



Research paper

Self-compassion is more effective than acceptance and reappraisal in decreasing depressed mood in currently and formerly depressed individuals[☆]



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ABSTRACT

Background: Self-compassion has recently been discussed as an effective affect regulation strategy for reducing negative affective states. The primary aim of the current study was to compare the efficacy of self-compassion to the more established strategies of acceptance and reappraisal.

Methods: For this purpose, we induced depressed mood in formerly, currently and never depressed individuals ($n = 30$ each) at four different time-points. Participants were instructed to regulate their emotions after each mood induction by either waiting, employing self-compassion, accepting their emotions or reappraising the situation. Level of depressed mood was assessed before and after each mood induction and regulation phase.

Results: Across groups, decreases in depressed mood were greater in the self-compassion compared to the waiting and acceptance conditions. In recovered and never depressed participants, self-compassion was also more effective than reappraisal.

Limitations: Our results rely solely on self-report data. **Conclusions:** Our finding that self-compassion is superior to acceptance and equally or more effective than reappraisal encourages future research on how self-compassion interventions can be used to enhance the efficacy and stability of current depression treatments.

1. Introduction

Major Depressive Disorder (MDD) is a highly recurrent disorder (Bockting et al., 2005). The risk for repeated episodes in individuals who have recovered from a depressive episode exceeds 80% (Boland and Keller, 2002) with patients experiencing an average of four major depressive episodes of 20 weeks duration each (Judd, 1997). The mechanisms of depression relapse and recurrence, however, have remained largely elusive (Beshai et al., 2011).

Throughout the past 20 years, deficits in affect regulation (AR) have gained increased attention as risk and maintenance factors for MDD (Ehring et al., 2010; Joormann and Siemer, 2014). AR refers to the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying affective states in accordance with situational demands, biological needs, and individual goals (e.g., Eisenberg et al., 2004; Gratz and Roemer, 2008, Thompson, 1994). Following Gross (2014), affective states include undifferentiated psychophysiological arousal (e.

g., tension, stress), moods (e. g., depressed mood, dysphoric mood), and emotions (e. g., anxiety, anger, sadness, shame, guilt). AR can thus be seen as an umbrella term including the concepts of emotion and mood regulation (Gross, 2014). Within this paper, a special emphasis was put on the regulation of depressed mood.

Cognitive theories of depression have suggested that negative affect cues cognitive processes that foster an escalation of negative mood which over time can culminate in a depressive episode (e.g., Teasdale, 1988). Many authors have argued that deficits in AR are not confined to acute episodes of depression but may be a more stable characteristic of depression vulnerability (Gross and Munoz, 1995; Krings and Werner, 2004; Rude and McCarthy, 2003). From this perspective, strategies that down-regulate negative affective states could potentially be used to prevent the onset, maintenance, or recurrence of depressive episodes. Two of the most widely studied AR skills are reappraisal (e.g., Gross and John, 2003) and acceptance (e.g., Berking and Whitley, 2014).

Several studies on healthy and clinical samples, including MDD

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participants, have supported negative associations between depressive symptoms and the use of reappraisal (Garnefski and Kraaij, 2006; Garnefski et al., 2004; Martin and Dahlen, 2005; Rood et al., 2012). At the same time, some authors have started to question the usefulness of reappraisal in down-regulating elevated negative mood states (e.g., Gotlib and Joormann, 2010). Reappraisal is a cognitively taxing task (Joormann and Siemer, 2014). Mood-congruent biases in basic cognitive processes such as attention, memory, and interpretation as well as deficits in cognitive flexibility and control may lead to inflexible and automatic appraisals and impede the use of reappraisal in MDD (Gotlib and Joormann, 2010; Joormann et al., 2010). Elevated levels of negative affect may further impede the use of reappraisal because alternative, more helpful, cognitions are incongruent with the experienced emotional and somatic states (Gotlib and Joormann, 2010; Joormann and Siemer, 2004). Consistent with this more critical evaluation of cognitive reappraisal, some studies have found habitual use of reappraisal to be unrelated to depressive symptoms or correlated with poorer outcomes (Garnefski et al., 2001; Nezelek and Kuppens, 2008).

