EMPIRICAL ARTICLE

Are Improvements in Shame and Self-Compassion Early in Eating Disorders Treatment Associated with Better Patient Outcomes?

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ABSTRACT

Compassion-focused therapy (CFT; Gilbert, 2005, 2009) is a transdiagnostic treatment approach focused on building self-compassion and reducing shame. It is based on the theory that feelings of shame contribute to the maintenance of psychopathology, whereas self-compassion contributes to the alleviation of shame and psychopathology. We sought to test this theory in a transdiagnostic sample of eating disorder patients by examining whether larger improvements in shame and self-compassion early in treatment would facilitate faster eating disorder symptom remission over 12 weeks. Participants were 97 patients with an eating disorder admitted to specialized day hospital or inpatient treatment. They completed the Eating Disorder Examination-Questionnaire, Experiences of Shame Scale, and Self-Compassion Scale at intake, and again after weeks 3, 6, 9, and 12. Multilevel modeling revealed that patients who experienced greater decreases in their level of shame in the first 4 weeks of treatment had faster decreases in their eating disorder symptoms over 12 weeks of treatment. In addition, patients who had greater increases in their level of self-compassion early in treatment had faster decreases in their feelings of shame over 12 weeks, even when controlling for their early change in eating disorder symptoms. These results suggest that CFT theory may help to explain the maintenance of eating disorders. Clinically, findings suggest that intervening with shame early in treatment, perhaps by building patients' self-compassion, may promote better eating disorders treatment response.

Keywords: shame; self-compassion; transdiagnostic; compassion-focused therapy; maintenance factors; treatment; eating disorders; bulimia nervosa; anorexia nervosa

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Introduction

The field of psychopathology has become increasingly concerned with identifying and intervening with the transdiagnostic factors that trigger and maintain a range of mental disorders. Within the field of eating disorders, a parallel interest has grown in testing theories and treatments that can help to explain and alleviate anorexia nervosa (AN), bulimia nervosa (BN), and other specified or unspecified eating disorders.[1,2] Compassion-focused therapy (CFT)[3,4] is a transdiagnostic psychotherapeutic approach whose theoretical principles and interventions have proven relevant in range of psychiatric populations,[5–7] with preliminary research supporting its integration into mainstream eating disorders treatments.[8–10]

CFT is a form of therapy, developed to be incorporated into cognitive-behavior therapies (CBT), that seeks to help self-critical, shame-prone individuals cultivate an attitude of inner-kindness toward their personal shortcomings and distress.[3] It derives from Gilbert's[3,4] model of affect regulation which draws on evolutionary psychology and neuroscience to postulate the existence of interacting affect-regulatory systems[11] that are responsive to both external (i.e., social interactions, physical stimuli) and internal signals (i.e., imagery, self-talk).[12,13] Criticism and hostility from both others and self are thought to stimulate an evolved threat system, which yields feelings of anxiety, anger, and/or shame, and promotes self-protective, but sometimes maladaptive, behaviors.[14,15] Warmth, affiliation, and compassion stimulate the soothing system. In response, this system yields feelings of safeness and calmness,[16] reduces threat sensitivities,[17] and promotes behaviors oriented toward

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trust and social connection.[18] It is thought that the soothing system evolved to be our primary threat-regulator, hence CFT's focus on building patients' capacities for self-compassion.[4]

Self-compassion has been defined as an attitude of kindness and acceptance toward one's personal distress and disappointments.[3,19] When individuals endure early experiences of abuse, criticism, or neglect, or simply have little encounter with warmth and support, they become much more prone toward self-criticism at times of distress, rather than self-compassion. According to Gilbert, this is partly because their threat systems are overactive and their soothing systems are underactive. These individuals are therefore prone to developing shame, a painful self-conscious emotion triggered and perpetuated by perceiving oneself as flawed, and believing that others share this view.[20,21] They are also prone to becoming "stuck" in shame as they try to regulate their feelings of inadequacy with self-protective strategies which provide limited long-term relief.

As applied to eating disorders, Goss and Gilbert[22] proposed that symptoms such as restrictive eating, excessive exercising, bingeing, and purging could be viewed as self-protective attempts to regulate underlying feelings of shame. They further suggested that eating disorder symptoms are generally effective at lowering shame in the short-term, but ultimately prolong and intensify these feelings.[3,23] Among individuals with BN, binge-purge symptoms offer a momentary distraction from shame; however, these secretive behaviors ultimately perpetuate the belief that one is different, defective, and/or disgusting in some way.[22,23] In AN, symptoms such as food restriction and excessive exercise yield temporary feelings of pride, which lower shame. However, shame tends to resurface quite quickly as the demands of the self-critical "eating disorder voice" escalate. According to the CFT model, it is only by developing self-compassion that patients can break out of these maladaptive cycles, and take steps toward recovery.[9]

Empirical Research on Shame, Self-Compassion, and Eating Disorder Symptoms

Several studies have established a link between shame and eating disorder symptoms, supporting CFT's postulation that shame contributes to the maintenance of psychopathology. Controlling for variables like guilt, global negative affect, depressive symptoms, and BMI, shame has been found to predict eating disorder pathology in both community[24–26] and clinical samples.[27] Other studies have found that eating disorder sufferers have higher levels of self-reported shame than healthy controls[28] and other psychiatric groups.[29,30] Shame has additionally been found to predict eating disturbance among women with a history of an eating disorder.[31] Taken together, these cross-sectional findings are consistent with the CFT theory that shame might play a role in maintaining eating disorder symptoms.

