire (GQ-6-NL; Jans-Beken, Lataster, Leontjevas & Jacobs, 2015; McCullough, Emmons & Tsang, 2002). This questionnaire consists of six statements for which the participant had to rate his or her agreement on a seven-point Likert scale. One example is: "I have so much in life to be thankful for" (McCullough et al., 2002). The scale ranged from "strongly disagree" (1) to

"strongly agree" (7). A high total score suggests a high level of gratitude. In previous research, the internal consistency was found acceptable with a Cronbach of α = .82 (Jans-Beken et al., 2015). In this study, the internal consistency was low ranging from α = .15 to α = .32 for the measures T0 to T2, therefore the analyses based on this scale could not be made.

2.5 Data analysis

SPSS 22 (IBM SPSS Statistics) was used to perform all statistical analyses. Missing cases of data relevant for this study were analyzed per instrument with the missing completely at random tests (MCAR). The test determines the distribution of the missing data and controls if the data misses randomly (Little, 1988). The MCAR test (Little, 1988) showed a chi-square of 443.77 (df = 609; p = 1.000), which supports a random distribution of the missing values. Hence, missing data were removed by listwise deletion from the data set. The data of 45 participants were removed from the dataset because they had missing data at the T1 or T2 measure. In addition, 14 outliers were removed by using the outlier labeling rule by Hoaglin and Iglewicz (1987).

In order to select the appropriate psychometric test, normality analyses were performed for all mean scores of well-being, self-criticism and self-attacking on T0, T1 and T2. In addition, normality analyses were performed on the change scores of well-being, self-criticism and self-attacking. Based on the evaluation of the skewness describing the asymmetry of the distribution, the decision was made whether the scores were normally distributed. Following a formula by Kim (2013), a z-value between -3.29 and 3.29 indicated a normal distribution for samples bigger than 50 and smaller than 300 (Kim, 2013). Most scales had a normal distribution, apart from the mean scores of self-attacking on T0, T1 and T2.

To test hypotheses 1) and 2), repeated-measure ANOVAs were conducted to compare the main effect of time, the main effect of condition and the interaction effect between condition and time on well-being, self-criticism and self-attacking measured at baseline and at three-month follow-up. Based on automatic calculation of the change scores of the repeated-measure ANOVAs, it was decided to also adapt this test to the paranormal distributed scores of self-attacking, because the change scores were proofed to be normally distributed. Gender was used as covariate to preclude bias in and to indicate gender related influences on the results, since a significant difference in gender between the conditions was found. For repeated-measure ANOVAs effect sizes are given using partial eta squared. According to Cohen (1988), partial eta squared were interpreted: .01 = small effect, .06 = moderate effect and .14 = large effect.

To test hypothesis 4), the change of the possible mediators self-criticism and self-attacking from pre- to post-measurement (T0 – T1) were used. The independent variable was the condition. The dependent variable was the mean change score between T0 and T2 of well-being. To assess whether T0-T1 changes in self-criticism and -attacking mediate the effect of the compassion training on T0-T2 changes on well-being, two mediation analyses were constructed by using the computational tool PROCESS created by Hayes (2013) in single models. Baseline scores of the mediators and outcome variable were used as control variables. The paths a, b and c of the mediation model were explored. If the confidence intervals of the indirect effect based on 5000 bootstrapped samples did not contain zero, a significant mediation effect was assumed.

3. Results

3.1. Effects of the condition on well-being, self-criticism and self-attacking

Table 2 contains the descriptive statistics of the condition group and measurement with the corresponding analysis of variance. The repeated measures ANOVAs detected a significant main effect of time between T0 and T1 ($\eta p^2 = .09$) and T0 and T2 on well-being ($\eta p^2 = .14$; Table 2), with moderate to large effect sizes, meaning that, for example, 9 % and 14 % of the improvement in well-being could be explained by time. No significant main effects of condition were found across T0 and T1 ($\eta p^2 = .01$) and T0 and T2 ($\eta p^2 = .00$) on well-being, accompanied by small effect sizes. However, an interaction effect was found between condition and time with moderate to large effect sizes, which could explain a moderate to large part of the improvement in well-being. This suggests that the participants in the experimental group compared to the control group had a greater improvement in well-being between T0 and T1 and T0 and T2. Those findings supported the first hypothesis.

