



# Effects of a brief compassion exercise on affect and emotion regulation in patients with personality disorders

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## ABSTRACT

**Background and objectives:** Cultivating compassion seems a promising strategy for ameliorating emotion dysregulation in patients with personality disorders (PDs). Thus far, empirical evidence is lacking. This study aimed to examine whether a brief compassion exercise compared to a neutral exercise would positively impact on (implicit) positive affect (PA) and (implicit) negative affect (NA) and foster the use of more adaptive emotion regulation strategies in an adult clinical sample with PDs.

**Methods:** A total of 24 patients admitted to a Dutch day-hospital treatment center for PDs participated in a two-group cross-over study. Participants were randomly allocated over two groups that were both given the compassion and neutral exercise, yet in a different order. Assessments took place prior to and following each exercise. Participants completed questionnaires assessing (implicit) PA and NA and emotion regulation strategies.

**Results:** Multilevel analyses did not yield significant differences between the neutral and compassion exercise in terms of adaptive and maladaptive emotion regulation and implicit PA. The compassion exercise was able to significantly decrease implicit NA among participants, relative to the neutral exercise. A significant interaction effect was observed between exercise and sequence of exercises on PA and NA.

**Limitations:** Limitations include the brief duration of the exercises, the control exercise and the low reliability for the emotion regulation measure.

**Conclusions:** The compassion exercise decreased implicit NA but seemed not able to impact on PA, NA and emotion regulation in patients with PDs.

## 1. Introduction

Emotion dysregulation, the inability to effectively respond to and manage emotions, is regarded as one of the primary symptoms underlying personality disorders (PDs). In patients with PDs, emotion dysregulation refers to harm towards self or others, affective lability, anxiousness, cognitive dysregulation, avoidance, oppositionality and suspiciousness (American Psychiatric Association, 2013). Existing psychotherapeutic approaches have small to medium effects on relevant outcomes for patients with PDs, including emotion dysregulation (Chakhssi et al., 2021; Cristea et al., 2017). This leaves room for improvement of current approaches, a worthwhile endeavor considering that more than 45% of psychiatric patients meet diagnostic criteria for

one or more PDs (Zimmerman et al., 2005).

Compassion-based therapies may have value for improving emotion regulation in PD. Compassion involves the ability to recognize suffering, understand the universality of human suffering, engage with suffering, tolerate uncomfortable feelings and the motivation to act in order to alleviate suffering (Strauss et al., 2016). Compassion can buffer against emotion dysregulation through (1) strengthening individuals' capacity for experiencing soothing/positive emotions, particularly in the face of setbacks and (2) strengthening individuals' capacity for engaging with and tolerating unpleasant or feared emotions such as anger, anxiety or guilt (Sommers-Spijkerman et al., 2018).

Although a few pilot studies indicate that patients diagnosed with PDs may benefit from compassion-based interventions (Feliu-Soler et al.,

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2017; Lucre & Corten, 2013), these studies are inconclusive regarding the effects of compassion on affect and emotion regulation. However, a number of experimental studies among mostly depressed samples, have shown that practicing compassion leads to the experience of more positive affect (Engen & Singer, 2015) and less negative affect (Arimitsu & Hofmann, 2017; Diedrich et al., 2014; Diedrich et al., 2016; Leary et al., 2007). The use of compassion may positively impact affective states, it remains as yet unclear whether it also facilitates the use of more adaptive emotion regulation strategies.

In an adult sample of PD patients, the current study aimed to investigate the immediate effects of a brief compassion exercise on affective states as well as emotion regulation choice in response to imagery-based emotional salient experiences, compared to a neutral exercise. We hypothesized that PD patients would report lower levels of (implicit) negative affect and higher levels of (implicit) positive affect following the compassion exercise compared to the neutral exercise, and that the compassion exercise would be superior to the neutral exercise in facilitating the use of more adaptive emotion regulation strategies.

## 2. Methods

### 2.1. Design

A two-group cross-over design was used. Participants were randomly assigned to one of two conditions: 1) compassion – neutral (CN), or 2) neutral – compassion (NC). The study had four measurements: a baseline assessment (T0) before the first compassion or neutral exercise, followed by a post-measurement (T1), a baseline measurement (T2) before the second neutral or compassion exercise, followed by a post-measurement (T3).