Findings on associations between acceptance and depressive symptoms are also mixed (e.g., Garnefski and Kraaij, 2006; Garnefski et al., 2001; Martin and Dahlen, 2005). Previous experimental studies indicate a lack of short term relief (Campbell-Sills et al., 2006) or even temporary increases of experienced distress following acceptance (Liverant et al., 2008). Acceptance has been proposed to be a strategy that is difficult to apply without previous training and that may even activate feelings of hopelessness and resignation (Diedrich et al., 2014). It may be difficult to apply at elevated levels of negative affect (Diedrich et al., 2014; Shallcross et al., 2010). Limitations of reappraisal and acceptance clearly indicate the need for further research on adaptive AR strategies.

A strategy that has a long tradition in Buddhist approaches to enhance well-being (Gilbert et al., 2004) but has only recently gained the attention of mental health and well-being researchers is compassionate self-support (e.g., Neff, 2003). Self-compassion entails being kind, empathetic, supportive, and understanding toward oneself in instances of pain or failure rather than being harshly self-critical. It includes being open to and moved by one's experiences. Negative affect is not avoided. Instead, people take an external perspective on themselves (i.e., on the suffering self); they let arise a warm and strong feeling of empathy that is associated with the wish to help themselves in instances of pain and suffering (e.g., Berking and Whitley, 2014; Neff, 2003). Self-compassion is regarded as an effective AR strategy that helps create distance from suffering (i.e., the suffering self) and transforms negative affect (e.g., disgust, shame) into more positive self-referential affect (e.g., feelings of kindness and understanding; Berking and Whitley, 2014; Neff, 2003). As it directly builds on the experienced emotional and somatic states, it should require less cognitive flexibility and control than for example reappraisal (Gotlib and Joormann, 2010). Furthermore, as self-compassion directly builds on a person's suffering, it is proposed to be easily applied when facing extremely negative emotions (Berking and Whitley, 2014; Diedrich et al., 2014; Hein and Singer, 2008). Within the adaptive coping with emotions model (Berking and Whitley, 2014), self-compassion is also discussed as an effective mood stabilizing strategy that helps keep one's mood within an acceptable range and enhances motivation for effective AR (Berking and Whitley, 2014). Self-compassion may thus enable individuals to persistently utilize other adaptive skills such as reappraisal and acceptance, even if they are initially aversive (Berking and Whitley, 2014; Diedrich et al., 2014; Liverant et al., 2008). Previous cross-sectional and longitudinal studies using individuals from the general population (MacBeth and Gumley, 2012; Neff et al., 2007; Shapira and Mongrain, 2010) and a clinical inpatient sample (Berking et al., 2008a) have linked higher levels of habitual use of self-compassion to more positive emotions, less negative emotions, and fewer depressive symptoms. In a previous experimental study, self-compassion was more effective than a neutral waiting condition and equal to or, at elevated levels of depressed mood, more

effective than reappraisal or acceptance in decreasing depressed mood in a MDD sample (Diedrich et al., 2014).

By comparing the effects of self-compassion on decreases in depressed mood to the more established AR strategies of acceptance and reappraisal, this study aimed to provide further support for self-compassion as an effective AR strategy in healthy and clinically diagnosed samples. Considering high rates of depression recurrence (e.g., Boland and Keller, 2002) and the likely importance of unregulated negative affect and deficits in AR (e.g., Teasdale and Cox, 2001) for depression relapse, this study, for the first time, aimed to test the effectiveness of self-compassion in formerly depressed individuals. Building on previous research and without previous training, we expected self-compassion to be more effective in reducing a previously induced negative mood state as (1) a neutral waiting condition, (2) emotional acceptance, (3) and cognitive reappraisal. Positive findings for self-compassion should hold across groups of currently, formerly and never depressed individuals.

2. Methods

2.1. Participants and procedures

Three groups of participants ($n = 30$ each) took part in the study: recovered depressed (RMD), currently depressed (MDD), and never depressed control (NC) participants. MDD participants were randomly selected out of 101 MDD patients enrolled in a treatment outcome study in two outpatient treatment centers in Germany using SPSS (Ehret et al., 2014). RMD and NC individuals were recruited to match these patients with regard to age, sex, and level of education ($n = 30$ each). RMD and NC participants were solicited in one of the two outpatient treatment centers as well as through advertisements posted in numerous locations within the local communities and in local newspapers. All individuals recruited in the outpatient clinic were willing to participate in the experiment. Individuals responding to the advertisements were excluded if they did not match the diagnostic criteria with regard to depression status, age, sex, and level of education.