A significant main effect of time was found between T0 and T1 ($\eta p^2 = .06$) and T0 and T2 on self-criticism ($\eta p^2 = .29$), with moderate to large effect sizes. No significant main effects of condition were found across T0 and T1 ($\eta p^2 = .01$) and T0 and T2 ($\eta p^2 = .02$) on self-criticism, accompanied by small effect sizes. An interaction effect was found between condition and time with moderate to large effect sizes, which could explain a moderate to large part of the reduction in self-criticism. This suggests that the participants in the experimental group compared to the control group had a greater reduction in self-criticism between T0 and T1 and T0 and T2.

The repeated measures ANOVA with the scores on self-attacking detected a significant main effect of time between T0 and T1 ($\eta p^2 = .03$) and T0 and T2 ($\eta p^2 = .10$), that could explain a small part of the reduction in self-attacking. No significant main effects of condition were found across T0 and T1 ($\eta p^2 = .00$) and T0 and T2 ($\eta p^2 = .01$) on self-criticism, accompanied by small effect sizes. An interaction effect was found between condition and time with low effect sizes. This suggests that the participants in the experimental group compared to the control group had a greater reduction in self-attacking between T0 and T1 and T0 and T2. However, the factor time as well as the interactional effect could explain a small part of the reduction in self-attacking between T0 and T1 and T0 and T2. No repeated measures ANOVA recognized a significant influence of gender as covariate on the effect of the condition on the dependent variables. The findings regarding the decrease in self-criticism and self-attacking supported the second hypothesis. Figure 1 compares the condition groups with the corresponding scores during the measurements.

Table 2
Descriptive statistics and analysis of variance

Outcome	Assessment	Experimental (N = 97)	Waitlist (N = 101)	ANOVA F			ES
		M (SD)	M (SD)	Time	Group	Time × Group	Time × Group
Well-Being	T0	2.37 (0.63)	2.52 (0.65)				
	T1	2.98 (0.77)	2.60 (0.73)	19.23***	1.77	39.30***	.17
	T2	3.01 (0.79)	2.77 (0.72)	31.70***	0.41	20.28***	.09
Self-Criticism	T0	2.07 (0.81)	2.04 (0.76)				
	T1	1.60 (0.72)	1.88 (0.83)	12.90***	1.54	11.41**	.06
	T2	1.40 (0.72)	1.81 (0.92)	28.64***	3.50	20.01***	.09
Self-Attacking	T0	0.75 (0.65)	0.72 (0.56)				
	T1	0.48 (0.59)	0.63 (0.61)	5.38*	0.51	5.98*	.03
	T2	0.45 (0.55)	0.66 (0.65)	7.90**	1.30	8.89 **	.04

Note. M = Mean; SD = Standard Deviation; n = number of participants; ES = effect size partial eta squared; *$p < .05$, ** $p < .01$, *** $p < .001$; E/W = experimental- , waitlist condition

