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Self-compassion as a mechanism of change in patients with eating disorders and childhood trauma receiving CFT-E; a study of within-person processes

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Abstract

Objective: This study examines the reciprocal relationship between self-compassion and eating disorder (ED) and trauma symptoms for patients receiving compassion- focused therapy for eating disorders (CFT-E). Method: A total of thirty-six patients with EDs and childhood trauma received inpatient treatment over 13 weeks. Levels of self-compassion and symptoms were assessed using repeated measures. A multilevel growth model was applied, and the effects of self-compassion and symptoms were separated into between- and within-patient effects. Results: The results show that ED symptoms did decrease significantly during treatment. Furthermore, the analyses demonstrated a reciprocal between-patient relationship between self-compassion and ED symptoms, and between self-compassion and trauma symptoms. However, regarding within-patient effects, only self-compassion predicted trauma symptoms. Discussion: The outcome of the current study demonstrates a favourable course for patients with EDs and childhood trauma receiving CFT-E in an inpatient facility. While there is a reciprocal relationship between the variables, the within-patient analyses imply the role of self-compassion in the therapy process for trauma symptoms.

Keywords: eating disorder, Compassion Focused Therapy, inpatient treatment, childhood trauma, within person processes

Introduction

Eating disorders (EDs) are a group of psychiatric conditions with vast impact on a person's life which goes beyond the observed difficulties in relation to food and body image. Patients with EDs have significantly elevated mortality rates (Arcelus et al., 2011) and less than half of the patients with anorexia nervosa (AN) recover, while one third improve and

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20% remain chronically ill (Steinhausen, 2002). Patients with EDs often have an insecure attachment pattern (Ward et al., 2000) and suffers from poor emotion recognition (Jewell et al., 2016), and this can be seen in relation to the notion that altered eating behaviour might be a dysfunctional way of controlling one's feelings (Rosenvinge & Götestam, 2002).

Research indicates that childhood trauma is frequent in the ED patient group. An extensive meta-analysis has investigated this association and has included patients with all types of childhood trauma, all types of EDs, and a control group with other mental disorders (Molendijk et al., 2017). The review found that regardless of trauma subtype, childhood trauma was strongly associated with the presence of all types of EDs (Molendijk et al., 2017). Furthermore, Polivy and Herman (2002) and Brewerton (2007) showed that exposure to childhood trauma is a possible risk factor for the later development of an ED. Patients with EDs and comorbid childhood trauma experiences has a higher relapse- and drop-out rate than ED patients without such trauma experiences (Mahon, 2000; Mahon et al., 2001). Studies have shown that experiencing a childhood trauma is often associated with elevated feelings of shame (Feiring & Taska, 2005; Talmon & Ginzburg, 2017). Furthermore, Franzoni et al. (2013) showed that ED patients who scored high on a trauma scale displayed higher levels of shame than those scoring lower and propose that one might understand EDs as a way of regulating feelings of shame following childhood trauma.

National institute for Health and Care Excellence (NICE, 2017) have no guidelines for treating patients with EDs and comorbid symptoms caused by childhood trauma. While cognitive behavioural therapy (CBT) is often the recommended psychological intervention for AN and bulimia nervosa (BN), the evidence for these methods' efficacy is scarce (NICE, 2017). Based on the poor treatment outcome and the level to which childhood trauma increases the rates of relapse, the psychological interventions for this group are insufficient. Attention and research should therefore be directed toward identifying common features in patients with ED and childhood trauma and developing treatment suitable for this patient group.

Compassion Focused Therapy (CFT) was developed for people struggling with feelings of shame and significant self-critical attitudes that often has its origin in traumatic experiences (Andersson & Viotti, 2013; Gilbert, 2010). Becoming more self-compassionate is the core feature and goal of CFT and is hypothesised to lead to symptom reduction. In recent years a specialised form of CFT for EDs (CFT-E) has been developed to address the biological, psychological, and social challenges of EDs (Goss & Allan, 2014). However, to our knowledge there are only a few studies that have investigated this form of treatment for ED patients. Gale et al. (2014) found that, after CBT group treatment where CFT were integrated, patients with AN and BN displayed clinically significant improvements in ED symptoms. Furthermore, Kelly and Carter (2015) found that a short self-compassion intervention reduced binge eating and weight and shape concerns among individuals with BED, while Kelly et al. (2020) observed that on days when an individual with AN felt more self-compassionate than usual, that individual would report fewer ED symptoms. These study all investigate outpatient treatment, while patients with ED and childhood trauma often need inpatient treatment at some point. The knowledge-base on CFT for patients in inpatient treatment is scarce. However, Stroud and Griffiths (2021) examined the effectiveness of CFT group treatment, compared to treatment as usual in a trans-diagnostic population, and found significant improvements across a range of areas, specifically the areas of wellbeing, functioning, self-compassion and compassion to others. We propose that because of its

distinct focus on factors common to EDs and trauma e.g. self-criticism (Lee et al., 2001; Irons and Gilbert, 2005), CFT-E will be particularly well-suited for these patients. However, the empirical evidence for the mechanisms of change in CFT and its effectiveness in inpatient treatment is still somewhat scarce.