Participants were assigned to the groups on the basis of the Structured Clinical Interview for DSM-IV Axis I (SCID; German version: Wittchen et al., 1997). The diagnostic interview was administered by interviewers with Bachelor's degrees or above in clinical psychology. All raters received extensive training in using the SCID interview and were supervised by advanced students (i.e., psychologists with Master's degrees or above in psychology). Individuals in the MDD group were diagnosed with MDD as the primary diagnosis. Participants in the RMD group had experienced at least one major depressive episode in the past and had been remitted for at least two months prior to inclusion in this study. NC participants did not meet criteria for any mental disorder and had no history of MDD at the time of the study. Further inclusion criteria for all groups included age 18 or above and sufficient German language skills. Exclusion criteria included acute risk for suicide or comorbid psychotic, substance-related, bipolar disorders, organic brain or other severe medical disorders, and severe cognitive impairments. Other comorbid disorders in the MDD and RMD groups were allowed to increase validity of the study.

2.2. Material

2.2.1. Mood measures

Participants rated their level of depressed mood ("How depressed do you feel at the moment") on visual analog scales (VAS) at the beginning of the experiment (baseline rating), before, and after each of the four mood inductions and regulation instructions. Computer-based VAS were composed of two vertical lines anchored on one end by the words "not at all" (= 0) and on the other end by the word "completely" (= 100). Participants were asked to place a mark across the line at the point that best described their answer.

2.2.2. Mood induction

Depressed mood was induced by music (extract from “Adagio in G minor” by Tomaso Giovanni Albinoni) and negative self-referential statements using a modified Velten method (Velten, 1968). Examples of statements that were presented on the computer screen during the induction phase include, “I think I am a loser”, “No one seems to be really interested in me”. The mood inducing music was played as background music. The effectiveness of the Velten procedure (Westermann et al., 1996), of mood-suggestive music (Westermann et al., 1996), and of the combination of both methods has been demonstrated in previous studies (Westermann et al., 1996).

2.2.3. Mood regulation

AR instructions were given orally via loudspeakers. The instructions for self-compassion and acceptance were abbreviated versions of audio sequences used in Affect Regulation Training (ART; Berking and Whitley, 2014). The effectiveness of the ART in increasing acceptance and compassionate self-support has previously been demonstrated (e.g., Berking et al., 2008b; Berking et al., 2010; Berking et al., 2013). The instruction for cognitive reappraisal aimed to represent strategies typically taught in cognitive therapy (e.g., Beck, 2011). A detailed description of the self-compassion, acceptance, and reappraisal instructions is given in the Appendix. For the waiting condition, participants read the following instructions on the computer screen: “We will now have a break of 5 min. Please remain seated and try to relax during this time. The program will signal the end of the break to you”. The AR instructions were validated in a previous study on currently depressed individuals (Diedrich et al., 2014).

2.2.4. Dysphoria

Prior to the experiment, participants were asked to complete the brief Patient Health Questionnaire mood scale (PHQ-9; Löwe et al., 2002). The PHQ-9 is a short self-report scale designed to measure depressive symptom severity. Participants indicate on a four-point Likert scale (0 = “not at all”; 3 = “nearly every day”) how frequently they have experienced each of the nine DSM-IV criteria for major depression (e.g., “little pleasure or interest in doing things”, “feeling down, depressed, or hopeless”) during the past two weeks. Associations with other depression and mental health scales supported the measure’s convergent and discriminant validity in clinical samples (Gräfe et al., 2004) and in the general population (Martin et al., 2006). Excellent internal consistency scores were reported in previous studies using representative population-based (Rief et al., 2004) and clinical samples (Löwe et al., 2004). Cronbach’s alpha in our study was .87 (RMD), .80 (MDD), .77 (NC).

2.3. Procedure

All participants were tested individually. The experiment was administered on a Dell Optiplex 740 MT computer using Presentation software (Neurobehavioral Systems, Albany, CA). The entire procedure took approximately 60 min. All participants received € 10 in cash in return for their participation. Written informed consent was obtained from all participants prior to the experimental session. All procedures were approved by the ethics committee of the Universities of Mainz and Marburg. The study was further approved by a formal committee of the German Research Foundation.