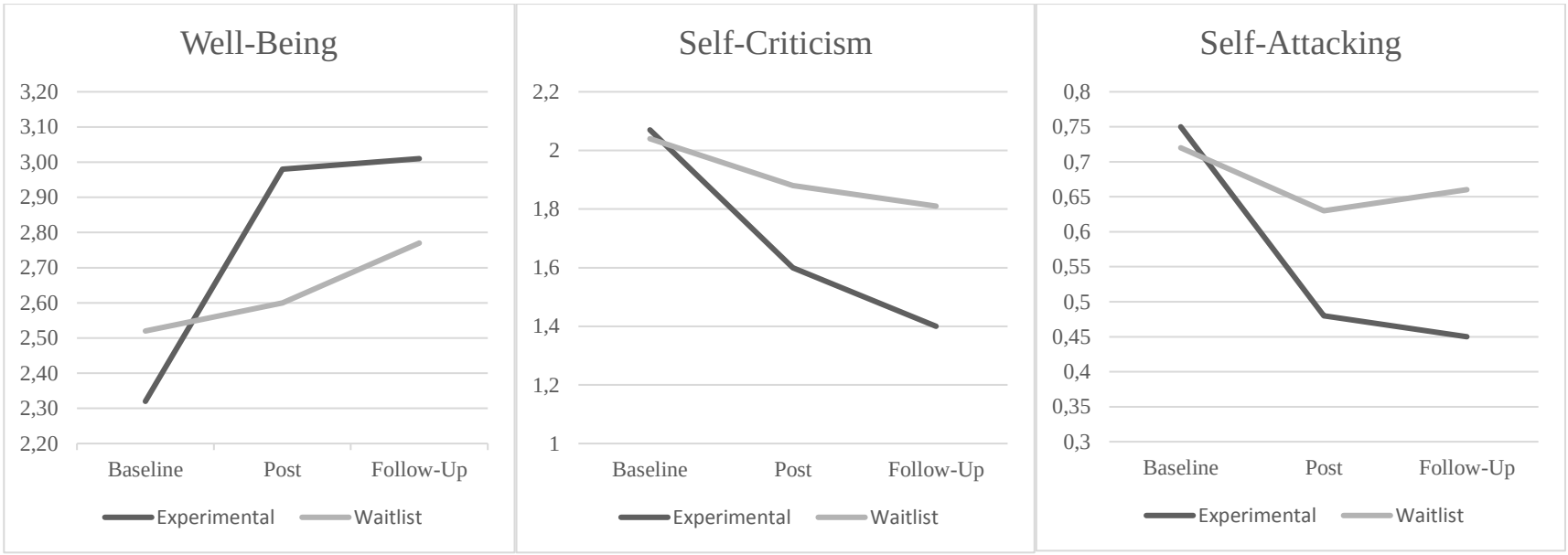


Figure 1. The interaction effect of condition × time on baseline-, post- and three-month follow-up measurement

3.2. Mediation effect of self-criticism and self-attacking

Two simple mediation models were conducted corrected for the baseline scores of self-criticism or self-attacking and well-being. They detected a significant effect of the condition group on T0-T2 change scores in well-being, suggesting that participants receiving the compassion training showed greater improvement in well-being compared to the waitlist condition on the T0-T2 change scores (path c; Table 4; Figure 2). Furthermore, significant effects of the condition group on the T0-T1 change score in self-criticism were found, suggesting that the experimental condition showed a greater change than the waitlist control condition (path a). Moreover, the T0-T1 change score in self-criticism show a significant direct effect on the T0-T2 change score in well-being (path b). The indirect effect estimation ($a \times b$) of the T0-T1 change scores in self-criticism on the T0-T2 change scores in well-being supported a mediation by testing if the confidence intervals contained zero ($a \times b = 0.06$, bootstrap confidence interval of 5000: 0.02 to 0.21). That means that the decrease in self-criticism between T0 and T1 mediated the effect of the condition group on the improvement in well-being between T0 and T2.

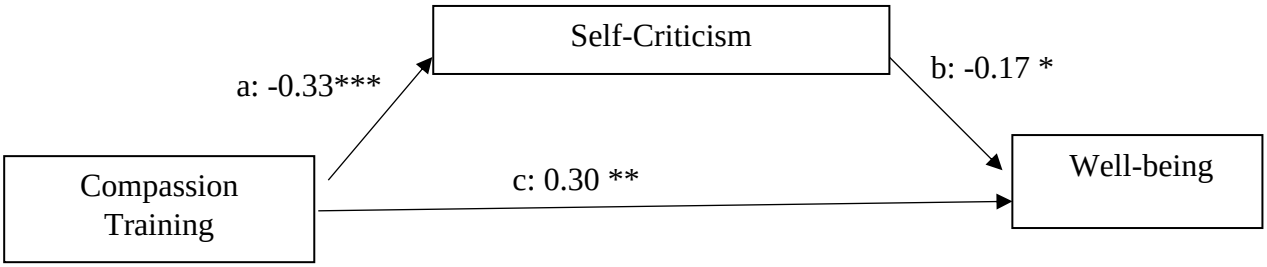
Regarding the second mediation analysis, also a significant effect of the condition group on the T0-T1 change score in self-attacking were found, suggesting that the experimental condition showed a greater reduction in self-attacking than the waitlist control condition (path a). However, the T0-T1 change scores in self-attacking did not show a significant direct effect on the improvement in well-being (path b). In addition, the indirect effect estimation ($a \times b$) of the T0-T1 change scores in self-attacking on the T0-T2 change scores in well-being showed no sign for a mediation effect ($a \times b = 0.01$, bootstrap confidence interval of 5000: -0.03 to 0.08). This indicated that the decrease in self-attacking between T0 and T1 did not mediate the effect of the condition group on the improvement in well-being between T0 and T2. The results of the mediation analyses supported the fourth hypothesis.

Table 4.

Regression coefficients (β) and Confidence intervals (CI) of the simple mediation models

Mediator	c-path	a-path	b- path	Bootstrap results for indirect effects (95% CI)		
	β	β	β	$a \times b$	Lower	Upper
Self-Criticism	0.30 **	-0.33***	-0.17 *	0.06	0.02	0.21
Self-Attacking	0.34 ***	-0.19 **	-0.05	0.01	-0.03	0.08

Note. *p < .05, ** p < .01, *** p < .001



Note. *p < .05, ** p < .01, *** p < .001

Figure 2. Schematic overview of the simple mediation model

4. Discussion

This study served to test the effect of a self-help compassion training on well-being directly after the intervention and at a three-month follow-up compared to a waitlist control condition and to explore self-criticism and self-attacking as possible mediators.

