British Journal of Clinical Psychology (2013), 52, 148–161
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Why self-critical patients present with more severe eating disorder pathology: The mediating role of shame

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Objectives. Gilbert (*Compassion: Conceptualisations, Research, and Use in Psychotherapy*. London: Routledge, 2005) theorized that self-critical individuals have more severe psychopathology due in part to their elevated feelings of shame. We sought to test this model in a sample of eating disorder sufferers.

Method. Seventy-four patients admitted to a specialized day or inpatient eating disorders treatment programme completed the Forms of Self-Criticism and Self-Reassurance Scale, Rosenberg Self-Esteem Inventory, Experience of Shame Scale, Beck Depression Inventory, Positive and Negative Affect Schedule, and Eating Disorder Examination Questionnaire.

Results. We tested our mediational model with Preacher and Hayes' (*Behavior Research Methods*, *40*, 879, 2008) bootstrapping approach entering self-criticism as a predictor, self-esteem as a covariate, and shame, negative affect, positive affect, and depressive symptoms as simultaneous mediators. Applying a 95% confidence interval, the total indirect effect of self-criticism on eating disorder pathology was significantly different from zero suggesting that its influence occurred through the proposed set of mediators. Specific indirect effects revealed that shame was the only mediator to contribute significantly to the model.

Conclusions. Results support the theory that among eating disorder patients, higher self-criticism is associated with elevated eating disorder pathology through feelings of shame. Interventions that target the shame of self-critical patients might therefore facilitate their recovery.

Practitioner Points

- Assessing and intervening with the feelings of shame experienced by high self-critical patients might be particularly important in helping them overcome their eating disorder.

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DOI:10.1111/bjc.12006

- Working with patients to understand and alter the links between their self-criticism, shame, and eating disorder behaviours might be a fruitful therapeutic avenue.
- Case conceptualizations in the eating disorders and perhaps other forms of psychopathology might benefit from integrating theoretical models that integrate a focus on self-criticism and shame.

Limitations

- This is a cross-sectional study, meaning that we cannot make conclusions about the directionality of the relationships observed. It will be important to examine the temporal relationships between self-criticism, shame, and eating disorder symptoms in future research.
- We rely on correlational data and so can only make predictive inferences based on our results. An experimental study in which self-criticism and/or shame are manipulated will be an important next step to allow for causal inferences.

Gilbert and colleagues proposed that feelings of shame contribute to the development and maintenance of many forms of psychopathology, including eating disorders (Gilbert, 2007; Goss & Allan, 2009). Shame has been defined as a painful self-conscious feeling characterized by a sense of being flawed, different, and defective (Tangney & Dearing, 2002). According to Gilbert (1998), internal shame stems from the negative views one has about oneself (e.g., I think I am hideous) and is intertwined with self-hatred and self-disgust. External shame, on the other hand, stems from the negative views one imagines others hold about oneself (e.g., people see me as different) and is intertwined with the fear that exposing one's behaviours, character, and/or physical appearance would invite disgust, rejection, and ridicule. Although these two types of shame derive from different evaluative processes, they frequently co-occur and are both thought to trigger a desire to hide part(s) of oneself from others (Gilbert, 1998).

Gilbert (2005) suggests that the most effective way to regulate shame is to elicit support and compassion. Because doing so involves sharing vulnerabilities and painful feelings without knowing how others will react, individuals who have particular difficulty tolerating distress and/or trusting other people may develop ways to manage feelings of shame that do not require disclosing their internal experiences (Gilbert, 2007; Gilbert *et al.*, 2010). In Gilbert's model, eating disorder symptoms such as restrictive eating, excessive exercise, bingeing and purging, and a compulsive focus on weight and shape are viewed as examples of these more secretive, isolating approaches to managing shame.

Individuals high in the trait of self-criticism are thought to be especially susceptible to feelings of shame. Gilbert (2005, 2007, 2009a,b) proposed that this is in part because self-directed criticism and hostility have the same threatened neurophysiological effects as criticism from other people. Eating disorder sufferers frequently find themselves in a vicious cycle wherein they are critical of themselves and their bodies, thereby triggering and intensifying feelings of shame, leading to behaviours focused on altering their weight and shape, and in time increasing feelings of shame (Goss & Gilbert, 2002). In the case of anorexia nervosa (AN), restrictive eating and excessive exercise might temporarily reduce shame by increasing pride (Goss & Allan, 2009; Goss & Gilbert, 2002). However, pride tends to be fleeting and its ability to distract from self-critical thoughts and shame become contingent on the setting and meeting of increasingly extreme standards. In bulimia nervosa (BN), bingeing and purging might help individuals escape feelings of shame temporarily, but the secrecy and perceived abnormality of these behaviours ultimately

perpetuate self-critical thoughts and a sense of being flawed (Goss & Allan, 2009). This theoretical model therefore suggests that the more self-critical patients are, the more likely it is that shame plays a role in the maintenance of their eating disorder.