There is also empirical evidence to support the CFT assumption that self-compassion might protect against both shame and eating disorder pathology. Magnus, Kowalski, and McHugh[32] found that controlling for self-esteem, female exercisers who were higher in self-compassion reported exercising for more intrinsic reasons (e.g., fun and enjoyment) and fewer introjected reasons (e.g., guilt or shame). Those with higher levels of self-compassion also reported less anxiety about their physique, and engaged in less compulsive, "obligatory exercise.[32]" In female college student samples, other researchers have found that, when controlling for self-esteem, self-compassion predicted less body and weight preoccupation, less guilt around eating, less binge eating, and a greater drive for thinness.[33–35] Eating disorder patients with higher trait self-compassion also report less severe eating disorder pathology.[33] Taken together, these studies offer cross-sectional support for the theory that self-compassion may indeed help to protect against a range of behaviors and attitudes commonly seen in the eating disorders.

Several studies have also found that interventions designed to build self-compassion may lower eating disorder pathology. In a short lab task, Adams and Leary[36] found that guilty and restrictive eaters who were asked to eat an unhealthy preload, and then primed to think self-compassionately about their eating (e.g., "everyone eats unhealthily sometimes"), had less subsequent disinhibited eating than those who did not receive this prime. Kelly and Carter (in prep)[37] found that a 3-week self-compassion intervention reduced binge eating and weight and shape concerns among individuals with binge eating disorder. Finally, Gale et al.[8] tested the impact of introducing CFT into a CBT-based outpatient eating disorders program and found that the combined treatment resulted in significant symptom improvement particularly among patients BN. Together these findings support the CFT premise that the cultivation of self-compassion might help to protect against and alleviate eating disorder symptoms.

Research by our group has also provided evidence for the theory behind CFT. In an early version of the present dataset, we tested two aspects of the CFT model in a transdiagnostic sample of eating disorder patients. First, a cross-sectional investigation found that eating disorder patients who were more self-critical at the time of their admission had more severe eating disorder pathology due to their elevated feelings of shame.[27] This finding lent support to CFT's emphasis on targeting shame in highly self-critical eating disorder patients. In a second investigation, we examined whether patients' capacity for self-compassion at the time of their admission would influence their treatment response over 12 weeks. We found that patients who were both lower in self-compassion and more fearful of becoming self-compassionate at baseline had the poorest response to treatment, both in terms of their shame and eating disorder symptom improvements.[10] This finding lent support to the CFT tenet that deficits in self-compassion contribute to persistent shame and psychopathology.

The Current Study

In this investigation, we sought to test two additional aspects of the CFT model in our final, complete dataset. Our first objective was to determine whether reductions in shame early in treatment would influence patients' eating disorder symptom remission over time. Previous research on the relationship between shame and eating disorder symptoms has been cross-sectional, making this longitudinal study unique. We hypothesized that larger decreases in shame in the first few weeks of treatment would be associated with a faster decrease in symptoms over 12 weeks.

Second, although patients'baseline capacity for self-compassion has been linked to their present and future levels of shame and eating disorder symptoms, there is currently no evidence to support the CFT view that improvements in self-compassion yield more positive patient outcomes. The second objective of this investigation was therefore to determine whether early increases in patients' levels of self-compassion would contribute to the alleviation of their shame and eating disorder symptoms over time. We hypothesized that larger early increases in patients'level of self-compassion would predict faster reductions in eating disorder symptoms and shame over the course of treatment, even when controlling for early symptom change. Support for our hypotheses would strengthen the evidence behind CFT's focus on reducing patients'level of shame, and building their level of self-compassion as a way to reduce eating disorder symptoms.

Method

Overview of Procedure

Ethics approval to conduct this study was obtained from University Health Network Research Ethics Board. Participants were asked to complete a battery of online questionnaires at the start of their admission, and every 3 weeks during the course of their treatment for 12 weeks. A link to the questionnaires was e-mailed to participants at these time points, and they were encouraged to complete the surveys within 48 h of receiving them.

Sample

Participants were recruited from patients admitted to the Toronto General Hospital's inpatient or day hospital treatment program between September 2010 and August 2012. In a pre-admission orientation session, patients were asked by a clinical team member if they would like to be contacted by our research team to find out about a study being conducted on psychosocial functioning and eating disorders. Of the 172 patients admitted into treatment over the recruitment period, 130 agreed to be contacted. Of these, 26 patients did not return our phone calls and 104 patients agreed to meet with a research assistant within a few days of their admission. Of these, 97 patients agreed to participate upon learning more about the study and reviewing the consent form. All participants gave written informed consent.

