



**Utrecht University**

**EMOTION REGULATION STRATEGIES IN WOMEN RECOVERED FROM AN  
EATING DISORDER**

Myriam Boscarolli (6848567)

Supervisor: Dr. Lot Sternheim

Master in Clinical Psychology thesis project

Academic year: 2019-2020

Utrecht University

## **Abstract**

**Objective:** The purpose of this study was to explore the role of two emotion regulation strategies, cognitive reappraisal and expressive suppression, in the framework of recovery from eating disorders. It aimed to investigate whether women who recovered from an ED report fewer issues with emotion regulation compared to women who never had an ED. Moreover, it explored a possible relationship between the two emotion regulation strategies and eating pathology.

**Method:** A total of 134 English speaking women voluntarily participated in this online study. 89 women were part of the control group, having no history of an ED, whilst 45 women were part of the recovered from an ED group.

The main instrument used was the ERQ (Emotion Regulation Questionnaire) to assess the two emotion regulation strategies, whilst the EDEQ (Eating Disorder Examination Questionnaire) was used to measure eating pathology.

**Results:** Women recovered from an ED do not significantly differ from women who have never had an ED in terms of emotion regulation strategies. Cognitive reappraisal did not result in significantly lower levels in the recovered group, and expressive suppression did not result in significantly higher levels in the recovered group, confirming the first two hypotheses.

Correlation analyses showed that eating pathology was associated to expressive suppression, the maladaptive strategy, and when accounting for eating pathology, it was found that there were no differences between the two groups for this specific emotion regulation strategy.

**Conclusion:** The present study suggests that women recovered from an ED have average levels of expressive suppression and cognitive reappraisal, when compared to women who have never had an ED. It also proposes that normalized emotion regulation strategies, such as the two studied in this paper, may be an indicator of recovery from an ED.

## **Introduction**

### **Eating disorders**

Eating disorders (EDs), such as anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED) amongst a few others (pica, rumination disorder, and so on) are serious psychiatric disorders; they negatively impair people's lives, affecting them biologically, emotionally and psychosocially (Fairburn & Harrison, 2003). EDs are much more frequent in women than men, specifically 19.4% for women and 13.8% for men (mean prevalence of any ED) (Galmiche, Déchelotte, Lambert, & Tivolacci, 2019) even though there is a slight under-representation of men in studies about EDs (Striegel-Moore et al., 2009). The causes and risk factors of EDs are complex, with a mix between both genetic and environmental aspects (Striegel-Moore & Bulik, 2007). In regard to the prevalence of EDs, there seems to be an increase over time, which may also be due to the changes in diagnostic criteria; however, a recent review (Galmiche et al., 2019) found that the means of lifetime EDs were 8.4% for women.

This topic is so important due to its prevalence and the increasing number of cases, which went from 3.5% for the 2000–2006 period to 7.8% for the 2013–2018 period (Galmiche et al., 2019). Furthermore, EDs are a problem also because of their mortality rate: they have the highest rate amongst all mental illnesses (Smink, van Hoeken, & Hoek, 2012), AN having the worst effect amongst all EDs with a standardized mortality ratio of 5.86 (Arcelus, Mitchell, Wales, & Nielsen, 2011), part of which is due to suicide (1 out of 5) (Pompili et al., 2004).

All EDs have some things in common: a distorted view of the body and weight and a bad/complicated relationship with food. AN is characterized by significantly low weight (a BMI lower than 18.5) and fear of gaining weight, that leads to avoiding food by dieting or fasting, or other inappropriate compensatory behaviours such as excessive exercise and/or purging (vomiting, using diuretics and/or laxatives) (American Psychiatric Association, 2013).

BN is characterized by episodes of over-eating accompanied by the feeling of loss of control, followed by unhealthy compensatory behaviours such as purging and/or excessive exercise;

it is not always characterized by low weight, someone with BN can also be overweight or have a normal weight (American Psychiatric Association, 2013).

BED is characterized by eating unusually large amounts of food in a short amount of time accompanied by a feeling of loss of control and not necessarily accompanied by hunger, eating rapidly till feeling uncomfortably full, feeling embarrassed, depressed and guilty; differently from BN, these over-eating episodes are not followed by harmful compensatory behaviours (American Psychiatric Association, 2013).

Eating disorders are complex and therefore significant to study for many reasons, such as the mental and physical implications they have, the overlap between different types, which may be an obstacle towards treatment and recovery, the comorbidity with other disorders and so on; however, one factor which appears to be important across EDs is emotion regulation.