4.1 Effects of the self-help compassion training on well-being, self-criticism, and self-attacking

The results of this study supported the hypotheses one and two that the compassion training has a positive effect on well-being and creates a reduction in self-criticism and self-attacking directly after the intervention and at three-month follow-up. These findings replicated the findings of previous studies. Moreover, the follow-up findings of this study indicate that using the self-help compassion training once influences the participants positively on a longer term.

Kirby (2016) showed a positive effect of CFT on dimensions of well-being like life satisfaction and happiness. In a study of Gilbert and Procter (2006), self-criticism was

reduced after a CFT intervention. Furthermore, it was found that compassion, the essence of CFT, has a negative impact on self-criticism (Dundas et al., 2015; Kirby, 2016; Neff, 2003). However, barely literature was found about the effect of CFT on self-attacking what makes the findings of this study important to fil the gap in the literature. It is important to investigate the effect of CFT on self-attacking, because CFT was found to reduce self-attacking equal to self-criticism by some studies (Gilbert & Procter, 2006) and that in turn could have positive effects on well-being like self-criticism (Duarte, 2017). This seems even more important considering that self-criticism were found to impair therapeutic alliances and could lead to poorer treatment outcomes in interpersonal therapy, for example (Marshall, Zuroff, McBride & Bagby, 2008). Self-attacking could have a similar influence, which would make in more important to counteract it through psychological interventions.

A possible explanation of the positive effect on well-being and negative effect on self-criticism and self-attacking of CFT could be the stimulation of affiliative feelings which are important for well-being and are reduced in self-critical and self-attacking individuals (Gilbert, 2014; Longe et al., 2010). CFT focusses on affiliative feelings and behavior towards the self due to compassion, like it is described by the evolutionary theory about emotion systems by Gilbert (2014). The evolutionary theory highlights the importance of the soothing system. Compassion, the essence of CFT, strengthens the soothing system which in turn enhances feelings of safeness and calmness. To focus on this system seems to be effective to handle stressors based on self-critical judgements and to enhance well-being based on the findings of this study. By strengthen the soothing system, a balance between the three systems could be enhanced. That could mean that the feelings of calm, non-striving and connected with others accompanied by the activation of the soothing system, may counteract the feelings accompanied by the threat and drive system which are, for example, anxiety, sadness, excitement and vitality. In that sense it seems reasonable that self-criticism and self-attacking is reduced, since the accompanied feelings of frustration and inadequacy that may activate the threat or drive system are counteracted. In another study it was hypothesized that a compassionate attitude may facilitate well-being and serve as a safeguard against negative feelings such as self-criticism (Hollis-Walker & Colosimo, 2011). This study can provide some evidence about the effect of CFT on self-criticism and well-being and can support the hypothesis of Hollis-Walker and Colosimo (2011).

4.2 Self-criticism and self-attacking as possible mediators

The findings supported the fourth hypothesis partially, meaning that the effect of the self-help compassion training on well-being at three-month follow-up was mediated by baseline-post changes in self-criticism but not by self-attacking. According to the two continua model, mental health and mental illness are related but also distinct dimensions (Westerhof & Keyes, 2010). Self-criticism can be seen as the relating factor between mental health and illness, since it effects well-being on the one hand and psychopathology on the other hand. In a prior study, self-criticism and -attacking were found to affect the dimension of mental illness only (Castilho et al., 2015). If self-attacking lies rather on the dimension of psychopathology than on the dimension of well-being, it could explain that reducing self-attacking does not directly lead to greater well-being. The effect of the self-help compassion training on well-being mediated by self-criticism could be explained by Gilbert and Procter (2006). They state that self-criticism inhibits individuals to experience self-liking and self-soothing. This inhibition could be corrected in self-critical individuals by means of compassion trainings such as CFT. That is an important finding since it shows the major role of self-criticism for example in therapy and that it can be counteracted by compassion trainings.

Another possible explanation for self-attacking being no mediator are the overall very low scores of both groups on self-criticism and -attacking at baseline, which could hinder the detection of a greater reduction in the scores and results in a floor effect. Especially the low scores of self-attacking are remarkable. Rather than individuals with moderate scores on self-criticism, it is possible that people scoring moderate or high on self-attacking were excluded from the study, since it is seen as a closer linked to depression, an exclusion criteria, as self-criticism (Irons et al., 2006). The exclusion of highly self-attacking individuals could also explain the left sided skewedness of the scores of self-attacking on T0 to T2, meaning that mostly low self-attacking scores were detected in the study. Summarized, for this sample no significant mediating effect of self-attacking could be found, but for a clinical sample that could be possible.