Our final sample of 97 was predominantly female (97%) and Caucasian (79.2%), with 4.5% of participants identifying themselves as East Asian, 1.4% as South Asian, 2.8% African-Canadian, 10.8% Latino, and 1.5% as mixed race. The mean age in our sample was 28 years (SD = 9.6), and participant ages ranged from 17 to 57 years. All participants were assessed using the Eating Disorder Examination,[38] and met DSM-IV-TR criteria for an eating disorder. The diagnostic breakdown of our sample was as follows: 27.2% AN restricting type (AN-R), 18.5% AN binge-purge type (AN-BP), 29.6% BN, and 24.7% EDNOS. The mean BMI in our sample was 21 (SD = 5.5) at admission, and ranged from 12.6 to 44. Of those patients who participated in our study, 27.8% were admitted to our inpatient unit, and 72.2% were admitted to our day hospital.

Treatment Programs

Both of these specialized treatment programs are group-therapy based. Groups in each program are

ongoing, with patients entering and leaving at different times. A multi-disciplinary team consisting of psychiatrists, psychologists, nurses, dieticians, social workers, and occupational therapists runs the treatment programs. Treatment goals include medical stabilization, weight restoration in the case of underweight patients, nutritional rehabilitation, and normalized eating through staff-supported meals and snacks, and eradication of binge eating, purging, and excessive exercise.[39] Although the underlying orientation of both programs is cognitive-behavioral, patients attend a variety of manual-based groups on psycho-education, relationships and sexuality, expressive arts, anxiety management, dialectical behavior therapy, and cognitive-behavioral therapy. Self-compassion is implicitly encouraged in some of the groups, but there is no group in either program devoted primarily to building self-compassion or reducing shame.

Measures

Eating Disorder Symptoms. The 36-item Eating Disorder Examination-Questionnaire (EDE-Q)[40] was used as a measure of eating disorder symptoms. Four subscales (Shape Concern, Weight Concern, Eating Concern, and Dietary Restraint) comprise the EDE-Q and these can be combined into one global score of eating disorder psychopathology ranging from 0 (low) to 6 (high). The EDE-Q has good test–retest reliability and strong internal consistency,[41] the latter of which was evidenced by a Cronbach's alpha of .95 for the global scale in our sample. The sample mean EDE-Q global score at admission was 4.04 (SD = 1.32) which indicates clinically severe eating disorder pathology.[42]

Shame. The 25-item Experiences of Shame Scale (ESS)[43] was used to measure shame. The ESS asks participants to rate their shame experiences from one (not all) to four (very much) on three subscales: body, character, and behavior. These subscales can be examined separately, and an overall shame score can be obtained by taking the mean of all ESS items. We conducted a factor analysis of all items in our sample and found that a one-factor solution best fit our data structure. Sample items from the ESS include "Have you felt ashamed of the sort of person you are?" and "Have you tried to cover up or conceal things you felt ashamed of having done?" The ESS has good discriminant and construct validity, and high test–retest reliability.[43] In our sample, internal consistency was strong, with a Cronbach's alpha of 0.95, and the mean global score at baseline was 3.15 (SD = 0.65).

Self-Compassion. We assessed self-compassion with the 12-item Self-Compassion Scale-Short Form (SCS-SF).[44] This measure asks participants to rate their typical reactions to distress and disappointment using a five-point scale from one (almost never) to five (almost always). Sample items include "I try to be kind and patient toward those aspects of my personality I don't like," "I try to see my failings as part of the human condition," and "When something painful happens I try to take a balanced view of the situation." This scale has been found to show near-perfect correlations with the full 26-item Self-Compassion Scale (SCS).[19] In this study, it had a Cronbach's alpha of 0.85, demonstrating good internal consistency, and a mean at baseline of 2.04 (SD = 0.68).

Patterns of Missing Data

The present analyses were performed on 97 patients admitted to one of our two specialized eating disorder treatment programs. The EDE-Q was administered as part of a routine clinical intake assessment. Responses at Time 0 (i.e., baseline) were available for 83 of the 97 participants, with missing data accounted for by eight patients refusing to complete or simply not returning the questionnaire, and six patients leaving treatment before returning their responses. Both other questionnaires (i.e., the ESS and SCS) were administered at admission as part of our specific study survey, and were thus available for all participants 97 at Time 0.

Over the course of their treatment, participants were asked to complete online questionnaires on five occasions—namely, at the time of their admission, and after 3, 6, 9, and 12 weeks of treatment. The mean number of online assessments completed by each participant was 3.5 questionnaires over 12 weeks. Sixty-three of the 97 participants completed three or more questionnaires, and 34 completed less than three. Of those participants who completed one or two assessments only, 17 were active patients in the treatment but simply failed to complete several study questionnaires; 16 dropped out of treatment prematurely either because the clinical team asked them to leave for reasons such as poor program compliance, or because the participant chose to drop out early; and one participant successfully completed what the team considered to be a sufficient "dose" of treatment before the 12-week mark.