Participants completed a short depression scale before the experiment. During the experiment, depressed mood was induced at four different time-points and participants were instructed after each mood induction to wait, employ self-compassion, reappraise the situation, or accept their negative emotions. To control for potential sequence effects, we utilized all possible permutations of regulation sequences across the subjects ($N_s = 24$). The length of induction and instruction phases was standardized across groups and conditions. Matched MDD, RMD, and NC individuals were given the same permutation numbers. To help participants recover from persisting negative mood, a positive

mood induction procedure was completed at the end of the experimental procedure and participants were offered to talk to the experimenter about their experiences. All participants briefly talked to the experimenter and were asked if they were doing ok. No participant showed the necessity for further treatment because of side-effects of the study (e.g., severe depressed mood or suicidal tendencies).

2.4. Post-experiment assessment

After the experiment, participants completed a short survey. They rated to what extent they had specific difficulties when trying to follow the regulation instructions. All these ratings were introduced by the question “Which aspects of the strategy were difficult for you to apply”. The answers were rated on a 5-point Likert scale ranging from 1 (“not at all”) to 5 (“completely”). Potential difficulties during the use of self-compassion included (1) to see oneself from an outsider’s point of view, (2) to perceive how the own feelings were reflected in one’s posture and facial expression, (3) to sense a feeling of compassion towards oneself and to support oneself, and (4) to encourage and cheer oneself up. Potential difficulties during the use of acceptance included (1) to label the perceived feelings, (2) to rate their intensity, (3) to accept them, and (4) to activate a positive attitude towards them. Potential difficulties during the use of reappraisal included (1) to find arguments and situations that validate the statement, (2) to find arguments and situations that question the validity of the statement, and (3) to imagine more positive statements (also see Diedrich et al., 2014).

3. Results

3.1. Participant characteristics

In each of the conditions, 67% of the participants were female and 60% held the highest level of education in Germany (“Abitur”). The mean age of participants was 39.50 ($SD = 12.13$) in the RMD, 40.93 ($SD = 11.92$) in the MDD, and 39.17 ($SD = 12.42$) in the NC group. As expected, participants in the three groups did not differ significantly in age, $F(2, 87) = .18, p = .84$.

Participants in the RMD group had experienced at least one major depressive episode in the past ($M = 1.47; SD = .63; range: 1–3$) and had been remitted for at least two months prior to inclusion in this study ($M = 32.87$ months; $SD = 37.10$ months; $range: 2–132$ months). The mean number of previous depressive episodes reported in the MDD group was 2.38 ($SD = 1.27; range: 1–5$). RMD and MDD participants significantly differed in the mean number of previous episodes reported ($t(54) = 12.28, p < .01$).

Frequent comorbid disorders in the MDD and RMD groups included: dysthymic disorder (7% MDD), panic disorders and agoraphobia (17% MDD, 7% RMD), social phobia (23% MDD), specific phobia (3% MDD), posttraumatic stress disorder (3% MDD), eating disorders (3% MDD, 3% RMD), and sexual dysfunctions (3% MDD). In line with our group selection criteria, the MDD ($M = 11.90, SD = 4.97$) participants had higher PHQ-9 scores than did both the RMD ($M = 5.38, SD = 4.57; t(51) = .89, p < .01$), and NC ($M = 3.17, SD = 3.24; t(51) = 1.11, p < .01$) participants. No significant differences in PHQ-9 scores existed between RMD and NC individuals ($t(58) = .23, p > .05$).

3.2. Mood induction

To examine the effectiveness of the applied mood induction procedure on VAS levels of depressed mood, we conducted a $2 \times 4 \times 3$ repeated model analysis of variance (ANOVA). Time (before mood induction, after mood induction) and Induction Number (first, second, third, fourth induction) were included in the analysis as within-subjects variables and Group (RMD, MDD, NC) as a between-subjects factor. This analysis yielded a significant increase in depressed mood over time ($F(2, 87) = 17.36, p < .01, partial \eta^2 = .17$). Non-significant main and

Table 1
Means and Standard Deviations of Depressed Mood Before and After Regulation Inductions.