### **Emotion regulation**

Emotion regulation is the ability of recognizing, understanding and accepting the emotions one feels, and managing them (Gratz & Roemer, 2004); disturbed emotion regulations is linked to mental health too (Gross & Munoz, 1995). There are two main emotion regulation strategies (Lazarus & Alfert, 1964; Gross & Levenson, 1993; Gross & John, 2003) which will be the focus of this paper: cognitive reappraisal and expressive suppression. Cognitive reappraisal is a psychological strategy that decreases the level of emotional experience and behavioral expression; in simpler words, it involves diminishing the emotional impact of a stressful situation by reframing or reappraising the initial perception of it (Gross & John, 2003). It is used when a stressful situation cannot be changed, and it is found at the very start of the process of emotion generation. On the other hand, expressive suppression is found later in the emotion generation process and has opposite effects: it decreases behavioral expression, but does not decrease the levels of emotion experience, meaning that it inhibits external signs of an internal, emotional state (Gross, 2002; Gross & John, 2003). An example of expressive suppression is smiling when being pinched, which is painful and

usually elicits negative emotions, and not positive ones; this is an act of disguising an emotional state, in this case anger and pain and annoyance, with a facial expression that does not coincide (Niedenthal, Ric, & Krauth-Gruber, 2006).

Plenty of research has shown the connection between emotion regulation and EDs: one study (Harrison et al., 2009) demonstrated that people who suffer from EDs have difficulties with emotional recognition, which is part of emotion regulation. A second study by this group (Harrison et al., 2010) showed that people with EDs have difficulties regulating their emotions intrapersonally and that they tend to particularly misuse expressive suppression. These findings are further confirmed by another study (Davies, Schmidt, Stahl, & Tchanturia, 2011) which showed that people with EDs have difficulties in expressing their emotions. It may be that these inabilities cause them to use ineffective strategies, leading to negative behaviours, such as bingeing or other disordered eating, in the hope to ease the negative feelings (Heatherton & Baumeister, 1991), indeed it has been suggested that lacking emotional regulation functions may be part of what maintains an ED (Zucker et al., 2007).

Research looking at emotion regulation strategies, specifically expressive suppression and cognitive reappraisal, is growing in general and in the field of EDs. It has been shown (Danner, Sternheim, & Evers, 2014) that people with an ED tend to use ER strategies maladaptively, specifically expressive suppression. One other study, which used the Difficulties in Emotion Regulation Scale (DERS, Gratz, & Roemer, 2004) found that women with AN have significantly more difficulties in all its subscales, compared to HC (Harrison et al., 2009) and that there were significant differences between the two groups, AN and HC, in regard to emotion regulation strategies (Manuel & Wade, 2013). Furthermore, another study found that with the DERS as the only significant predictor, greater emotion regulation problems were associated with more eating disorder symptoms (Haynos, Roberto, & Attia, 2015).

However, despite the potential importance of emotion regulation, there are very few studies which look at emotion regulation in people who have recovered from an ED. This could be

significant due to its potential role in understanding the mechanisms of EDs and therefore could elucidate markers of recovery. It may help define what recovery from an ED really is, in general and from the ER point of view, becoming a metric for its definition. Finally, it is also important for treatment purposes.

The results of the following studies highlight that from an emotion regulation point of view, recovered women function better than ill ones, but still not as well as the controls: one study (Danner et al., 2012) that compared women currently suffering from AN, recovered from AN and healthy women, showed that the high anxiety levels that were found could indicate that the group of recovered women still had emotional and cognitive difficulties, characteristic of this disorder. Another study, also comparing women with AN, recovered from AN and healthy controls, found that in the recovered sample the attentional bias to social stimuli and difficulties in recognizing emotional expressions from the eyes were aspects that remained impaired. On the other hand, the recovered group reported normal emotional regulation (Harrison et al., 2010). This study concludes by suggesting that the difficulties with emotion recognition but not emotion regulation, and the attentional biases to social affective stimuli, may be a trait vulnerability factor or simply a mark of the ED, and further studies are needed to explore this field.

Only a handful of studies about EDs have looked at the emotion regulation strategies of expressive suppression and cognitive reappraisal, and none which involved a recovered population, which is what this present study will be doing. This is very important because emotion regulation in general and also these two strategies specifically, play a significant role in EDs, as it has emerged from previous studies mentioned above. This study will be investigating these two emotion regulation strategies in the context of ED recovery, exploring whether general recovery also implies emotional recovery or not.

The first two hypotheses will explore emotion regulation, specifically the two strategies measured by the ERQ, (Emotion Regulation Questionnaire, Gross & John, 2003) expressive suppression and cognitive reappraisal; this tool has never before been used in a population of

recovered women. The first hypothesis is that women recovered from an eating will not display significantly lower levels of cognitive reappraisal, compared to a group of controls, women who have never had an eating disorder. The second hypothesis is that women recovered from an eating disorder will not display significantly higher levels of expressive suppression, when compared to a group of controls, women who have never had an eating disorder. Harrison and colleagues (2010) found that the recovered group did not significantly differ from the HC group in terms of emotion regulation, by using a different tool which was the DERS. They found that the acute AN group reported a significantly higher total score for difficulties in emotion regulation than both the HC and recovered groups and the same was true for each subscale. There were no significant differences between the recovered AN group and HCs for the total score or for the six subscales.