There are limitations to the current way in which many treatment studies are researched. One ideally wants to deduct information that has clinical relevance. However, standard research methods are often based on comparing patients to other patients, usually from two points in time; namely between-person effects (Curran & Bauer, 2011). What might be of greater clinical relevance is comparing one patient to him- or herself. That is, information about how one patient functions at two or more points in time; within-person effects (Vrabel et al., 2015). A multilevel growth model allows us to address both effects simultaneously. As Kelly and Tasca (2016) propose, the use of research methods examining within-person variance in outcome can provide a rare insight into the processes by which some patients get better or worse.

There are limitations to the treatment for patients with an eating disorder and childhood trauma and this study explores the use of CFT as an innovative new approach with this population. Therefore, this study elucidates the relationship between ED and trauma symptoms following childhood trauma and self-compassion for patients receiving CFT-E. Further, we are interested in both between- and within-patient effects. Specifically, we examined the following research questions (1a and 1b):

(1) *Is self-compassion a specific mechanism of change in patients with ED and trauma symptoms?*

(1a) Will between- and within-patient self-compassion predict ED symptoms over the course of inpatient therapy, and will there be a reciprocal relationship for ED symptoms and self-compassion?

(1b) Will between- and within-patient self-compassion predict trauma symptoms over the course of inpatient therapy, and will there be a reciprocal relationship for trauma symptoms and self-compassion over the course of therapy?

Materials and methods

Design

The present sample consisted of patients hospitalised at a specialised ED unit at a Norwegian nationwide psychiatric facility. Prior to admittance, it was required that all patients had attempted therapy locally without satisfactory results. The data was collected as part of a study ensuring the treatment quality of the ED unit, which was a pilot project leading up to a randomised controlled trial (Vrabel et al., 2019).

All therapists were authorised psychologists with clinical specialisation (i.e., minimum five years clinical experience) or clinical nurses, and all of them had experience with treating EDs. The therapists received regular supervision according to treatment of EDs, and was undergoing training in CFT principles, attended workshops and shared the CFT treatment philosophy. The eligibility for the study was decided using standardised screening tools; Mini-International Neuropsychiatric Interview was used to assess present psychosis, suicidal risk and abuse of alcohol, medicine and narcotics, as well as other psychiatric disorders (Sheehan et al., 1998), while Eating Disorder Examination-Interview (Fairburn et al., 2008)

was used in order to obtain ED diagnoses for inclusion. Furthermore, patients reported levels of ED- and trauma-symptoms and self-compassion every week through self-assessment instruments.

All patients admitted to treatment were asked to participate. All patients who consented were included in the study, whether they completed the treatment or dropped-out (i.e., this study applied "the intention to treat" principle). The Regional Committee for Medical and Health Research Ethics (REC) considered the current study as a quality assurance work, and it was therefore not affected by the Health Research Act. (REC-reference 2012/1186b). The study met the intent and requirements of the Helsinki declaration, and was approved by the designated data authorities at the institution. All data was de-identified by using a unique ID number linked to names. The list of ID numbers and names was only available for the PI. There were no harmful procedures or interventions.

Participants

A total of 44 patients were admitted for 13 weeks of inpatient treatment in the period between 2011-2014. Within the first two weeks of treatment, three patients dropped out of the treatment since they wanted treatment elsewhere, three patients were withdrawn from the treatment due to alcohol abuse, one was withdrawn because of an unstable somatic condition, and one was withdrawn because of a severe comorbid disorder needing extensive care at a different treatment facility, leaving a sample of 36 patients.

All patients were 18 years or older and fulfilled the DSM-IV criteria for AN, BN or eating disorder not otherwise specified (EDNOS). Furthermore, all patients had a history of experiencing at least one childhood trauma. To identify possible cases of trauma, the definition of childhood trauma was consistent with the conceptualisation from Childhood Trauma Questionnaire (CTQ) (Bernstein et al., 2003). Exclusion criteria included current suicidal risk, present psychosis or ongoing trauma.