### 2.2. Participants

Participants were admitted to a Dutch day-hospital PD treatment center (N = 25), with one or multiple PDs according to the DSM-IV as primary diagnosis. One participant dropped out prior to the start of the intervention because he found it too stressful. The characteristics of included participants (N = 24) are presented in Table 1. The majority of

**Table 1**  
Participant characteristics.

	Total		CN		NC		p
	M	SD	M	SD	M	SD	
Age, years	37.50	10.96	37.83	11.57	37.17	10.81	.885
	n	%	n	%	n	%	
Female gender	19	79.2	10	83.3	9	75.0	.615
Dutch nationality	22	91.7	10	83.3	12	100.0	.218
Educational attainment							.675
Low	2	8.3	1	8.3	1	8.3	
Intermediate	14	63.6	6	50.0	8	66.7	
High	8	33.3	5	41.7	3	25.0	
Living situation							.673
Alone	9	37.5	5	41.7	4	44.4	
With family	15	62.5	7	58.3	8	66.7	
Personality disorder diagnosis							.233
Borderline	11	45.8	8	66.7	3	25.0	
Avoidant	6	25.0	2	16.7	4	33.3	
Dependent	3	12.5	1	8.3	2	16.7	
Otherwise specified	4	16.7	1	8.3	3	25.0	
Other diagnosis							.402
Major Depressive Dis.	15	62.5	9	75.0	6	50.0	
PTSD	3	12.5	1	8.3	2	16.7	
Other	4	16.7	2	16.7	2	16.7	
None	2	8.3	0	0.0	2	16.7	

Note. CN = Compassion – neutral condition. NC = Neutral – compassion condition. PTSD = Posttraumatic Stress Disorder. p-values based on  $\chi^2$ -test or t-test. Total: N = 24; CN: n = 12; NC: n = 12.

participants were female with a mean age of 37.50 years (range 20–56), had a Dutch nationality, lived with family, and were diagnosed with a Borderline PD and a depressive disorder. There were no significant differences in characteristics between the participants in the CN (n = 12) and NC (n = 12) condition.

### 2.3. Instruments

The 20-item Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), was used to examine state positive and negative affect at T0 to T3. Internal consistency was found good (Positive Affect [PA]:  $\alpha = 0.82$  to  $0.91$ ; Negative Affect [NA]:  $\alpha = 0.87$  to  $0.93$ ). A subset of the Implicit Positive and Negative Affect Test (IPANAT; Quirin et al., 2009) was used to examine implicit positive and implicit negative affect at T1 and T3. Internal consistency was found to be high for both subscales (Implicit Positive Affect [IPA]: T1:  $\alpha = 0.88$ ; T3:  $\alpha = 0.95$ ; Implicit Negative Affect [INA]: T1:  $\alpha = 0.82$ ; T3:  $\alpha = 0.92$ ). The Emotion Regulation Profile – Revised (ERP-R; Nelis et al., 2011) was used to assess emotion regulation choice at T1 and T3. This vignette-based questionnaire comprises 15 scenarios describing different types of positive or negative emotion-eliciting situations. Participants were randomly offered four scenarios featuring the emotions anger, fear, contentment and gratitude. They were instructed to imagine each scenario as vividly as possible, after which they were provided with four Adaptive Emotion Regulation (AER) strategies (i.e. situation modification, attention reorientation, positive reappraisal, emotion expression) and four Maladaptive Emotion Regulation (MER) strategies (i.e. learned helplessness, substance abuse, rumination, acting out). Participants had to rate the likelihood of using each strategy on a Likert scale ranging from 1 = ‘very unlikely’ to 7 = ‘very likely’. The item ‘Acting out’ was removed from the MER scale and the items ‘Positive reappraisal’ and ‘Situation modification’ were removed from the AER scale to reach acceptable internal consistency (MER: T1:  $\alpha = 0.69$ ; T3:  $\alpha = 0.60$ ; AER: T1:  $\alpha = 0.62$ ; T3:  $\alpha = 0.63$ ). As a manipulation check, state compassion was examined at T1 and T3 with the question ‘At this moment, I like being me’ using a Likert scale ranging from 1 = ‘very little’ to 5 = ‘very much’. Compliance with the exercise was examined at T1 and T3 through the question ‘To what extent did you adhere to the instructions?’ using a Likert scale from 1 = ‘not at all’ to 4 = ‘completely’.

### 2.4. Exercises

#### 2.4.1. Compassion exercise

An adapted version of the “building a compassionate image” exercise developed by Gilbert (2013) was used (see supplementary material). Participants engaged in a soothing breathing rhythm and, subsequently, visualized their ideal compassionate image in as much sensory detail as possible. They were instructed to think about how old the image is, its gender, its visual characteristics (e.g. colour, facial expression and clothing), voice tone and other sensory qualities, as well as about how they would like to relate to their image.