	Baseline	Self-Compassion		Waiting		Acceptance		Reappraisal	
		Pre M (SD)	Post M (SD)	Pre M (SD)	Post M (SD)	Pre M (SD)	Post M (SD)	Pre M (SD)	Post M (SD)
RMD	10.77 (17.84)	20.13 (27.65)	10.90 (17.79)	14.17 (21.79)	11.00 (18.56)	15.53 (22.47)	9.23 (14.18)	11.53 (17.05)	13.80 (19.36)
MDD	41.97 (31.08)	51.27 (32.30)	46.83 (29.28)	49.07 (32.29)	43.00 (28.61)	47.80 (31.22)	43.27 (29.28)	51.63 (31.29)	45.31 (28.02)
NC	11.40 (19.50)	15.60 (27.20)	9.40 (18.37)	12.30 (22.47)	9.00 (16.18)	11.43 (19.91)	7.17 (12.02)	8.57 (15.51)	11.40 (18.37)

Note. RMD = remitted depressed participants. MDD = currently depressed participants. NC = never depressed control participants.

interaction effects for Induction Number and Group indicate the effectiveness of the negative mood inductions across participants and consecutive mood inductions ($F_s < 2.59, p_s < .15$, partial $\eta^2_s < .06$).

3.3. Mood regulation

Means and standard deviations of depressed mood before and after the regulation instructions are given in Table 1. Within groups, pre-levels of depressed mood did not significantly differ among the four instruction conditions ($F(3, 27) < 1.20, p_s > .32; \eta^2_s < .12$).

We predicted that RMD, MDD, and NC participants would exhibit greater improvement in their depressed mood in the self-compassion compared to (1) the waiting condition, (2) the acceptance condition, and (3) the reappraisal condition. To test these a priori hypotheses, we compared the effects of self-compassion in RMD, MDD, and NC participants to mood improvements in the other regulation conditions using separate $2 \times 2 \times 3$ repeated measures ANOVAs. Time (before mood instruction, after mood instruction) and Strategy (self-compassion vs. waiting; self-compassion vs. acceptance; self-compassion vs. reappraisal) were included in these analyses as within-subjects factors; Group (RMD, MDD, NC) served as a between-subjects factor.

3.3.1. Self-compassion vs. waiting

The comparison of self-compassion with the neutral waiting condition showed significant effects for Time ($F(1, 87) = 17.08, p < .01$, partial $\eta^2 = .16$) and Strategy ($F(1, 87) = 4.21, p = .04$, partial $\eta^2 = .05$). No significant effects were revealed for the interaction of Time and Strategy or for Group. These results indicate that time had an overall effect on participants' depressed mood and that decreases in depressed mood varied between the self-compassion and the waiting condition. Across participants, decreases in depressed mood were significantly greater in the self-compassion than in the waiting condition ($d = .16$).

Table 2
Mean Ratings and Standard Deviations for Difficulties in Following Regulation Instructions.

ER strategies and its aspects	NC M (SD)	RMD M (SD)	MDD M (SD)
Self-compassion	2.38 (.92)	2.71 (.92)	3.21 (1.10)
(1) To see oneself from outsider's view	2.10 (1.24)	2.75 (1.16)	3.00 (1.41)
(2) To perceive how feelings were reflected in posture and facial expression	2.50 (1.17)	2.55 (1.23)	2.97 (1.40)
(3) To sense feeling of compassion towards oneself and to support oneself	2.67 (1.27)	2.95 (1.43)	3.50 (1.45)
(4) To encourage and cheer oneself up	2.23 (1.25)	2.60 (1.27)	3.32 (1.47)
Acceptance	2.27 (.85)	2.59 (.92)	3.61 (.73)
(1) To label perceived feelings	2.46 (1.20)	2.79 (1.18)	3.32 (1.28)
(2) To rate intensity of feelings	2.61 (1.20)	2.58 (1.07)	3.58 (1.27)
(3) To accept feelings	1.79 (.96)	2.32 (1.16)	3.58 (.99)
(4) To activate a positive attitude towards feelings	2.21 (1.17)	2.68 (1.46)	4.08 (1.02)
Cognitive reappraisal	2.20 (1.01)	2.70 (.75)	2.98 (.82)
(1) To find arguments and situations that validate statement	2.13 (1.22)	2.75 (1.02)	2.62 (1.29)
(2) To find arguments and situations that question validity of statement	2.40 (1.35)	2.80 (1.06)	3.14 (1.13)
(3) To formulate a more positive statement	2.07 (1.05)	2.55 (1.15)	3.17 (1.14)

Note. ER = Emotion Regulation. NC = never depressed control participants. RMD = remitted depressed participants. MDD = currently depressed participants.

3.3.2. Self-compassion vs. acceptance

The comparison of self-compassion and acceptance also revealed significant effects for Time ($F(1, 87) = 22.26, p < .01$, partial $\eta^2 = .20$) and Strategy ($F(1, 87) = 5.02, p = .03$, partial $\eta^2 = .06$). Across participants, decreases in depressed mood were significantly greater in the self-compassion than in the acceptance ($d = .10$) condition. The interaction of Time and Strategy was non-significant.