Analytic Strategy

All analyses were conducted using SAS 9.2 (SAS Institute, 2012). We tested our primary hypotheses with multilevel modeling using maximum likelihood estimation. Multilevel modeling is the recommended statistical approach when observations are nested within participants, as in longitudinal treatment datasets.[45] It models change trajectories over time (i.e., slopes, or rates of change) without requiring fixed data collection schedules. It has as an advantage that it retains data from participants for whom observations are missing, provided that these are missing at random (MAR).[46]MAR means

that the "missingness" of the data is unrelated to the unobserved value(s) but may be related to the missing observation(s) through other variables in the model for which observations are not missing.[47]

We tested the MAR assumption in the present dataset with pattern-mixture variables based on Hecker and Gibbon's (1997) recommendations. We created two categorical variables to represent the two primary reasons for missing data (i.e., early discharge or poor study compliance) and assigned participants a value (yes–no) based on their pattern of missing data. We found no effect for either of these variables, or their interaction with time, in predicting changes in our dependent variables. As such, patterns of missing data did not seem to influence outcomes in our dataset, in support of the MAR assumption. Because only one participant left treatment (and thus our study) early due to adequate progress, we did not control for this scenario when testing the MAR assumption. Furthermore, the "good-enough level" of change assumption—that patients who leave treatment early due to progress have faster rates of improvement – appeared irrelevant in our dataset (Baldwin, Berkeljon, Atkins, Olsen, & Nielsen, 2009).

We tested our primary hypotheses in two multilevel models in which the dependent variables were patients' global scores on the EDE-Q and ESS between the time of admission to the program and week 12 of treatment. It is important to include all data points when modeling slopes as dependent variables, since doing so provides more precise estimates of participants' rates of change.[45] Although participants were asked to complete their assessments within 48 h of receiving a notification to do so (sent precisely at 0, 3, 6, 9, and 12 weeks), they sometimes completed their questionnaires late. Nevertheless, all completed surveys were date stamped, which allowed us to identify the precise time, relative to patients' admission date, at which the survey was completed. To maximize the precision of our data analyses, we entered the precise time point in each participant's treatment course (i.e., 3 weeks, 4.5 weeks etc.) at which they completed each of their surveys used these times in our multilevel models described below. This approach, rendered possible through multilevel modeling, is recommended when measurement occasions are variably spaced, even if they were intended to occur at fixed times, as it more precisely models participants' within-person trajectories over time.[45,46]

In each of our models, we included a fixed- and random-effects portion for effects considered to be constant and variable across participants respectively. Initial models included a random intercept for patients and an unstructured error covariance structure. We then included a random effect for time. This was significant in both models and improved the model fit according to the AIC criterion; it was thus retained in our analyses. Fixed effects in both multilevel models included time, baseline levels of the relevant dependent variable and its interaction with time, and diagnosis and its interaction with time. Diagnosis was a dummy-coded categorical variable representing patients' eating disorder diagnosis at admission (i.e., AN-R, AN-BP, BN, or EDNOS).

Patient demographic characteristics, including age, marital status, and living circumstances, were also included in initial models but were not significant and were therefore dropped. Because of the fluctuating composition of the treatment groups, we were unable to represent patients as nested within groups. We did, however, control for patient treatment program (i.e., inpatient vs. day hospital) in our initial models. There was no significant effect for Program or Program $\times$ Time in either model so these terms were removed from the final models. To check whether our dependent variables changed in a non-linear fashion, we tested for quadratic and cubic effect of time on eating disorder symptoms and shame; however, results supported a linear model of change for both dependent variables.

Early Change Variables. To test our hypothesis that larger early changes in shame and self-compassion would predict faster symptom decreases, we calculated difference scores to reflect the magnitude of change participants experienced in shame and self-compassion between their first and second assessment points. First assessments were completed within a few days of admission, and second assessments were generally completed between weeks 3 and 5 (Mean = 4.3, SD = 1.1). For ease of interpretation, differences scores were calculated such that positive values indicated improvements in the variable in question in the desired direction (i.e., an increase for self-compassion, a decrease for shame). In addition, these variables and all other between-person predictors were standardized before we tested our multilevel models.