4.3 Strength and limitations of the present study

A strength of the present study is the RCT design that can provide a strong evidence about the effectiveness of a given study design. In addition, the measurements of the concepts well-being and self-criticism were reliable. Another strength is the number of participant. Although the data of 45 participants were excluded, the sample of 198 participants was

sufficient to produce a power of 80% at a significance level of $\alpha = .05$. That could impact the reliability and validity of this study.

There are also some limitations of the present study. Overall, people with a higher educational background took part in this study. According to Hadjistavropoulos, Pugh, Hesser and Andersson (2016), people with lower educational background adhered to a less extent to an internet-delivered cognitive behavioral therapy assisted by a therapist. This also seems likely working with a self-help compassion-training delivered by a book and keeping the responsibility by the participant. Highly educated people are generally more used to work independently with books since educational programs often apply books. Due to a selection bias, it could be possible that more highly educated women took part. The selection bias could occur during the recruitment with daily newspaper which could be more likely read by this target group. That more highly educated women took part may influence the interpretation of the results, which can be more adopted to highly educated women than to individuals with other demographical characteristics.

Furthermore, the sample was unequal regarding the women-men ratio. Women are seen as more self-critical than men what could make the study more appealing to them (Baião, Gilbert, McEwan & Carvalho, 2015). The results denied an influence of gender on the findings. Apart from this, the ratio could decrease the external reliability because the results could look different if more men took part. Summarized was the study not representative to the Dutch population. Another limitation is the low internal consistency of the gratitude questionnaire, ranging from $\alpha = .15$ to $\alpha = .32$. As a consequence, hypotheses three and fife could not be investigated. Moreover, the overall sufficient internal consistency of the baseline measure of self-attacking was relatively low. The results regarding self-attacking could therefore be misleading.

4.4 Further research

This study investigated the effectiveness of the self-help compassion training with mostly highly educated women what emphasizes the need to investigate the effectiveness of the intervention for another sample. Another sample could be lower-educated people or a clinical population. This could be interesting target groups for investigation to explore if CFT can be used for people with different educational backgrounds who miss other psychological therapies, because of the lack of severity of their problems or want to enhance their well-being. For lower-educated individuals the format of the self-help compassion training should be tested on the capability. They might need more external support or a more interactive

medium and exercises, like a computer game for example, to maintain the concentration or to feel more appealing to the training.

With the given sample, self-attacking did not seem to be an important factor to achieve well-being. People with a higher degree of psychopathology, like highly depressive individuals, could have higher scores in self-attacking since high scores of self-criticism and self-attacking predict higher levels of psychopathology (Castilho et al., 2015). This could result in a mediating role for self-attacking for a clinical sample, meaning that a clinical sample could also profit from compassion-based exercises. However, embracing also individuals with severe psychopathology as target group and using compassion-based exercises in therapeutic therapies may improve well-being and could help to counteract also severe psychopathology.

Another interesting topic of investigation could be other possible mediators and processes underlying between the effect of CFT on well-being. Possible mediators could be positive and negative emotions. CFT is based on the function of the emotion systems, therefore a connection between emotions and actions is already investigated (Gilbert, 2014). Gratitude as mediator should be investigated in another study again, since other literature had promising findings regarding its effect on well-being (Petrocchi and Couyoumdjian, 2016).

5. Conclusion and practical implications

Summarized, the focus lay on the effect of CFT, self-criticism and -attacking on psychopathology for a long time. CFT seemed to be effective in improving well-being and reducing self-criticism and self-attacking. The findings showed that self-criticism acts as key to well-being also and that it can be addressed by CFT. CFT can therefore provide interventions with a comprehensive reach. CFT could be used as a therapy for people with low levels of depression and low to moderate levels of well-being. This target group misses other therapeutic interventions because their complaints are not severe related to diagnosis of patients in other therapeutic settings. The society would also profit from lower levels of depression and higher levels of well-being since this could result in less sick-leave (Keyes, 2007). The gap in the literature about the underlying processes of the effectiveness of compassion trainings could be reduced by this research and might support the body of evidence regarding CFT. The findings could have some implication for the construction of other intervention and highlights the importance of a focus on self-criticism. A recommendation for further research focusses on the effects of CFT on clinical populations and to investigate further processes that underlie the effect of CFT on well-being.

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