Shame, self-criticism, and eating disorders

Although no studies to our knowledge have examined self-criticism, shame, and eating disorder symptoms together, several studies have separately found shame and self-criticism to be related to one another (Gilbert *et al.*, 2010; Whelton & Greenberg, 2005) and to eating disorder pathology (Dunkley, Masheb, & Grilo, 2010; Fennig *et al.*, 2008; Troop & Redshaw, in press). Self-criticism is a personality trait characterized by an excessive focus on achievement, harsh self-evaluation, and strong fears of failure and rejection (Blatt, 1995; Blatt, d'Afflitti, & Quinlan, 1976), and has been linked to early experiences with critical, controlling, and/or insufficiently warm carers (Koestner, Zuroff, & Powers, 1991). Self-criticism is also associated with greater vulnerability to psychopathology (Ryder, McBride, & Bagby, 2008), interpersonal problems (Mongrain & Zuroff, 1995), more global negative affect (Zuroff, Stotland, Sweetman, Craig, & Koestner, 1995), and higher shame (Gilbert *et al.*, 2010). Whelton and Gilbert (2005) additionally found that compared to individuals low in self-criticism, high self-critics reported significantly more shame and submissiveness after self-attacking.

The developmental, cognitive, affective, and motivational profile of self-critical individuals resembles that of many eating disorder sufferers, making a link between trait self-criticism and eating disorder pathology compelling. Although a great deal of the research on personality risk factors for eating disorders has focused on perfectionism (Egan, Wade, & Shafran, 2011), a review of more recent studies suggests that it is the tendency to self-criticize when standards are not met that is more pathogenic than the actual setting of high standards (Kelly & Zuroff, in press). In binge eating disorder (BED), for example, Dunkley, Blankstein, Masheb, and Grilo (2006) found that the relationship between perfectionistic personal standards and eating disorder symptoms was explained entirely by the former's shared variance with self-criticism. Other studies in mixed eating disorder samples found that trait self-criticism was associated with greater eating disorder pathology, even controlling for various other forms of perfectionism (Fennig *et al.*, 2008; Steele, O'Shea, Murdock, & Wade, 2011). Trait self-criticism might therefore contribute to the maintenance of eating disorder pathology.

There is also empirical support for the theory that feelings of shame are linked to more severe eating disorder pathology. Swan and Andrews (2003) found that eating disorder sufferers had more global shame, bodily shame, and shame around eating compared to healthy controls. Other studies have found evidence that eating disordered populations have higher levels of shame, about eating and overall, compared to other psychiatric groups (Cook, 1994; Frank, 1991). In community and college samples, shame has been found to predict eating disorder symptoms controlling for guilt, depressive symptoms, and body mass index (Burney & Irwin, 2000; Hayaki, Friedman, & Brownell, 2002; Sanftner, Barlow, Marschall, & Tangney, 1995). Shame has also been linked to present level of eating disturbance among individuals with a history of an eating disorder (Troop, Allan, Serpell, & Treasure, 2008), with internal shame associated with more bulimic symptoms and external shame associated with more anorexic symptoms.* Troop and

**Note: Correction added on 5 November 2012 after first online publication on 17 October 2012. This sentence has been corrected to read 'with internal shame associated with more bulimic symptoms and external shame associated with more anorexic symptoms' (in the original online version the words 'anorexic' and 'bulimic' were accidentally reversed).*

Redshaw (in press) also found a prospective link between shame and future eating disorder pathology among women with a past or present diagnosis. Additional studies in non-clinical populations have suggested that shame partially mediates the relationship between a history of childhood maltreatment and eating disorder symptomatology (Murray & Waller, 2002; Murray, Waller, & Legg, 2000). Together, these findings support the theory that shame plays an important role in the maintenance of eating disorder symptoms.