Results

Preliminary Analyses

Table 1 presents means, standard deviations, and Pearson zero-order correlations for study variables at baseline, and for early change scores (i.e., in eating disorder symptoms, shame, and self-compassion). Higher baseline shame and higher baseline eating disorder symptoms had small associations with early EDE-Q improvements, and lower baseline self-compassion was moderately correlated with early improvements in self-compassion. Zero-order correlations between the early change scores ranged from non-significant to strong. Early self-compassion change and early

TABLE 1. Means, standard deviations, and zero-order correlations for variables at baseline and for early change score variables

	Early EDE-Q Change	Early Shame Change	Early S-C Change	Mean (SD)
Baseline EDE-Q	0.27[b,d]	−0.16[a]	−0.14[a]	4.04 (1.32)
Baseline shame	0.27[a,d]	−0.04[c]	−0.07[c]	3.15 (0.65)
Baseline S-C	0.07[a]	0.14[c]	−0.38[c,e]	2.04 (0.68)
Early EDE-Q change	–	0.53[a,f]	0.00[a]	0.89 (0.88)
Early shame change	–	–	0.30[c,d]	0.28 (0.50)
Early S-C change	–	–	–	0.04 (0.63)

Note. S-C = self-compassion; EDE-Q = eating disorder symptoms. Early change variables reflect the difference between unstandardized levels of the variable in question between participants' first two assessments, where a positively valenced term reflects an improvement in the variable's desired direction.
[a]$n = 58$; [b]$n = 59$; [c]$n = 65$; [d]$p < .05$; [e]$p < .01$; [f]$p < .001$.

EDE-Q symptom change were not related to one another. Early self-compassion change was moderately correlated with early shame change, with these two variables sharing less than 10% of their variance. The strongest observed correlation was between early EDE-Q change and early shame change, with these two variables sharing less than 30% of their variance. Together, these correlations indicate that the early improvements patients showed in self-compassion, shame, and eating disorder symptoms were generally quite distinguishable from one another.

Research Question 1: Do Early Changes in Self-Compassion and Shame Predict Changes in Eating Disorder Symptoms over Time?

To explore our first research question, EDE-Q global scores collected between baseline and weeks 12 (inclusive) served as the dependent variable. To test our hypotheses that larger early increases in self-compassion and larger early decreases in shame would predict faster eating disorder symptom reductions during treatment, we first added the following terms to the fixed-effects portion of our EDE-Q model described above: baseline self-compassion, Baseline Self-Compassion × Time, early change in self-compassion, and Early Self-Compassion Change × Time. The latter interaction term was our predictor of interest; a significant negative effect would indicate that eating disorders symptoms decreased over time as a function of early improvements in self-compassion. The inclusion of Baseline Self-Compassion × Time in the model would further allow us to determine whether these early improvements in self-compassion exerted unique effects on symptom trajectories after controlling for patients' baseline levels of self-compassion. To test our hypothesis that early changes in shame would predict symptom decrease over time, we subsequently added baseline shame, Baseline Shame × Time, early shame change, and Early Shame Change × Time as fixed effects in the model. Again, a significant negative effect of this latter interaction term would indicate that patients' symptoms decreased as a function of early reductions in shame, controlling for their baseline levels of shame. The formulas at level-1 (within-persons) and level-2 (between-persons) for our final model were as follows.

Level-1 model:

$$Y = \beta_{0J} + \beta_{1J}\text{TIME} + e_{IJ}$$

Level-2 model:

$$\beta_{0J} = \gamma_{00} + \gamma_{01}X_{\text{DX}} + \gamma_{02}X_{\text{BLEDEQ}} + \gamma_{03}X_{\text{BLSc}} + \gamma_{04}X_{\text{BLSH}} + \gamma_{05}X_{\text{ScCHA}} + \gamma_{06}X_{\text{SHCHA}} + u_{0J}$$

$$\beta_{1J} = \gamma_{10} + \gamma_{11}X_{\text{DX}} + \gamma_{12}X_{\text{BLEDEQ}} + \gamma_{13}X_{\text{BLSc}} + \gamma_{14}X_{\text{BLSH}} + \gamma_{15}X_{\text{ScCHA}} + \gamma_{16}X_{\text{SHCHA}} + u_{0J}$$

Early Self-Compassion Change as a Predictor. First, our results indicated that the model that contained the self-compassion terms was a better fit than the model that did not. Specifically, the AIC criterion dropped from 515.4 to 438.7, where smaller numbers indicate better fit. Second, as hypothesized, Early Self-Compassion Change × Time emerged as a significant predictor of change in eating disorder symptoms, $F(1, 195) = 4.74$, $p < .05$, effect size $r = .15$. To further interpret this interaction term, we calculated simple slopes of the EDE-Q Global score as a function of time for patients who experienced increases in self-compassion that were 1 standard deviation above the mean (larger) and 1 standard deviation below the mean (smaller). These estimates revealed that patients who had relatively larger increases in self-compassion early in treatment had significant decreases in eating disorder symptoms over the 12 weeks, $B = -0.20$ ($SE = 0.06$), $p < .001$, and to a lesser degree, so too did patients who had relatively smaller early increases in self-compassion, $B = -0.13$ ($SE = 0.06$), $p < .05$.