3.3.3. Self-compassion vs. reappraisal

The comparison of self-compassion and reappraisal yielded a significant effect for Time ($F(1, 87) = 9.38, p < .01$, partial $\eta^2 = .10$), a significant interaction of Time and Strategy ($F(1, 87) = 7.81, p < .01$, partial $\eta^2 = .08$) and a significant three-way interaction of Time, Strategy, and Group ($F(2, 87) = 3.59, p = .03$, partial $\eta^2 = .08$). To further examine the three-way interaction, we conducted 2×2 repeated measures ANOVAs with Time (before mood induction, after mood induction) and Strategy (self-compassion vs. reappraisal) as within-subjects factors separately for the three groups. These analyses yielded a significant interaction of Time and Strategy in the RMD ($F(1, 29) = 6.76, p = .02$, partial $\eta^2 = .19$) and NC ($F(1, 29) = 6.03, p = .02$, partial $\eta^2 = .17$) groups. Mood improvements were significantly greater following the self-compassion than the reappraisal instructions in both the RMD ($d = .41$) and the NC ($d = .24$) groups. As can be seen in Table 1, reappraisal was associated with a slight increase in depressed mood in RMD and NC participants. This effect, however, was non-significant ($t(29) < 1.30; p_s > .20$). Mood differences in the reappraisal condition did not significantly differ from effects of the waiting condition in the RMD and NC participants ($t(29) < 1.95; p > .06$).

3.3.4. Post-experiment assessment

Means and standard deviations of participants' reported difficulties in applying self-compassion, cognitive reappraisal, and acceptance are presented in Table 2. To test for significant differences in participants'

self-reported difficulties in following the instructions, we used a 3×3 repeated measures ANOVA with Strategy (difficulties in self-compassion, acceptance, reappraisal) as within-subjects factor and Group (RMD, MDD, NC) as between-subjects factor. This analysis yielded a significant interaction of Group and Strategy ($F(4, 138) = 2.63, p = .04$, partial $\eta^2 = .07$). Results revealed no significant difference among strategies ($F(2, 69) = 2.34, p = .10$, partial $\eta^2 = .06$). To further explore group differences, we conducted a multivariate analysis of variance (MANOVA) with group (NC, RMD, MDD) as the independent and mean difficulties in following the instructions as the dependent variables. Main effects for group in the MANOVA that remained significant after Bonferroni corrections were followed up by separate *t*-tests, adjusted for α inflation following the least significant difference (LSD) procedure. The MANOVA supported significant group differences in difficulties in following reappraisal and acceptance instructions. MDD participants reported higher difficulties in applying acceptance and reappraisal instructions than did both RMD (acceptance: $d = 1.23$; reappraisal: $d = .36$) and NC (acceptance: $d = 1.69$; reappraisal: $d = .85$) participants. RMD participants reported higher difficulties following reappraisal instructions ($d = .56$) than NC participants. Group differences in the application of self-compassion instructions did not remain significant after Bonferroni correction.

4. Discussion

The present study was designed to experimentally evaluate the effectiveness of self-compassion as compared to a waiting condition, acceptance, and cognitive reappraisal in reducing depressed mood in RMD, MDD, and NC individuals. Depressed mood was induced by a combination of the [Velten \(1968\)](#) method and mood-suggestive music. The procedure worked equally well in consecutive mood induction phases as well as within the different groups. Consistent with our hypotheses, self-compassion led to a significantly greater reduction of previously induced depressed mood than did the waiting or acceptance conditions. In RMD and NC participants, decreases in depressed mood were significantly greater for self-compassion than reappraisal. In MDD participants, the analyses did not yield significant differences between self-compassion and reappraisal. The finding that self-compassion was superior to the waiting condition indicates that effects of self-compassion exceed time-effects and the effects of spontaneous regulation. Support for self-compassion as an adaptive AR strategy that helps down-regulating depressed mood is consistent with previous research on self-compassion and positive mental health outcomes (e.g., [Gilbert and Procter, 2006](#); [Laithwaite et al., 2009](#); [Lucre and Corten, 2013](#); [Diedrich et al., 2014](#)). Even though individuals with higher depression scores reported difficulties with self-compassion in some previous studies (e.g., [Gilbert et al., 2011](#); [Pauley and McPherson, 2010](#)) and spontaneously used less self-compassion than healthy controls ([Ehret et al., 2015](#)), our results suggest that (recovered) depressed individuals can benefit from this strategy when instructed. When compared to healthy controls, currently and formerly depressed individuals reported greater difficulties in following reappraisal and acceptance but not self-compassion instructions in our study. These findings are in line with the proposed use of self-compassion as an adaptive AR strategy for individuals suffering from high levels of depressed mood (e.g., [Diedrich et al., 2014](#)).