The patients were all female, and their age ranged from 20 to 53 years ($M = 32.6$, $SD = 9.1$). For more demographic and clinical variables, see Table 1.

BN was the most frequent diagnosis (44.4%), while AN was the least frequent ED diagnosis (22.2%). A total of 33.4% of the patients fulfilled the criteria for EDNOS. A total of 61.1% of the patients fulfilled the criteria for a PTSD-diagnosis. The characteristics of the patients' traumas are illustrated in Table 1. Besides PTSD, the most common comorbid disorder were affective disorders, affecting 50.0% of the patients. Overall, 94.5% of the patients met the criteria for any SCID-disorder.

Treatment

The compassion-focused therapy used in this study is an adaption of outpatient CFT for ED, postulated by Gale et al. (2014) and Goss and Allan (2014). Since it in this study is an inpatient treatment it is more intensive, but uses the same procedures and strategies.

The patients received a multicomponent inpatient program. Each week patients were offered two individual therapy sessions with a psychologist, one individual session with a milieu therapist, and a total of six group sessions. In addition, the patients attended three group meetings with the rest of the patients at the unit. The patients were served four meals a day together with the other patients, followed by a group meeting. During the

Table 1. Demographic, clinical and trauma variables at pretreatment, N = 36.

Characteristic	Total (N = 36)
Age, years (*M* ± *SD*)	32.6 (9.1)
Duration of illness, years (*M* ± *SD*)	17.0 (9.3)
Duration of treatment, years (*M* ± *SD*)	8.0 (6.2)
Previous inpatient treatment (*M* ± *SD*)	5.6 (9.4)
Civil status	
Married, n (%)	5 (13.9)
Partner, n (%)	1 (2.8)
Cohabitant	1 (2.8)
Divorced, n (%)	4 (11.1)
Unmarried, n (%)	24 (66.7)
Trauma Category	
Emotional abuse, n (%)	24 (66.7)
Physical abuse, n (%)	14 (38.9)
Physical neglect, n (%)	22 (61.1)
Sexual abuse, n (%)	29 (80.6)
Emotional neglect, n (%)	30 (83.3)
Trauma $\geq$ 2, n (%)	30 (83.3)
Eating disorder symptoms	
Bulimia nervosa, n (%)	16 (44.4)
Anorexia nervosa, n (%)	8 (22.2)
Other specified eating disorder, n (%)	12 (33.3)
BMI (*M* ± *SD*)	22.9 (6.6)
Binging *n* (%)	16 (44.4)
Vomiting *n* (%)	18 (50.0)
Use of laxatives *n* (%)	6 (16.7)

Note. BMI; Body Mass Index.

hospitalisation, the patients were offered three to five family days, where families were invited to the unit for orientation and information about the illness and the treatment. Lastly, the patients received three sessions of psychoeducation concerning substance abuse.

The treatment was divided into four phases. In the first phase, the focus was on psychoeducation and on making the patients familiar with the unit and the CFT-model. In the second phase, the goal was to focus on the gradual development of compassion through identifying and making sense of protection strategies, face the challenges of recovery and activate and practice compassion through the group work. In the third phase, the aim was for the patient to integrate the changes made in recovery, and to transfer these changes to everyday life. In the fourth and final phase, the focus was on relapse prevention and planning a life without the ED.

The treatment consisted of two main components; 1) an eating program in which the patients learned to develop and confront their eating habits, and 2) a focus on psychological change. To promote psychological change there are four main treatment elements. The patient group is essential for the first two elements, which concern practising compassionate support to others, and experiencing and acting upon compassionate support from others. The third element is compassionate mind training (CMT), and involves the patients using imagery tasks designed to open up to compassion towards oneself and others. CFT differs from other treatment models in its focus on activating and sensitizing people to positive emotions instead of desentising them to negative emotions like anxiety. The fourth treatment element includes learning to improve the ability to use social connectedness to engage in alternative strategies of affect regulation.

Instruments

Assessment

Mini-International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998) was used to assess present psychosis, suicidal risk and abuse of alcohol, medicine and drugs, as well as other psychiatric disorders. The authorized Norwegian version 12 of *Eating Disorder Examination—Interview (EDE)* (Fairburn et al., 2008) was used in order to obtain ED diagnoses for inclusion.