#### 2.4.2. Neutral exercise

During the neutral exercise (see supplementary material), participants were instructed to describe the room where they were seated by using their senses. Participants were invited to take a relaxed but alert posture. Subsequently, they were asked to focus on five things they could see in the room, four things they could hear in the room, three things they could feel with their touch sense, two things they could smell, and one thing they could taste.

### 2.5. Procedure

Ethics approval was obtained from an independent hospital medical ethical review board in the Netherlands (METiGG; number NL61988.044.17). The experiment was conducted twice, with two small

groups of 16 and 9 patients, at a treatment center for PD. All participants provided voluntary and informed consent prior to study participation. After the explanation of the procedure, participants were randomly allocated over two groups, using either sealed envelopes or a random list generated by an independent researcher. Each group was seated in a separate room. In both rooms, one of the researchers was present to guide the participants through the study. A socio-therapist was present as well to warrant safeness of the participants. Both groups underwent the same procedures but in a different order. During the first session, participants completed the PANAS followed by a 10-min [compassion/neutral] exercise. The exercise was guided by an experienced mindfulness/compassion trainer who was not involved in the study. Immediately after completion of the exercise, the ERP-R, PANAS and the I-PANAT were administered. Participants were given a short break after the first session. During the second session, participants were requested to fill out the PANAS in order to examine whether the effects of the first exercise were washed away. Participants who received the compassion exercise during the first session now received the neutral exercise, and vice versa. After completion of the exercise, again the ERP-R, PANAS and IPANAT were administered. Finally, all participants were fully debriefed.

### 2.6. Statistical analysis

Analyses were conducted in SPSS 24. Descriptives were calculated for all variables. Multilevel analyses were used to examine the effects of the compassion versus neutral exercise on the manipulation check, compliance, affect, implicit affect and emotion regulation strategies. The intercept was added as random factor to the model. Three fixed factors were specified to examine the effect of exercise, and to control for the sequence of exercises and its possible interaction with exercise: (1) exercise (compassion vs. neutral), (2) sequence of exercises (compassion first vs. compassion second), and (3) the interaction between exercise and sequence of exercises. Separate analyses were run for all dependent variables. Possible covariates were examined using two stepwise regression analyses with demographics and diagnoses as predictor variables and levels of PA or NA at T0 as dependent variables. Only gender significantly predicted levels of PA at T0 and was added as a covariate. Affect at baseline (T0 and T2) was also added as covariate when affect was the dependent variable.

### 3. Results

Descriptives of the study variables are shown in Tables 2 and 3. Table 4 presents the outcomes of the multilevel analyses. The results show no significant differences between the compassion and neutral exercise on the manipulation check, compliance, AER, MER and IPA. Level of INA was significantly lower after the compassion exercise

compared to the neutral exercise. The interaction effect was significant between exercise and sequence of exercises on PA and NA. As shown in Fig. 1, for PA, the induction of compassion was most successful, that is, it led to higher levels of PA, when it was preceded with the neutral exercise. For NA, this effect was reversed. Participants reported the lowest levels of NA, when the compassion exercise was first. The neutral exercise showed different effects. When the neutral exercise was done first, it led to higher levels of PA than when the exercise was done second. For NA, the neutral exercise led to the lowest levels of NA when the neutral exercise was preceded with the compassion exercise.

### 4. Discussion

The primary aim of this study was to investigate the immediate effects of a brief compassion exercise on affective states as well as emotion regulation choice in response to imagery-based emotional salient experiences in PD patients, compared to a neutral exercise. In contrast to our expectations, participants did not report improved emotion regulation skills or affective states following the compassion exercise, compared to the neutral exercise.

Nonetheless, there were significant findings worthy of consideration. The compassion exercise was able to significantly decrease INA among participants, relative to the neutral exercise. As INA is considered an indicator of physiological arousal (Weil et al., 2019), this finding might indicate that participants were less aroused after the compassion induction. In addition, results revealed a significant interaction effect between exercise and sequence of exercise on affect. The compassion exercise had the strongest effect on PA when it was preceded by the neutral exercise, while the neutral exercise had the strongest effect on NA when it was preceded by the compassion exercise. This finding may suggest that practice increased the effect for compassion on PA and neutral on NA. Although the content of the exercises employed in this study differed, the exercises were similar in type and nature.