The difference between these slope estimates was not significant, $t(195) = 0.70$, *n.s.*

Early Shame Change as Predictor. When we added the shame terms to the fixed-effects portion of our model, the model fit improved, with the AIC dropping from 438.7 to 421. When we did this, however, Early Self-Compassion Change × Time was no longer significant a significant predictor, $F(1, 196) = 1.54$, $p = .22$. However, a significant effect was found for Early Shame Change × Time, $F(1, 196) = 10.60$, $p < .01$, effect size $r = .23$. To interpret this significant interaction, EDE-Q Global score simple slopes were estimated for small (−1 SD) and large (+1 SD) levels of early shame change over time. These estimates revealed that patients who had relatively large reductions in shame early in treatment had faster improvements in eating disorder symptoms over the 12 weeks of treatment, $B = -0.30$ ($SE = 0.05$), $p < .001$. By contrast, patients who had relatively smaller decreases in shame early in treatment failed to show improvements in their eating disorder symptoms over the 12 weeks of treatment, $B = -0.02$ ($SE = 0.05$), *n.s.* In addition, these slope estimates differed significantly from each other, $t(196) = -3.02$, $p < .01$. To facilitate further interpretation of this interaction, we estimated and plotted mean EDE-Q global scores at weeks 0 (baseline), 3, 6, 9, and 12 (see **Fig. 1**).

Research Question 2: Do Early Changes in Self-Compassion Predict Changes in Shame over Time, Controlling for Early Changes in Eating Disorder Symptoms?

To test our second hypothesis that larger early increases in self-compassion would predict greater changes in shame over the course of treatment, controlling for early eating disorder symptom change, we conducted a second multilevel model. ESS shame scores between baseline and weeks 12 served as the dependent variable. We began by adding baseline EDE-Q, Baseline EDE-Q × Time, early EDE-Q change, and Early EDE-Q Change × Time to the fixed-effects portion of the model. We then added baseline self-compassion, Baseline Self-Compassion × Time, early self-compassion change, and Early Self-Compassion Change × Time as fixed effects to the model. A significant negative effect for the latter interaction term would reveal that controlling for patients' baseline self-compassion, and early change in symptoms, their level of early improvement in self-compassion would predict a faster rate of shame reduction over 12 weeks. Mathematical formulas for our final model are presented below.

Level-1 model:

$$Y = \beta_{0J} + \beta_{1J}\text{TIME} + e_{IJ}$$

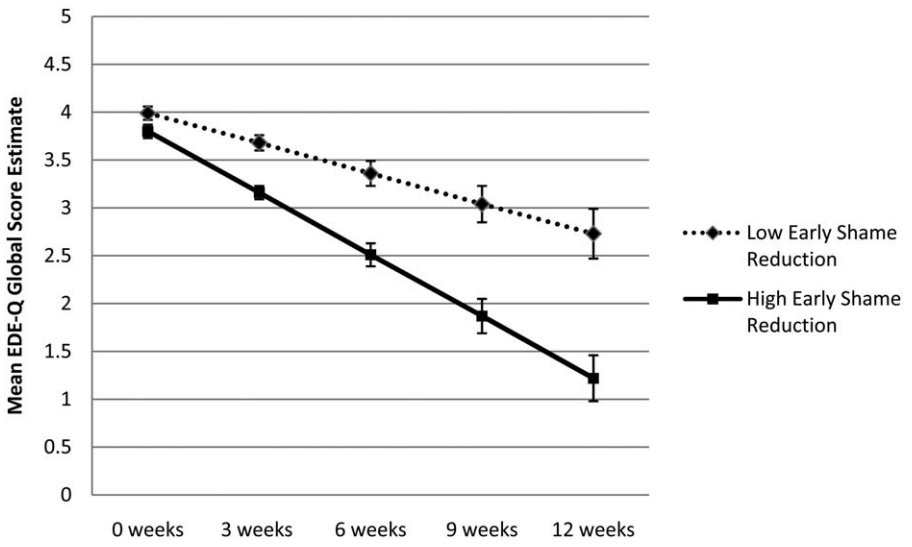
Level-2 model:

$$\beta_{0J} = \gamma_{00} + \gamma_{01}X_{\text{DX}} + \gamma_{02}X_{\text{BLSH}} + \gamma_{03}X_{\text{BLSc}} + \gamma_{04}X_{\text{BLEDEQ}} + \gamma_{05}X_{\text{ScCHA}} + \gamma_{06}X_{\text{EDEQCHA}} + u_{0J}$$

$$\beta_{1J} = \gamma_{10} + \gamma_{11}X_{\text{DX}} + \gamma_{12}X_{\text{BLSH}} + \gamma_{13}X_{\text{BLSc}} + \gamma_{14}X_{\text{BLEDEQ}} + \gamma_{15}X_{\text{ScCHA}} + \gamma_{16}X_{\text{EDEQCHA}} + u_{0J}$$

The addition of the EDE-Q terms to the model resulted in a better model fit than the model that contained only our basic control variables (i.e., time, diagnosis, baseline shame). Specifically, the AIC dropped from 160 to 144.7. Furthermore, a significant effect was found for Early EDE-Q Change × Time, $F(1,175) = 16.66$, $p < .001$, effect size $r =$

FIGURE 1 Early shame change predicting changes in EDE-Q global scores during treatment.