Outcome

Eating Disorder Examination Questionnaire 6.0 (EDE-Q)

(Fairburn & Beglin, 2008) was used to assess ED symptoms. The questionnaire consists of 28 items and uses a 7-point scale to assess the frequency of typical behaviours associated with EDs, such as restrictive eating, binge eating and vomiting. Since it was a weekly assessment, the patients were asked about the last seven days (instead of the last 28 days as in the original version). The Norwegian version of EDE-Q was applied in the study and has demonstrated good psychometric properties (Rø et al., 2010; Rø et al., 2015).

Post traumatic symptom Scale - Self report (PSS-SR)

(Foa et al., 1993) was used to assess the patients' trauma symptoms. It consists of 17 items which correspond to one of the 17 diagnostic criteria of DSM-III-R, and they are clustered into three subscales: reexperiencing, avoidance, and arousal. The questionnaire has shown good psychometric properties (Foa et al., 1993). For the current study, a Norwegian version was used, translated by Norwegian psychologists and back-translated to English by a native-English speaking professional also competent in Norwegian, until satisfactory formulations were found (Hoffart et al., 2013).

Process

Compassion is a complex construct and there is lack of consensus on the definition of compassion, which is also reflected in the measurement tools that are currently available. The

Self-Compassion Scale (SCS) was used to assess patients' level of self-compassion. It consists of 26 items. The SCS was developed by Neff (2003) and was designed to measure the three main components of self-compassion on separate subscales: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification. In addition, a mean score can be calculated, representing an overall level of self-compassion (Neff, 2003). We are aware that this measure has previously been criticized because of its factor structure (Williams et al., 2014; Muris et al., 2016), however, it was still chosen to provide comparative insights into self-compassion as a whole construct. The Norwegian version used in this study has shown good psychometric characteristics (Dundas et al., 2016).

Statistical analyses

In the current study, measures were collected (EDE-Q, PSS-SR, and SCS) at multiple points in time (every week) for several individuals. This result in information about both between-patient and within-patient differences. Consequently, our data has a two-level hierarchical data structure where the repeated measures are nested within the persons (Field, 2013). Taken together, these two components form the multilevel statistical model.

The MCAR (Missing Completely at Random) test (Little, 1988) was not significant on the EDE-Q ($\chi 2 = 240.4$, $p = 0.339$), PSS-SR ($\chi 2 = 197.3$, $p = 0.560$) or SCS ($\chi 2 = 194.7$, $p = 0.553$), indicating that the data could be considered to be missing at random. In multilevel modelling, the analyses utilise all observations to estimate missing data. That said, the rest of the statistical assumptions (additivity and linearity, normality, homoscedasticity/homogeneity) were met.

The two levels of effect need to be disaggregated. To disaggregate the between- and within-effects, time was centred at the first time point (first week of therapy), making the first time point the intercept of the growth curve. The between-effect was estimated as the variance in intercepts, i.e. the expected value the first week. Then the within-effect was estimated as the difference from expected level at any given time point, that is, every patient's deviation from the expected value at every measurement. For all models, the within-patient predictor variables were lagged, thus allowing the variables to predict effects in the following session.

We tested growth models for all the variables- EDE-Q, PSS-SR and SCS. We started with a linear growth model, a fixed intercept and no random effects. Then a random intercept was added, followed by random effect of time. Then the variables' fit was tested for homoscedastic or heteroscedastic variance over time, for linear or quadratic growth and covariance structure. We used the -2 log likelihood ratio test to examine the fit of all models and the most parsimonious model was selected.

The preliminary analysis showed that there is meaningful variance in the intercept and slope. Our final model resulted in homoscedastic variance, linear growth curves and unstructured covariance structure for all the variables. Our first model was built by including only time as a predictor to investigate overall change. We then added the between-patient predictor and at last we added the lagged within-patient effect.

Interpretations on the effect size description were based on the classifications of Cohen (Cohen, 1988). SPSS version 25 was used.

Results

Preliminary results

Concerning the patients' ED symptoms, the group had an EDE-Q mean of 4.33 ($SD = 1.22$) at admission and a mean of 3.44 ($SD = 1.51$) at discharge, yielding an effect size of $d = 0.65$. The group's average PSS-SR score was 24.31 ($SD = 10.39$) at pretreatment and 24.25 ($SD = 12.04$) at posttreatment. This constitutes a small effect size ($d = 0.005$). At admission the group had a mean SCS score of 2.11 ($SD = 0.53$) and at discharge a mean score of 2.30 ($SD = 0.74$). The effect size for this change was $d = 0.01$. For details, see Table 2.