Testing a theoretical model of self-criticism, shame, and eating disorder symptoms

In spite of the theoretical and empirical links between shame, self-criticism, and eating disorder symptoms, no studies to our knowledge have examined these three variables together. We sought to test the theoretical model that, among eating disorder patients, those higher in the trait of self-criticism would have more severe eating disorder pathology due in part to their elevated shame. To make this test more robust, we sought to rule out alternate meditational models by including low self-esteem as a covariate, and depressive symptoms, global negative affect (NA), and global positive affect (PA) as simultaneous mediators. All these variables have been theoretically and empirically related to both self-criticism and eating disorder symptoms. Our hypothesis was that, controlling for self-esteem, self-criticism would be indirectly related to more eating disorder pathology through our proposed set of mediators, with a specific indirect effect through shame. In other words, we expected that those patients who had higher levels of trait of self-criticism would present with more severe eating disorder pathology due to affective processes in general and heightened shame in particular. As this is the first study examining self-criticism, shame, and eating disorder pathology, our priority was to garner overall support for our mediational model using a global measure of shame, rather than formulating and testing more specific hypotheses about internal and external shame. Given that our hypothesized model is thought to apply across eating disorder subgroups, we sought to test our research questions in a mixed eating disorder sample in line with the movement towards transdiagnostic theories and treatments.

Method

Participants

Our sample consisted of 74 patients admitted to an intensive hospital-based eating disorders treatment programme in Canada between the months of September 2010 to December 2011. At the time of admission, all patients met *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition* (DSM-IV) criteria for an eating disorder based on the Eating Disorder Examination (Fairburn & Cooper, 1993). Twenty-three patients (31%) were admitted to our inpatient unit and 51 (69%) were admitted to our day hospital. These specialized treatment programmes are operated by an interdisciplinary team and consist of intensive group psychotherapy programmes focused on medical stabilization, nutritional rehabilitation through provision of supervised meals, weight restoration, and eradication of binge eating and purging symptoms.

Participants were 18–55 years of age, with a mean of 27.5 years (SD = 9.3), and most (97%) were women. The ethnic makeup of our sample was as follows: 79.1% Caucasian, 4.5% East Asian, 1.5% South Asian, 2.9% African Canadian, 10.5% Latin, and 1.5% mixed

race. The admission Body mass index in our full sample ranged from 12.5 to 35, with a mean of 19.7 (*SD* = 5.2). At the time of admission, 29.2% of participants met DSM-IV criteria for the restricting subtype of AN (AN-R), 18.5% met criteria for the binge-purge subtype of AN (AN-BP), 29.2% met criteria for BN, and 23.1% had an eating disorder not otherwise specified (EDNOS). Ten of our 74 participants (13.5%) had previously been patients in one of our two treatment programmes.

Measures

Eating disorder symptoms

We assessed eating disorder symptoms with the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994). The EDE-Q has 36 items that ask participants to use a 0–6 rating scale to report on the frequency of their shape concerns, weight concerns, eating concerns, and dietary restraint over the previous 28 days. The EDE-Q yields scores on each of these four subscales and also produces a mean score of global eating disorder pathology, our primary interest. The EDE-Q has been shown to have good test-retest reliability and internal consistency (Luce & Crowther, 1999), as was the case in our sample, where the Cronbach's alpha was .95. The mean EDE-Q score in our sample was 4.1 (*SD* = 1.47) confirming that this sample had clinically severe eating disorder pathology (Mond, Hay, Rodgers, & Owen, 2006).

Self-criticism

We assessed trait self-criticism with the 22-item Forms of Self-Criticism and Self-Reassurance (FSCSR; Gilbert, Clarke, Hempel, Miles, & Irons, 2004). This scale asked participants to rate how they typically react when things go wrong for them using a scale from 0 (*not at all like me*) to 4 (*extremely like me*). This scale yields three subscales, one of which assesses self-reassurance and two of which assess self-criticism. The first measures self-criticism characterized by a sense of inadequacy and the second assesses self-criticism characterized by a sense of self-hatred. These two subscales correlated at .85 with each other; their constituent items were therefore summed to derive a composite self-criticism score. Sample items included the following, 'I am easily disappointed with myself', 'I have a sense of disgust with myself', and 'I remember and dwell on my failings'. The Cronbach's alpha of this composite measure was .94 and the mean was 2.76 (*SD* = .98)

Self-esteem

Self-esteem was assessed using the Rosenberg Self-Esteem (RSE; Rosenberg, 1965). This 10-item measure assesses the extent to which individuals evaluate themselves positively using a rating scale of 1 (*strongly disagree*) to 4 (*strongly agree*). The Cronbach's alpha for the RSE in our sample was .86, demonstrating adequate internal consistency, and the mean score was 2.1 (*SD* = .60).