If replicated in future research, the findings from the present study have important clinical implications. Existing treatments of MDD often focus on an increase in reappraisal and acceptance. Findings from treatment outcome studies provide ample evidence for the efficacy of these interventions, including cognitive behavioral therapy (e.g., [Beck, 2011](#)) and mindfulness-based therapies (e.g., [Segal et al., 2002](#)), for MDD (e.g., [Cuijpers et al., 2013](#)). However, previous studies also demonstrate important limitations of available treatments as high rates of non-responders ([Casacalenda et al., 2002](#)) and high rates of relapse (e.g., [Beshai et al., 2011](#)). Our finding that self-compassion is superior

to acceptance and equally (MDD) or more (NC, RMD) effective than reappraisal for decreasing depressed mood in currently and formerly depressed individuals encourages research on self-compassion interventions. Feasibility and pilot trials of Compassion Focused Therapy ([Gilbert, 2010](#); [Gilbert and Procter, 2006](#); [Laithwaite et al., 2009](#); [Lucre and Corten, 2013](#)) have provided preliminary support for the effectiveness of increases in self-compassion to decrease depressive symptoms in clinical populations. Furthermore, increases in self-compassion were found to be a key mechanism in mindfulness-based cognitive therapy for depression ([Kuyken et al., 2010](#)). Future studies should do further work to show how self-compassion interventions can be used to enhance the efficacy and stability of current depression treatments. Using randomized controlled trials, these studies should also longitudinally assess and further compare effects of AR strategies as self-compassion, acceptance, and reappraisal on depressed mood.

Although our findings on self-compassion promise to increase our understanding of protective factors for MDD, several limitations bear noting. First, the effects of mood induction and instructed AR on emotion relied on self-reported emotion. Considering the multidimensionality of emotion ([Scherer, 2004](#)), future studies should extend measures of emotion to behavioral expression and physiological responses. These studies should also further evaluate the validity of Likert scales as used in our and similar studies (e.g., [Diedrich et al., 2014](#); [Liverant et al., 2008](#)) to assess levels of depressed mood. Existing studies provide preliminary support for Visual Analog Mood Scales as reliable and valid measure of current mood state ([Nezu et al., 2003](#)). Second, this study focused on only three AR strategies (i.e., self-compassion, acceptance, reappraisal). Future studies should extend our work by including AR strategies such as engaging in positive activities ([Cuijpers et al., 2007](#)), recalling positive memories, or distraction (e.g., [Joormann et al., 2007](#); [Joormann and Siemer, 2004](#)). Third, despite careful selection of participants (i.e., matching with regard to relevant characteristics, recruiting of participants from the general population), the modest sample size should be noted. Future studies using larger samples should examine whether the absence of group differences (e.g., in the comparison of self-compassion and acceptance/ the waiting conditions) is real or due to methodological issues such as low statistical power. These studies should also examine the role of personality traits and disorders on individuals' ability to successfully apply AR strategies. Within a former study using the same experimental procedure, comorbid diagnoses including personality disorders had no effects on the results ([Diedrich et al., 2014](#)). As we did not obtain valid Axis II diagnoses for all participants in this study, we are unable to further address this research question in our study. Fourth, also considering a higher number of previous depressive episodes in MDD than RMD participants in our study, we cannot rule out group differences in training effects of past acceptance, self-compassion, and reappraisal interventions. To minimize treatment effects on the outcomes of our experiment, we tested MDD participants from outpatient treatment centers after the intake assessment and before the start of depression therapy. Moreover, using a very similar sample, MDD participants showed lower levels of self-compassion than RMD and NC individuals prior to the experiment ([Ehret et al., 2015](#)). Fifth, from our results, we can only conclude that self-compassion is more or equally effective than waiting, acceptance or reappraisal without previous training. Future studies should test differential effects of AR strategies on depressed mood after training. Finally, (differences in) mechanisms by which AR strategies affect depressed mood remain somewhat elusive. Possible explanations for the superiority of self-compassion include that negative affective states may stronger impede the application of acceptance or the use of reappraisal (as they interfere more strongly with activating and utilizing positive thoughts) than self-compassion (the use of which might even be facilitated by offering an object for compassion that suffers more strongly; [Diedrich, 2014](#)). A lack of group differences following self-compassion as opposed to acceptance and reappraisal instructions is in line with this idea. Future studies are needed to