Analyses indicated that a significant reduction in the patients' symptom level of ED could be found over time ($b = -0.04$, $p = .031$), while the patients' level of self-compassion ($b = 0.01$, $p = .169$) and trauma symptoms ($b = 0.11$, $p = .0.314$) did not change significantly over time. An overview of fixed effects estimates and random effects estimates for ED symptoms, trauma symptoms and levels of self-compassion over time can be seen in Table 3.

Eating disorders and self-compassion (research question 1a)

In the first model, between-patient effect of SCS was included as predictor and in the second model the lagged within-patient effect of SCS was added. A summary of fixed and

Table 2. Mean scores for EDE-Q, PSS-SR and SCS at pre- and posttreatment

Variable	Pre *M* (*SD*)	Post *M* (*SD*)	*t*-test	Effect size
EDE-Q	4.33 (1.22)	3.44 (1.51)	4.98***	0.65
PSS-SR	24.31 (10.39)	24.25 (12.04)	0.05	0.01
SCS	2.11 (0.53)	2.30 (0.74)	−1.60	0.27

Note: EDE-Q; Eating Disorder Examination-questionnaire, PSS-SR; Post Traumatic Symptom Scale - Self Report, SCS; Self-compassion Scale.

Table 3. Fixed effects estimates and random effects (Variance-Covariance) estimates for eating disorder symptoms, trauma symptoms and levels of self-compassion over time (weeks of therapy).

Parameter	EDE-Q	PSS-SR	SCS
	Fixed	effects	
Intercept	3.757*** (0.186)	23.043*** (1.657)	2.313*** (0.113)
Time	−0.036* (0.016)	0.112 (0.110)	0.012 (0.009)
	Random	effects	
Residual	0.351*** (0.027)	33.199*** (2.577)	0.165*** (0.013)
Intercept	0.007** (0.002)	0.213* (0.105)	0.002* (0.001)
Time	1.143*** (0.301)	88.718*** (23.824)	0.408*** (0.110)
Intercept*time	0.005 (0.018)	−0.116 (1.150)	−0.002 (0.006)
−2 log likelihood	912.018	2708.077	581.876

Note. EDE-Q = Eating Disorder Examination Questionnaire, PSS-SR = Post Traumatic Symptom Scale, SCS = Self-Compassion Scale.
*p<.05, **p<.01, ***p<.001.

Table 4. Fixed effects (top) and variance estimates (bottom) with standard error for SC predicting ED symptoms.

			Predictor: SCS	
		Model 1[a]		Model 2[b]
Parameter		Estimate (SE)		Estimate (SE)
Intercept		6.390*** (0.542)		6.348*** (0.540)
Time		−0.037* (0.016)		−0.034 (0.017)
SC between-patient		−1.137*** (0.225)		−1.148*** (0.224)
SC within-patient				0.051 (0.087)
Residual		0.352*** (0.027)		0.335*** (0.028)
Intercept		0.708*** (0.199)		0.700*** (0.202)
Time		0.007** (0.002)		0.007** (0.002)
Intercept*time		−0.012 (0.016)		−0.014 (0.016)
−2 log likelihood		894.339		774.764

Note. SC = self-compassion, ED = eating disorder, SCS = Self-Compassion Scale.
[a]Model 1 = between-patient effects.
[b]Model 2 = within-patient effects.
*$p<.05$, **$p<.01$, ***$p<.001$.

Table 5. Fixed effects (top) and variance estimates (bottom) with standard error for ED symptoms predicting SC.

			Predictor: EDE-Q	
		Model 3[a]		Model 4[b]
Parameter		Estimate (SE)		Estimate (SE)
Intercept		3.888*** (0.327)		4.088*** (0.347)
Time		0.012 (0.009)		0.010 (0.011)
ED between-patient		−0.419*** (0.084)		−0.463*** (0.088)
ED within-patient				0.033 (0.041)
Residual		0.165*** (0.013)		0.166*** (0.014)
Intercept		0.236*** (0.069)		0.291*** (0.088)
Time		0.002* (0.001)		0.002* (0.001)
Intercept*time		−0.003 (0.005)		−0.009 (0.007)
−2 log likelihood		565.649		488.138

Note. ED = eating disorder, SC = self-compassion, EDE-Q = Eating Disorder Examination Questionnaire.
[a]Model 3 = between-patient effects.
[b]Model 4 = within-patient effects.
*$p<.05$, **$p<.01$, ***$p<.001$.

random factors is shown in Table 4. The results show that the between-patient effect was significant ($b = -1.14$, $t(33.65) = -5.05$, $p < .001$), but not the within-patient effect ($b = 0.05$, $t(292.94) = 0.59$, $p = .558$). Thus, the level of self-compassion at the start of therapy predicted ED symptoms across weeks in therapy. However, a patient's deviation from

Table 6. Fixed effects (top) and variance estimates (bottom) with standard error for SC predicting trauma symptoms.