The absence of a differential effect of the exercises on emotion regulation skills or affective states may be accounted for by the inhibitors of compassion focused imagery that people with a PD experience, such as weak imagery ability, lack of compassionate experience and psychological symptoms (Naimsmith et al., 2019). Previous research also failed to show positive effects of soothing imagery on affect in women with borderline PD (Jacob et al., 2011). The unfamiliarity of compassion might decrease by psycho-education about the brain's evolution and processes to develop a compassionate understanding of one's emotional responses, part of CFT (Gilbert, 2010). Exercises such as letter writing or written compassion reflections might not suffer from weak imagery ability and have been proven to directly foster compassion in non-clinical samples (Breines & Chen, 2012). Another factor that could explain the absence of effects involves fear of compassion in the participants. Theories underlying CFT presume that feelings of

**Table 2**  
Descriptives for variables measured after the first exercise (T1) and the second exercise (T3).

	First exercise (T1)				Second exercise (T3)			
	Compassion (CN)		Neutral (NC)		Compassion (NC)		Neutral (CN)	
	M	SD	M	SD	M	SD	M	SD
MER <sup>a</sup>	4.14	1.38	3.33	0.93	3.75	1.11	4.05	1.00
AER <sup>a</sup>	4.19	1.16	4.17	1.37	4.14	0.90	3.92	1.40
IPA <sup>b</sup>	2.17	1.31	2.22	1.04	2.69	1.17	2.06	1.43
INA <sup>b</sup>	2.39	1.45	3.14	1.06	2.14	1.35	2.58	1.32
Manipulation check <sup>b</sup>	1.67	0.89	1.75	1.06	2.00	1.13	1.55	0.82
Compliance <sup>c</sup>	3.25	0.97	3.50	0.90	3.25	0.97	3.42	0.67

Note. AER = Adaptive Emotion Regulation; CN = compassion – neutral condition; INA = Implicit Negative Affect; IPA = Implicit Positive Affect; MER = Maladaptive Emotion Regulation; NC = neutral – compassion condition.

<sup>a</sup> Range 1–7.  
<sup>b</sup> Range 1–5.  
<sup>c</sup> Range 1–4.

**Table 3**  
Descriptives for positive affect (PA) and negative affect (NA).

	Covariate T0				First exercise				Covariate T2				Second exercise			
	Compassion (CN)		Neutral (NC)		Compassion (CN)		Neutral (NC)		Compassion (NC)		Neutral (CN)		Compassion (NC)		Neutral (CN)	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
PA	2.15	0.75	2.54	0.61	1.95	0.74	2.61	0.67	2.53	0.74	1.87	0.79	2.33	0.70	1.80	0.76
NA	3.03	0.91	3.13	0.88	2.55	0.99	2.59	1.02	2.39	1.15	2.28	1.07	2.38	1.02	2.41	1.02

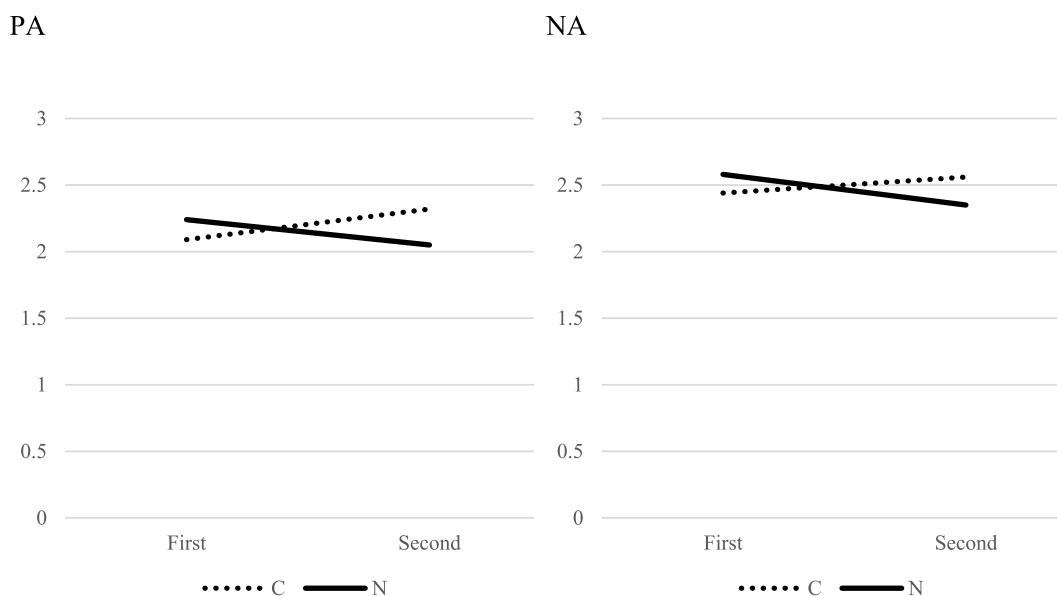
Note. CN = compassion – neutral condition; NA = Negative Affect; NC = neutral – compassion condition; PA = Positive Affect. Range 1–5.