Shame

We assessed shame using the 25-item Experiences of Shame Scale (ESS; Andrews, Qian, & Valentine, 2002), which has been found to have good discriminant and construct validity,

as well as high test-retest reliability (Andrews *et al.*, 2002). The ESS asks participants to rate the frequency of their shame experiences from 1 (*not all*) to 4 (*very much*) and it yields a global score computed by taking the mean of all 25 items and typically also yields scores on three subscales of Body Shame (e.g., 'Have you avoided looking at yourself in the mirror?'), Character Shame (e.g., 'Have you felt ashamed of the sort of person you are?'), and Behaviour Shame (e.g., 'Have you tried to cover up or conceal things you felt ashamed of having done?'; Andrews *et al.*, 2002). Factor analysis of the 25 items in our sample, however, did not support a three-factor structure. Both Promax and Varimax rotations suggested a five-factor structure which fit poorly with Andrews and colleagues' conceptual model and empirically derived factors; the same was true when we forced a three-factor structure. We therefore forced a one-factor structure, and found this solution best represented the data, with item loadings ranging from .49 to .85. This total ESS scale had a Cronbach's alpha of .95, demonstrating strong internal consistency. The sample mean was 3.15 (*SD* = 0.66).

Positive and negative affect

Global positive and negative affect were assessed using the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS is a self-report measure comprised of two 10-item subscales assessing PA and NA respectively. The measure asks participants to rate the extent to which they experienced various emotions from 1 (*Very slightly or not at all*) to 5 (*Extremely*) over the previous few weeks. Sample items on the PA scale are happy, enthusiastic, proud, and excited, and on the NA scale are afraid, hostile, guilty, and sad. Both PANAS subscales showed adequate internal consistency, with Cronbach's alphas of .87 and .89 respectively. Mean PA in our sample was 2.3 (*SD* = 0.75) and mean NA was 3.5 (*SD* = 0.9).

Depressive symptoms

Depressive symptoms were assessed using the Beck Depression Inventory (BDI; Beck, Steer, & Brown, 1996). This 21-item measure asks participants to report on the intensity of their affective, cognitive, motivational, and somatic symptoms of depression by selecting one of four options for each question. Past research has demonstrated that the BDI has high internal consistency and correlates with other self-report and interview-based measures of depression (Gotlib & Cane, 1989; Shaw, Vallis, & McCabe, 1985). Possible scores range from 0 to 63, with scores between 20 and 28 reflecting moderate depression, and scores between 29 and 63 reflecting severe depression. The mean BDI in our sample was 36.8 (*SD* = 14) reflecting a severely depressed group.

Results

Preliminary analyses

All our analyses were conducted in SAS 9.3 (SAS Institute, Cary, NC, USA). To ensure that our variables of interest were related to each other in expected ways, we first computed Pearson correlations between all study variables (see Table 1). Consistent with our hypothesized model that self-criticism would influence eating disorder pathology through shame, we found that self-criticism, shame, and eating disorder symptoms were all positively and strongly related to one another. Importantly, pairs of

Table 1. Zero-order correlations between study variables at baseline

	EDE-Q	Self-criticism	Self-esteem	Shame	PA	NA	BDI
EDE-Q	–	.70***	−.48***	.70***	−.47***	.67***	.46***
Self-criticism		–	−.39***	.73***	−.54***	.74***	.38**
Self-esteem			–	−.42***	.22	−.34**	.68***
Shame				–	−.37***	.71***	.38**
PA					–	−.57***	−.33**
NA						–	.47***
BDI							–

Note. EDE-Q = Eating disorder symptoms; PA = Positive affect; NA = Negative affect; BDI = Depressive symptoms.

variables shared no more than 53% of their variance, indicating that self-criticism, shame, and eating disorder pathology were related, but distinguishable phenomena in our sample. Depressive symptoms (BDI), NA, and low PA were also associated with self-criticism and eating disorder symptoms, supporting their investigation as alternate mediators of the relationship between self-criticism and eating disorder pathology. In addition, shame correlated negatively with PA and positively with NA and BDI; as such, these three variables as candidate mediators would enable us to test the unique mediating role of shame controlling for its shared variance with other affective processes. Finally, self-criticism was negatively associated with self-esteem, which correlated negatively with shame, NA, and BDI, and positively with PA, supporting the inclusion of self-esteem as a covariate in our model.