.29. Simple slope estimates revealed that patients who had greater early decreases in eating disorder symptoms showed significant improvements in shame over time, $B = -0.16$ (SE = 0.03), $p < .01$, whereas those who had smaller early symptom decreases had no significant improvements in shame over time, $B = 0.05$, *(SE* = 0.03), *n.s.*

When the self-compassion terms were added to the model, fit once again improved, with the AIC dropping from 144.7 to 140.2. Controlling for Early EDE-Q Change × Time, which remained a significant predictor of shame, $F(1, 175) = 14.05$, $p < .001$, there was a significant effect of Early Self-Compassion Change × Time, $F(1, 175) = 6.77$, $p = .01$, effect size $r = .19$. Simple slope estimates revealed that those who had larger early improvements in self-compassion showed significant decreases in shame over time, $B = -0.10$ (SE = 0.04), $p < .05$, whereas those who had smaller early improvements did not, $B = 0.03$ (SE = 0.04), *n.s.* In addition, these slope estimates differed from each other, $t(175) = -1.99$, $p < .05$, revealing that patients who had larger early improvements in self-compassion had faster decreases in shame over 12 weeks. To further illustrate this effect, mean point estimates of EDE-Q global scores were calculated for low and high levels of early self-compassion change and graphed in **Figure 2**.

Summary of Findings

Our results indicated that patients who, in the first few weeks of treatment, experienced larger reductions in shame showed faster decreases in their eating disorder symptoms over 12 weeks of treatment. In addition, patients who experienced larger increases in self-compassion in these first few weeks of treatment showed faster decreases in shame over 12 weeks, controlling for the effects of early changes in eating disorder symptoms.

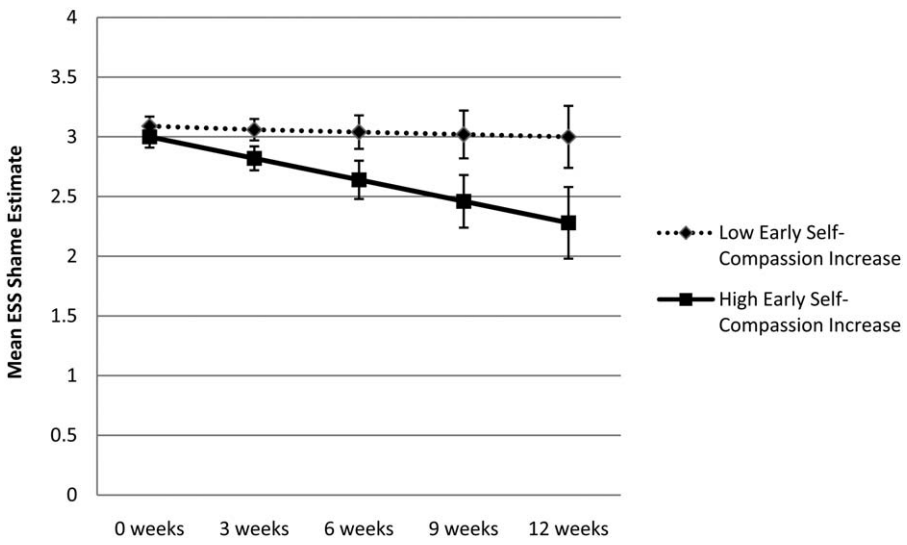
Discussion

This study examined two aspects of the CFT maintenance model of psychopathology in a transdiagnostic sample of eating disorder patients. In support of the model, we first found that patients who experienced relatively larger decreases in their level of shame in their first 4 weeks of treatment had faster decreases in eating disorder symptoms over 12 weeks of treatment. Second, patients who reported greater increases in their level of self-compassion early in treatment had faster reductions in shame over 12 weeks of treatment, even when controlling for the effect of early change in eating disorder symptoms. These findings suggest that feelings of shame may contribute to the maintenance of eating disorder pathology among eating disorder sufferers, and may thus be an important treatment target. Results also suggest that the development of self-compassion may help to relieve patients' feelings of shame. Our results therefore support the theoretical and clinical relevance of CFT in the eating disorders.

Theoretical Implications

The CFT model postulates that feelings of shame and inadequacy play a role in maintaining psychopathology, with many eating disorder symptoms (i.e., restricting eating, losing weight, compensating

FIGURE 2 Early self-compassion change predicting changes in shame over treatment.



for overeating) serving the self-protective function of regulating shame in temporary ways.[3,48] The implication of this theory is that as shame begins to decrease, so too should various forms of eating disorder pathology.[49] Although several cross-sectional studies have found that shame is positively correlated with eating disorder symptoms[27,28,31] this study was the first to examine the relationship between shame and eating disorder pathology longitudinally among patients receiving treatment. Our finding is that larger early reductions in shame were associated with a faster decrease in eating disorder pathology over 12 weeks of treatment is consistent with the theory that shame may contribute to the maintenance of eating disorders. The fact that this finding emerged in a mixed sample of eating disorder sufferers, comprised of individuals with AN-R, AN-BP, BN, and EDNOS, additionally supports the potential transdiagnostic relevance of shame as a maintenance factor of psychopathology.