**Table 4**  
Outcomes of the multilevel analyses.

	MER	AER	PA	NA	IPA	INA	Man. check	Comp.
Intercept	3.82**	3.98**	0.10	-0.09	2.59**	3.26**	1.73**	3.17**
Sequence (S)	0.37	0.11	0.19	0.23	-0.49	0.21	-0.24	0.03
Exercise (E)	-0.42	0.03	0.28	0.21	-0.47	1.00*	-0.25	0.25
S*E	0.32	-0.31	-0.43*	-0.35*	0.36	-0.81	0.09	-0.08
<i>Covariate</i>								
Gender	-0.26	0.64	-0.31*	-0.46**	0.40	-0.48	1.07*	0.31
PA/NA (T0)			0.21	0.40**				
PA/NA (T2)			0.78**	0.56**				

Note. Exercise: 0 = neutral; 1 = compassion; Sequence: 0 = CN; 1 = NC. AER = Adaptive Emotion Regulation; INA = Implicit Negative Affect; IPA = Implicit Positive Affect; Man. check = Manipulation check; MER = Maladaptive Emotion Regulation; NA = Negative Affect; PA = Positive Affect.

\* $p < .05$ , \*\* $p < .00$ .



Note. C = Compassion; N = Neutral; First = first induction; Second = second induction; NA = Negative Affect; PA = Positive Affect.

**Fig. 1.** The interaction effect between sequence and exercise for positive affect (PA) and negative affect (NA) based on the estimated means  
Note. C = Compassion; N = Neutral; First = first induction; Second = second induction; NA = Negative Affect; PA = Positive Affect.

compassion may activate memories of the early attachment system. In individuals with a background of abuse and high levels of self-criticism and shame, feelings of compassion may evoke negative (childhood) memories, especially when just starting to practice compassion (Gilbert, 2010). Considering that patients with PDs frequently have adverse childhood experiences (Samuels, 2011), it may have been difficult for the participants to engage with the self-compassion exercise. Also, the duration of the compassion exercise may have been too short to cultivate self-compassion in a clinical sample such as the one used in the current study. Previous studies that showed beneficial effects of fostering

compassion in people with PDs practiced compassion for at least one week (Feliu-Soler et al., 2017; Lucre & Corten, 2013; Naismith et al., 2019). In addition, the ERP-R demonstrated low reliability. Multiple items were discarded from the analyses so as to reach an acceptable level of internal consistency. A potential explanation for the low reliability of the ERP-R is that our sample may have experienced difficulties with vividly imagining the different scenarios and what emotion regulation strategies they would use in those scenarios, and may not have been able to complete the scale accurately. Future research may indicate whether visual stimuli such as brief videos, which require less from people's

imagination ability, are more effective in eliciting affective states in patients with PDs. Finally, it is also possible that the neutral exercise was not neutral enough. As the neutral exercise seems to resemble the mindfulness skills taught in Dialectical Behavior Therapy, an alternative and empirically validated treatment used to alter emotion regulation in patients with PDs, this exercise may have fostered mindfulness in some participants. Previous research has shown that mindfulness can be linked to more adaptive emotion regulation (Roemer, Williston, & Rollins, 2015).

In conclusion, the compassion exercise decreased INA but seemed not able to impact PA, NA and emotion regulation in patients with PDs, casting doubt upon the usefulness of compassion-based therapies for improving emotion regulation in PD. More experimental work is needed to explore what types of compassion exercises may be acceptable and clinically useful for PDs. Several issues were raised that should be taken into account when designing future studies to examine the impact of compassion exercises in patients with PDs.

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### CRediT authorship contribution statement

**Marion Sommers-Spijkerman:** Conceptualization, Methodology, Investigation, Writing – original draft. **Mirjam Radstaak:** Methodology, Formal analysis, Investigation, Writing – review & editing. **Farid Chakhssi:** Conceptualization, Methodology, Investigation, Writing – review & editing.

### Declaration of competing interest

We have no conflicts of interest to disclose.

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### Appendix A. Supplementary data

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