Central analyses

Analytic strategy

To test our central hypothesis that shame would mediate the relationship between trait self-criticism and eating disorder symptoms, we used Preacher and Hayes' (2008) bootstrapping method for estimating direct and indirect effects with multiple mediators. This approach is recommended for sample sizes that are not large enough for structural equation modelling. Other advantages are that the approach does not require the sampling distribution to be normal, relies on fewer inferential tests thereby lowering the chances of a Type I error, and allows for the testing of multiple mediators simultaneously thereby reducing parameter bias.

We used the SAS INDIRECT macro created by Preacher and Hayes (2004) using 1,000 bootstrap re-samples with data replacement and applying a 95% bias corrected and accelerated confidence intervals (BCa CIs). As in Baron and Kenny's (1986) method, the INDIRECT macro first computes the effects of the independent variable on each of the proposed mediators (a path), the effects of the proposed mediators on the dependent variable (b path), and the total (c path) and direct effects (c' path) of the independent variable on the dependent variable. It then uses bootstrapping to estimate the total and specific indirect effects (ab) of the independent variable on the dependent variable through the proposed mediators. BCa CIs on the indirect effects that do not cross 0 are significantly different from 0 at an alpha of .05. A total indirect effect that differs from zero indicates that the independent variable influences the dependent variable through the group of mediators together. A specific indirect effect through one of these candidate

mediators reveals that within the model, the influence of the independent variable on the dependent variable occurs through that specific variable.

Testing our hypothesized mediational model

In the INDIRECT command, we entered eating disorder symptoms (EDE-Q Global score) as the dependent variable, self-criticism as the independent variable, self-esteem as a covariate, and shame, NA, PA, and BDI as simultaneous mediators. Figure 1 presents the direct effects of self-criticism, controlling for self-esteem, on each proposed mediator (*a* path), and the direct effects of the proposed mediators on eating disorder pathology (*b* path). We found that controlling for self-esteem, whose partial effect was not significant (coefficient = −.03), the total effect of self-criticism on eating disorder symptoms (*c* path) was significant, coefficient = .93, $p < .001$. Once mediators were included in the model (c' path), the direct effect of self-criticism on eating disorder pathology became insignificant, coefficient = .39, *n.s.,* consistent with Baron and Kenny's (1986) criteria for mediation.

Preacher and Hayes' (2004, 2008) bootstrapping approach was then used to estimate the indirect effect of self-criticism on eating disorder pathology through our proposed set of mediators. Bootstrapping estimated a total indirect effect of .53 with a BCa CI of .16–.87. In not crossing zero, this BCa CI indicated that shame, NA, PA, and BDI together fully mediated the relationship between self-criticism and eating disorder pathology in our sample. This finding reveals that trait self-criticism is indirectly associated with eating disorder severity through affective processes in general. We then examined specific indirect effects of self-criticism through each of the proposed mediators in the model to determine which specific affective experiences contribute most to the mediational model. Point estimates and BCa CIs, presented in Table 2, reveal that shame was the only

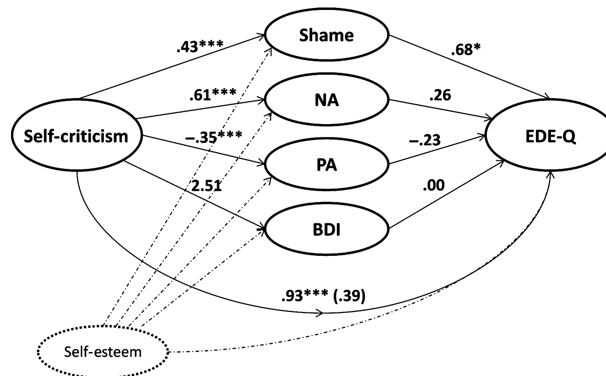

Figure 1. Full mediational model all coefficients in the diagram are unstandardized. The path values on the left arrows represent effects of the independent variable on the proposed mediators, controlling for self-esteem. The path values on the right arrows represent the direct effects of the four proposed mediators on the dependent variable, eating disorder symptoms. The bottom two coefficients are most important, with the first value representing the full effect of self-criticism on the dependent variable and the value in parenthesis representing the direct effect of self-criticism after the proposed mediators of shame, NA, PA, and BDI are included in the model. The fact that the full effect was significant and the direct effect was not suggests that self-criticism influences eating disorder symptoms indirectly through the four mediators.