			Predictor: SCS	
Parameter		Model 1[a] Estimate (SE)		Model 2[b] Estimate (SE)
Intercept		36.866*** (5.667)		36.912*** (5.584)
Time		0.112 (0.110)		0.068 (0.123)
SC between-patient		−5.973* (2.357)		−5.865* (2.318)
SC within-patient				−1.810* (0.841)
Residual		33.194*** (2.577)		31.655*** (2.680)
Intercept		75.539***(20.845)		73.188*** (20.389)
Time		0.213* (0.105)		0.274* (0.132)
Intercept*time		−0.016 (1.056)		−0.308 (1.164)
−2 log likelihood		2698.478		2338.323

Note. SC = self-compassion, SCS = Self-Compassion Scale.

the expected level of self-compassion for that patient in a particular week did not predict ED improvement the next week.

To test the reciprocal effect SCS was used as dependent variable. In the first model, between-patient effect of EDE-Q was included as predictor and in the second model the lagged within-patient effect of EDE-Q was added. A summary of fixed and random factors is shown in Table 5. The results show that the between-patient effect was significant ($b = -0.42$, $t(34.74) = -5.00$, $p < .001$), but not the within-patient effect ($b = 0.03$, $t(271.70) = 0.79$, $p = .428$). Thus, the level of ED at the start of therapy (i.e., the level of ED for each patient compared with other patients at the start of therapy) predicted self-compassion across weeks in therapy. However, a patient's deviation from the expected level of ED for that patient in a particular week did not predict the level of self-compassion the next week.

Trauma symptoms and self-compassion (research question 1b)

In the first model, between-patient effect of SCS was included as predictor and in the second model the lagged within-patient effect of SCS was added. A summary of fixed and random factors is shown in Table 6. The results show that the between-patient effect was significant ($b = -5.97$, $t(33.86) = -2.54$, $p = .016$), as well as the within-patient effect ($b = -1.81$, $t(294.89) = -2.15$, $p = .032$). Thus, the level of self-compassion at the start of therapy (i.e., the level of self-compassion for each patient compared with other patients at the start of therapy) predicted trauma symptom across weeks in therapy. Furthermore, a patient's deviation from the expected level of self-compassion for that patient in a particular week did predict trauma improvement the next week.

To test for reciprocal effect the SCS was used as dependent variable, between-patient effect of PSS-SR was included as predictor and in the second model the lagged within-patient effect of PSS-SR was added. A summary of fixed and random factors is shown in Table 7. The results show that the between-patient effect was significant ($b = -0.03$, $t(34.48) = -2.73$, $p = .010$),

Table 7. Fixed effects (top) and variance estimates (bottom) with standard error for trauma symptoms predicting SC.

			Predictor: PSS-SR	
Parameter		Model 1[a] Estimate (SE)		Model 2[b] Estimate (SE)
Intercept		2.991*** (0.270)		3.103*** (0.289)
Time		0.012 (0.009)		0.011 (0.011)
PSS-SR between		−0.029** (0.011)		−0.033** (0.011)
PSS-SR within				−0.003 (0.004)
Residual		0.165*** (0.013)		0.166*** (0.014)
Intercept		0.343*** (0.095)		0.431*** (0.123)
Time		0.002* (0.001)		0.002* (0.001)
Intercept*time		−0.002 (0.006)		−0.010 (0.008)
−2 log likelihood		582.169		510.008

Note. SC = self-compassion, PSS-SR = PTSD Symptom Scale Self-Report.
[a]Model 1 = between-patient effects.
[b]Model 2 = within-patient effects.
*$p<.05$, **$p<.01$, ***$p<.001$.

but not the within-patient effect ($b= -0.00$, $t(274.42) = -0.80$, $p = .423$). Thus, the level of PSS-SR at the start of therapy (i.e., the level of trauma symptoms for each patient compared with other patients at the start of therapy) predicted self-compassion across weeks in therapy. However, a patient's deviation from the expected level of trauma symptoms for that patient in a particular week did not predict the level of self-compassion the next week.