explicitly test these hypotheses. Moreover, future research should also work to clarify how the different AR instructions could impact on levels of positive affect following mood inductions. In this context, it is of note that the absence of positive affect has been proposed as an even more relevant antecedent and symptom of depression than the presence of negative affect (Gruber et al., 2011; Geschwind et al., 2011). Despite these limitations, this study indicates that self-compassion can effectively be applied by RMD, MDD, and NC participants. Self-compassion interventions thus hold considerable therapeutic promise in restoring or maintaining mental health and in diminishing the health burden associated with MDD.

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Appendix A

The self-compassion instructions were as follows: “Try to experience very clearly which feelings have been activated by these statements. Try to see yourself from an outsider's view from the perspective of a compassionate, friendly observer, to imagine how you look, sitting here in front of the computer. Maybe you can notice from the outside which feeling upsets you at the moment. Try to perceive now how the negative feelings are reflected in your posture and facial expression. Then, try to let this warm and strong feeling of compassion towards yourself come up in you; this warm and strong feeling of compassion, which is connected with the desire to help yourself. If you sense this feeling, you can start approaching yourself in your imagination and signal to yourself that you are there for you. Maybe you can say to yourself: ‘It is understandable that you feel that way. You are facing a challenging situation. You experience a natural response to depressing thoughts. But I am with you. I am going to help you. You are not alone.’ In the next step you can start encouraging yourself internally: ‘Come on, you can do this. You can pull yourself out of this mood again. You have already accomplished so much; you will also be able to deal with this.’ If you want, you can also rest your hand on your shoulder in your imagination or hug yourself and comfort and support yourself this way. Then try to cheer yourself up by internally giving yourself a friendly smile. While smiling in a friendly manner at yourself, you can check if there are other things you want to tell yourself; things that would energize and encourage you to cheer you up. Take your time to think of some sentences and tell them to yourself. When the moment is right for you, say bye to yourself in this situation. Make yourself aware that this is no farewell forever and that you can come back to yourself every time. Perhaps there is still something you want to tell yourself for farewell. If so, do this now before you come back from this exercise to the here and now, slowly, in your own way.”

In the cognitive reappraisal condition, participants received the following instructions: “Please read the statements closely again. Choose one statement with which you can identify and which influences your mood in a particularly negative way and click on it. Read it over again and take your time contemplating it. What are the consequences of thinking this way? How do you feel if you think like that? Does this thought help you feel how you want to? And how does it influence your behavior if you think like that? Does this thought help

you behave like you want? Which arguments validate this statement? Can you think of situations that reinforce your statement? Which arguments speak against it? Can you also remember situations that question the validity of the statement? Now try to formulate – on the basis of your chosen statement – a more positive statement, which may be more helpful for you. Feel free to test different versions until you have found one that makes you feel better. If you want, say this new, positive statement a few times aloud, until you notice that you are getting into a better mood.”

Instructions in the acceptance condition were: “Please focus your attention on what you are feeling at the present moment. Try to label the perceived feelings and to rate their intensity on a scale from 0 to 10. Observe these feelings for a while. Try to let them be without controlling them. If you notice that you digress or that other thoughts come to mind, just make a mental note of your thoughts or your digression, and then focus on your feelings again. Give yourself the permission to experience these feelings, even if they are unpleasant. Now try to set the acceptance of your feelings as a goal. Try to underpin this with a statement, e.g. ‘Now it is important to accept my feelings and to give me the permission to feel them because down-regulating emotions may take some time.’ Then continue with the exercise by activating a positive attitude towards your feeling by completing the sentence ‘This feeling also has a positive side: it wants to tell me that...’ to yourself. Now make yourself aware that you can also stand problematic feelings: Make yourself aware that you have already endured negative feelings over a longer period of time in the past. Consider that feelings are transient phenomena and that feelings will not last forever. Feelings come and go; unpleasant feelings will not last forever.”

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