Table 2. Mediation of the effect of self-criticism on eating disorder symptoms through shame, negative affect, positive affect, and depressive symptoms

		Bootstrapping	
	Point estimate	Lower BCa 95% CI	Upper BCa 95% CI
Shame	.2945	.0165	.6396
Negative affect	.1557	−.1933	.5510
Positive affect	.0794	−.1219	.2763
Depressive symptoms	.0036	−.0984	.0818
Total	.5332	.1636	.8721

Note. BCa = Bias corrected and accelerated.

variable whose BCa CI that did not include zero, making it the only putative mediator of the group to contribute significantly to the model. Because BCa CIs for specific indirect effects through NA, PA, and BDI did not cross zero, we can conclude that they did contribute significantly to the model.

Summary

These results reveal with 95% CI that, controlling for self-esteem, trait self-criticism influenced eating disorder symptoms through shame, NA, low PA, and depressive symptoms together with a specific indirect effect occurring through shame only.

Discussion

In a clinical sample of eating disorder patients, we obtained support for the theoretical model that eating disorder patients higher in trait self-criticism have more severe eating disorder pathology due in part to their elevated shame. Using a bootstrapping approach (Preacher & Hayes, 2008) in which we controlled for self-esteem and included shame, NA, PA, and depressive symptoms as simultaneous mediators, trait self-criticism influenced eating disorder pathology indirectly through our proposed set of mediators with a specific indirect effect occurring through shame only. These findings suggest that among eating disorder patients, trait self-criticism is associated with more severe symptomatology through affective experiences in general, and through shame in particular.

The association we uncovered between trait self-criticism and eating disorder symptoms is consistent with prior studies (i.e., Dunkley *et al.,* 2006; Steele *et al.*, 2011; Steiger, Goldstein, Mongrain, & Van der Feen, 1990) and supports the general theory that self-criticism is a vulnerability factor for psychopathology (Blatt & Zuroff, 1992; Gilbert, 2005, 2007; Mongrain & Zuroff, 1995). The fact that this effect emerged controlling for self-esteem, whose partial effect was non-significant suggests that trait self-criticism might be an equally if not more important contributor to eating disorder pathology. It is particularly noteworthy that shame was the only mediator to contribute uniquely to our model, even with other theoretically and empirically plausible mediators included (Blatt & Zuroff, 1992; Mongrain & Zuroff, 1995). Our findings suggest there is something distinctive about shame, beyond its shared variance with global NA, low PA, and depressive symptoms, which accounts for the more severe eating disorder pathology individuals high in self-criticism experience.

Theoretical and clinical contributions

Our results offer preliminary support for the theory that a self-critical personality style is associated with greater vulnerability to psychopathology through heightened shame (Gilbert, 2005; Goss & Gilbert, 2002). Self-critical individuals expect that others will reject and criticize them (Mongrain, 1998; Zuroff & Fitzpatrick, 1995), perceive less social support than is actually available to them (Mongrain, 1998) and are more fearful and mistrustful of displays of compassion from others (Gilbert, McEwan, Matos, & Rivis, 2011). As such, they may be less likely to cope with their high shame by eliciting compassion from others, considered to be one of the optimal ways to regulate shame long-term (Gilbert, 2005). Instead, highly self-critical eating disorder sufferers may be more likely to engage in self-protective behaviours (e.g., focusing all efforts on work, isolating from others, dieting) and/or self-destructive behaviours (e.g., self-harm, self-induced vomiting), which temporarily distract from shame, but ultimately amplify shame and self-criticism. The present study was cross-sectional, rendering it impossible to elucidate the temporal relations between self-criticism, shame, and eating disorder pathology, but nevertheless suggest that Gilbert's theoretical model might be a useful lens through which to understand the eating disorder pathology of highly self-critical patients.

It is important to note that the measures of self-criticism and shame we administered were not eating disorder-specific; they assessed global self-criticism and global shame. It seems, therefore, that a general predisposition towards self-critical thoughts and feelings in eating disorder sufferers is associated with an overall sense of being flawed and inadequate, which in turn is associated with intensified eating disorder symptoms. This suggests that clinically it may be important to attend to and intervene with not only patients' self-critical thoughts about food and their body, and feelings of shame that are linked specifically to eating, weight, and shape but also to more global negative thoughts and feelings they have about themselves as a person. In particular, the present findings suggest that to help patients who are especially self-critical recover from their eating disorder, modulating their feelings of shame will be crucial.