Discussion

The aim of this study was to examine the relationship between ED symptoms, trauma symptoms following childhood trauma and self-compassion. Their relationship was analysed by investigating both patients' standing relative to other patients (i.e., the between-effect) and a patient's standing in any particular session relative to the expected level for that patient in that session (i.e., the within-effect). The first research question was whether self-compassion would be a significant predictor for change in ED and trauma symptoms. The answer is multifaceted.

The length of illness (mean of 17.0 years) and duration of earlier treatment (mean of 8.0 years) for the patients in the present study indicate that many of these suffered from severe and enduring EDs (SEEDS). Some researchers suggest that this group (≥10 years of illness and failed earlier treatment) might need Case Management instead of traditional treatment (Molin et al., 2016). However, the current sample did, in fact, experience a reduction in ED symptoms. This reduction must be interpreted with caution since this is not a randomised controlled trial. However, the fact that ED symptoms was reduced can be interpreted as a challenge to the need for Case Management, illustrating that these patients may benefit of inpatient treatment, for example with a compassion-focused approach. Even though ED symptoms were reduced, the level of self-compassion did not increase significantly throughout the treatment. One possible explanation for the absence of change is

that the patients did not, in fact, experience an increase in self-compassion. As highlighted in a former case study (Germer & Neff, 2013), it is not unexpected if they were to need more time to embed the concept of self-compassion, as this process might be a slow changing one.

The between analyses imply that patients who commenced therapy with higher levels of self-compassion had lower levels of ED symptoms in all subsequent weeks of therapy, compared to those who entered therapy with a lower level of self-compassion. This relationship was reciprocal, as levels of ED symptoms predicted levels of self-compassion over time. This provides information about a predictive relationship between the two variables at a group level.

Nevertheless, Vrabel et al. (2015) emphasise that a central effect when predicting symptoms, is the patients' development in the construct of interest relative to him or herself, in addition to their development relative to other patients. In the current study, there was not detected a within-patient relationship between self-compassion and ED symptoms. The clinical psychologists in the study might have played a part in this. The psychologists' competence in EDs was high, while their adherence to the treatment model might have taken longer time to accomplish. This is one possible explanation for why we detected a reduction in ED symptoms, but not an increase in self-compassion, and for why these two are not statistically associated at the within-patient level.

There might be other mechanisms of change explaining the reduction in ED symptoms that is not measured in this study. Olofsson et al. (2020) have studied possible change processes for patients with EDs and childhood trauma. They exhibited three change processes that differentiated the patients with poor outcomes from those with good long-term outcomes: patient agency, alliance and processing of the trauma. Each of these factors play a part in CFT, and it would be interesting to examine whether they would contribute to change in ED symptoms for the current sample. It is also worth mention that one explanation for the reduction in ED symptoms can be attributed to the inpatient treatment in itself.

In a study of patients with AN, Kelly et al. (2020) found that an increase in self-compassion was significantly related to a decrease in ED symptoms at the within-person level, but only for patients with high and average means of self-compassion (over 2.64 on the SCS (short form)). Their interpretation of this finding was that treatment that focus on increasing self-compassion might elude the patients with the most severe pathology. The current sample may have had a self-compassion level that is too low to significantly predict ED symptoms at a within-patient level (mean of 2.61 at admission and 2.63 at discharge). As noted above, by Germer and Neff (2013), the process of embedding the concept of self-compassion might be a slow changing one. Therefore, it would have been interesting to study the patients longitudinally to investigate if this could affect their lever of self-compassion and furthermore the predictive relationship with ED symptoms. Furthermore Kelly et al. (2013) demonstrated that not only a lower level of self-compassion, but also the presence of fear of self-compassion might be especially damaging for ED patients. For patients with lower self-compassion levels, like the patients in this study, fear of self-compassion might be more predictive of eating pathology than levels of self-compassion. We propose that additional treatment and a focus on reducing the fear of self-compassion might contribute to elevating the patients' levels of self-compassion.

The patients' level of trauma symptoms did not decrease significantly over the course of therapy. One explanation is that CFT-E is a treatment primarily addressing the patients' eating pathology, not their trauma symptoms. Furthermore, if one considers the ED as a method for regulating difficult emotions after childhood trauma, one could expect a possible increase in trauma symptoms as the ED symptoms diminish (Brewerton, 2008). Another possible explanation for the lack of a significant reduction of trauma symptoms might be related to the use of the PSS-SR. The scale is developed to assess symptoms of PTSD, while the inclusion criteria in our study was exposure at least one childhood trauma. This result in a sample with highly varying symptom scores. Furthermore, it might be that complex PTSD is more suitable for capturing the complexity of the symptoms in the current patient group (Herman, 1992; Dorahy et al., 2009; Cloitre et al., 2009).