CFT theory further postulates that although eating disorder symptoms might momentarily reduce feelings of shame, the secretive and self-destructive nature of most symptoms ultimately intensifies and prolongs shame and self-hatred. In this model, it is thought that the optimal way to regulate shame long-term is via compassion from self and others.[3,50] In support of these elements of CFT theory, we found that patients' feelings of shame decreased over 12 weeks as a function of the magnitude of their early improvements in both eating disorder symptoms and self-compassion. The fact that early changes in each of these variables contributed uniquely to patients' shame trajectories is consistent with the CFT model. First, this finding supports Goss et al.'s cyclical conceptualization of shame perpetuating eating disorder symptoms and eating disorder symptoms in turn perpetuating shame.[22,23] Second, the finding suggests that independent of the symptom changes patients make, developing a kinder, more compassionate self-attitude may lead to their feelings of shame abating over time.

Although our results appear to support the CFT model, it will be important to replicate this research and rule out alternative explanations for our findings. One wonders, for example, if the shame and self-compassion levels of patients who have abuse histories may be more resistant to improvement. If this is the case, one would want to control for abuse history in future research to determine whether the effects of early shame change on symptom trajectories, for instance, still remain. It could also be that patients whose eating disorders have lasted longer have levels of shame and self-compassion that are less malleable to change. We did control for age in our analyses, which is likely to correlate with illness duration; however, it would be important to control for illness duration in future research to determine whether our results may be influenced by baseline patient characteristics that were not studied in this research. Future studies would benefit from collecting more information on patient history beyond the demographic data we collected and controlled for in this study.

Clinical Implications

These findings suggest that it would be clinically valuable to intervene with patients' feelings of shame early in their treatment process. Shame is known for its tendency to evoke a "hiding" action tendency, which means it is an emotion that tends to be expressed and shared less directly than others.[21] Indeed, several studies have found that shame is one of the most common reasons why patients tend not to disclose in therapy, and tends to be especially relevant to non-disclosure of psychiatric symptoms.[28,51] Given that early decreases in shame predict faster improvements in eating disorder symptoms, it may be important for therapists to be attuned to potential indicators of shame (e.g., the absence of self-disclosure), and to compassionately explore their underpinnings with patients. Based on CFT theorizing, one would expect a warm, validating therapeutic stance to be especially important to help patients feel less ashamed in their early phase of treatment.[5,48] However, before we can make clinical recommendations, there is a need for more research into the therapeutic qualities and interventions that are most associated with shame reduction in eating disorder patients. There is also a need for experimental research on this topic—in particular, it would be helpful to know whether specific types of interventions alleviate eating disorder symptoms indirectly by decreasing shame.

The findings from this article suggest that to reduce shame in our patients, targeting both their eating disorder pathology and their self-compassion may offer the best results. The fact that patients who had greater early symptom decreases had faster decreases in shame over treatment suggests that a clinical focus on reducing symptoms early in treatment, as seen in many CBT-based approaches, may inadvertently help them to feel less defective and ashamed. Our findings additionally support the

value of integrating interventions that seek to build patients' level of self-compassion as a way to decrease their shame. Once again, however, future research is needed before we can feel confident in making clinical recommendations.

Limitations and Future Research

This was a correlational study meaning we cannot draw causal conclusions from our findings. An important next research step would be to manipulate shame and self-compassion in eating disorder sufferers to determine the impact of doing so on eating disorder pathology. Such a design would lend even more support to the value of integrating CFT approaches into our current eating disorder treatments.

Second, this study investigated only 12 weeks of treatment. In future research, it would be important to determine whether the effects we observed persist beyond this time period. If we knew, for example, that improvements in shame led to sustained improvements in eating disorder pathology, the rationale for intervening with patients' feelings of shame would be even stronger.

Third, we must be cautious about generalizing the conclusions from our study to all eating disorder sufferers. Our sample consisted of eating disorder sufferers receiving intensive day hospital or inpatient treatment, and therefore likely represents a more severe subset of eating disorder sufferers. To ensure that the shame and self-compassion influence treatment response in less severe eating disorder sufferers, it would be important to replicate results with a different sample, for instance patients attending weekly outpatient therapy.

Fourth, the limitations associated with testing mediation through multilevel modeling (Zhang, Zyphur, & Preacher, 2009) prevented us from examining whether changes in shame mediated the relationship between change in self-compassion and eating disorder symptoms over time. Future research should take advantage of new structural equation modeling techniques to test such hypotheses.

Finally, although our findings lend support to the theoretical applicability of CFT to eating disorders, they do not speak directly to the efficacy of CFT for eating disorders. The current findings simply suggest that shame and self-compassion might be important factors to attend to and target in treatment, thereby supporting the value of continued investigations into CFT-based treatments in the eating disorders.

Conclusions

Our results suggest that the CFT model may be a useful one from which to understand and treat persistent eating disorder pathology. Importantly, they suggest that intervening with patients' feelings of shame early in treatment may help to facilitate more rapid recovery.

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