Cognitive-behavioural exercises that encourage patients to identify and challenge their self-critical thoughts are one type of approach that might be effective. Fennell (1999) provides thought records designed to help individuals spot their self-critical thoughts, and notice the emotions and self-defeating behaviours with which they are associated. People are then encouraged to find alternatives for their self-critical thoughts by questioning the evidence, examining other perspectives, and searching for biases in their thinking. Fennell focuses on helping patients build self-esteem with these activities; however, self-esteem did not emerge as a significant predictor of eating disorder symptoms in our analyses. Although it may indeed be helpful to target patients' low self-esteem in addition to their self-criticism, our results suggest that helping patients identify the thoughts that are most associated with feelings of shame may be most therapeutic.

Gilbert (2005) suggested that for people with pathological forms of self-criticism it can be difficult to believe and feel soothed by alternatives to their negative thoughts. In this case, he proposed a therapeutic focus on developing more self-compassionate thoughts, rather than more logical ones, the rationale being that compassion is the antidote to shame. Gilbert developed compassion-focused therapy (CFT) based on this model, and there is now evidence that CFT-based interventions may be especially effective for self-critical individuals (Kelly, Zuroff, Foa, & Gilbert, 2010) and can reduce shame (Kelly, Zuroff, & Shapira, 2009).

Goss and Allan (2010) recently adapted Gilbert's CFT to be integrated into outpatient cognitive-behavior therapy for eating disorders (Fairburn, 2008). In CFT for

eating disorders, an important focus is to help patients come to see their eating disorder behaviours, and their self-critical thoughts, as strategies they adopted for understandable reasons to protect them from interpersonal and emotional stressors. This 'not your fault' message permeates the CFT approach and encourages patients to shift from a self-blaming attitude for having developed an eating disorder, to a more self-compassionate mindset thought to be antidotal to shame and compatible with recovery (Gilbert, 2005). CFT also validates patients' fears related to becoming more self-compassionate and helps patients be patient with their fears while working toward building greater skills in self-compassion. Preliminary research on the integration of this CFT approach into eating disorders treatment is promising (Gale, Gilbert, Read, & Goss, in press). Future randomized controlled trials would help to determine not only the relative efficacy of CFT but also whether as theorized, it exerts its effects by lowering patient shame.

Limitations and future research

There are several limitations to the present study. First, it was a correlational study, meaning we cannot conclude that self-criticism causes eating disorder symptoms through shame. A future experimental study would benefit from examining the effects of a self-criticism intervention on shame and eating disorder symptoms over time.

A second and related limitation is that our study was cross-sectional rendering it impossible to determine the temporal relationship between our variables of interest. Although it makes theoretical sense to view self-criticism as an antecedent to shame, and shame as an antecedent to eating disorder pathology, a longitudinal study would be required to test these hypotheses.

Third, our sample size was moderate, and it would be important to replicate results with a larger number of participants. The statistical method we used, however, employed bootstrapping from 1,000 samples lending confidence to our results. Furthermore, we used a highly conservative model in which we included empirically and theoretically compelling control variables and candidate mediator variables.

Fourth, we obtained support for our mediational model using a global measure of shame. In future studies, it would be interesting to determine the unique contributions of internal and external shame using an array of shame measures. In addition, the ESS in our sample seemed to be tapping into one global shame factor making it impossible for us to determine the unique roles of body shame and character/behaviour shame in our model. Data permitting, it would be informative to answer this question in future research.

Conclusions

Our results suggest that the eating disorder symptoms of highly self-critical patients might be partly due to their feelings of shame, consistent with Gilbert and colleagues' theoretical model of psychopathology (Gilbert, 2007; Goss & Allan, 2009; Goss & Gilbert, 2002). Our findings suggest that clinical interventions and therapist behaviours that focus on alleviating feelings of shame might help patients high in self-criticism to overcome their eating disorder (Goss & Allan, 2010; Kelly, Carter, Zuroff, & Borairi, 2012). Findings also support the value of conducting longitudinal and experimental studies that might further clarify the roles of self-criticism and shame in the development and maintenance of eating disorders.

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Received 5 June 2012; revised version received 10 August 2012

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