The between-patient effect detected in the current study indicates a reciprocal relationship between self-compassion and trauma symptoms. This implies that patient's initial level of self-compassion (i.e. at the start of therapy) will predict their trauma symptoms across weeks of inpatient therapy. The same applies to patients' initial level of trauma symptoms and their self-compassion outcome in subsequent weeks of inpatient therapy. These results are in line with previous research that has illustrated an association between self-compassion and trauma symptoms (Thompson & Waltz, 2008; Seligowski et al., 2015; Barlow et al., 2017).

The current study detected a one-way negative within-effect between self-compassion and trauma symptoms. This implies that if a given patient's level of self-compassion is increased more than expected one week, the therapist can expect that patient's level of trauma symptoms to decrease the following week. If the level of self-compassion deviates the other way, an increase in trauma symptoms will be expected. This within-effect confirms previous research on the relationship between self-compassion and trauma symptoms (Hoffart et al., 2015). Taken together, these results support that self-compassion is a specific mechanism of change in ED patients who in addition struggle with trauma symptoms. Research in the field (e.g. Thompson & Waltz, 2008 and Hoffart et al., 2015) and the results of this study support that addressing self-compassion in patients with trauma symptoms might be beneficial.

Strengths and limitations

The data was collected in a specialised ED unit with extensive research experience in which the therapists were qualified clinical psychologists with specialised ED competence. The fact that the inpatient unit was an open ward increases the chances for good ecological validity. Furthermore, the current study is based on weekly assessments using established measurements with good psychometric qualities, as well as the use of advanced statistical methods. Usually, psychotherapy processes are studied through between-person effects; comparing patients with other patients (Curran & Bauer, 2011). However, what is of relevance for the therapist is information about how one particular patient functions in a particular session relative to how that patient is typically doing. For research to be able to provide information at this level, the hypotheses and analyses have to be at the within-person level (Vrabel et al., 2015). Up until today, research of within-person processes in ED patients remains scarce. This study contributes to a positive development in this field.

Another critical feature of multilevel modelling is that it can lead to conclusions substantially different from the ones derived from other conventional analyses, because the latter does not allow for the disaggregation of effects into between and within-components. See Raudenbush and Bryk (2002) for a more elaborate example of this.

There are, however, some limitations of the current study. Although the measures applied has shown good psychometric properties, the SCS has been subject of much discussion (Gilbert et al., 2011; Williams et al., 2014; Neff, 2016). There is a possibility that exploring the factors separately or dividing them into the two categories- self-compassion and self-criticism- would show a significant increase in the patient's level of self-compassion. This is a subject for further research. Furthermore, this study lacks a control-group with patients receiving another type of treatment/therapy. The results from the subsequent ongoing RCT on CFT-E for patients with ED and childhood trauma (Vrabel et al., 2019) will therefore be of great importance. As in any study, there might have been confounding variables affecting the associations, or the absence of associations found. Not controlling for the patients' length of illness, duration of earlier treatments, ED diagnosis and comorbid disorders makes it possible that these factors might have affected the treatment outcome and the results of the study.

Contribution to the field

The outcome of the current study may contribute to optimism and hope in the field, and shed light on some of the possibilities and challenges with CFT-E in inpatients with EDs and childhood trauma. It is encouraging that patients with severe psychopathology showed a decrease in ED symptoms, which is, among other things, important in the discussion about Case Management. Self-compassion is related to both ED and trauma symptoms, as illustrated by the significant between effects. However, the predictive role of self-compassion is somewhat unclear. While it might be other possible mechanisms of change that contribute to the positive development in ED symptoms, self-compassion seems to predict trauma symptoms on a weekly basis. The results of this study invite future studies to investigate CFT-E more thoroughly and provides optimism and hope in a field where the patients are often described as challenging and treatment resistant, and where new treatment perspective is truly needed.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Author contributions

HRS and HC made substantial contributions to the analysis and interpretation of data and drafting and revising of the manuscript. KAV made contributions to the conception and

design, the data collection, analysis and interpretation of data, and revising and commenting of the manuscript. SW contributed to the conception and design of the current study, in the interpretation of data, in the drafting and revision of the study. All authors have approved the final version of the manuscript and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Data availability statement

The datasets generated and analyzed during the current study are not publicly available due to Norwegian laws and regulations, but are available from the corresponding author on reasonable request.

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