A review of studies (Aldao, Nolen-Hoeksema, & Schweizer, 2010) found that maladaptive strategies such as suppression were associated with higher levels of eating pathology, and on the other hand adaptive strategies such as cognitive reappraisal were associated with lower eating pathology. However, they also found that maladaptive strategies had a stronger relation to psychopathology. Another study (Svaldi, Griepenstroh, Tuschen-Caffier, & Ehring, 2012), which as instruments used the DERS, the EDEQ and the ERQ, found that participants with an ED diminished their use of adaptive emotion regulation strategies, which in the case of the ERQ is cognitive reappraisal, and increased their use of maladaptive emotion regulation strategies, which is expressive suppression when measured with the ERQ, when compared to HC. Furthermore, the severity of eating pathology was significantly correlated to almost all indicators of emotion regulation difficulties.

Therefore, the third hypothesis is that eating pathology, measured in the group of recovered women with the EDEQ (Eating Disorder Examination Questionnaire, Fairburn, & Beglin, 1994), is associated to emotion regulation, specifically the two strategies measured by the ERQ (cognitive reappraisal and expressive suppression). This is also based on previous results by Svaldi et al

(2012) who had found that eating pathology, assessed with the EDE-Q, was significantly related to almost all ER variables, measured with the ERQ and the DERS.

## **Method**

### **Participants**

In this paper, the inclusion criteria for the “control” group were English speaking females above the age of 18 who had never had any eating disorder in their past and currently had a BMI between 18.5 and 30. For the “recovered” group, participants were required to have been officially diagnosed with an eating disorder in the past, they were not currently receiving treatment for the eating disorder anymore and their current BMI was between 18.5 and 30. They were also screened for eating pathology thoughts and behaviours through the EDEQ (Eating Disorder Examination Questionnaire, Fairburn, & Beglin, 1994).

According to Holle et al (2008) recovery was defined as 3 years free of any eating disorder symptoms (such as low weight or any compensatory behaviours); another study (Bardone-Cone et al., 2010) defined recovery with four clear points: 1, not meeting ED diagnostic criteria, 2, no bingeing, purging or fasting in the last 3 months, 3, a BMI of at least 18.5 and 4, average scores on all the scales of the EDE-Q (Eating Disorder Examination Questionnaire, Fairburn, & Beglin, 1994).

A total of 309 responses for the “recovered” group and 191 for the “control” group were recorded, but after applying the chosen filters mentioned above, the sample consisted of a total of 74 “recovered” and 102 “control” adult women. For the “recovered” group, all the BMIs were calculated and 7 more women were excluded; after scoring the EDEQ and using it as a filter for eating pathology, the final sample consisted of 45 recovered women. In the “control” group, 6 women were excluded for their BMI, after calculating it for all those who did not know their BMI, and the final sample consisted of 89 women, after filtering for eating pathology with the EDEQ. The final sample of recovered women consisted of 20 women with a DSM-5 diagnosis of anorexia



nervosa, 15 women with a DSM-5 diagnosis of bulimia nervosa, and 2 women with a DSM-5 diagnosis of binge eating disorder. The other 8 women had been diagnosed with a combination of eating disorders. According to the power analysis (using G\*Power), the minimum number of participants needed to make the analysis significant was 42 participants per group, which was reached and surpassed in both groups.

Participants were recruited through sharing the survey links on online platforms such as Facebook groups and WhatsApp. All participants were given preliminary information about the study and provided with an informed consent form, which they had to electronically agree to. Participation was on a voluntary basis. Ethical approval was obtained from the Faculty Ethics Assessment Committee of Utrecht University.

## **Instruments**

Two surveys were created using Qualtrics: “Recovered Eating”, for those recovered from an ED, and “Eating Habits Questionnaire”, for the control group. The only differences between the two surveys were in the introduction, as the two had a different target population.

The demographics section included questions such as age, gender, nationality (based on continent of origin), BMI and weight and height, in case someone did not know their BMI so it could be calculated. There is no pre-existing survey specifically for people recovered from an ED, so for the screening, some questions related to the DSM criteria were used and some that came from other surveys: 4 of the total 5 questions from the SCOFF questionnaire were used (Morgan, Reid, & Lacey, 2000).

To assess eating pathology, and also as screening questions, the EDEQ (Eating Disorder Examination Questionnaire, Fairburn, & Beglin, 1994) was used. It is a self-report measure that evaluates the presence and severity of eating pathology over the past 28 days; the higher the score, the greater the eating pathology. It consists of a global score (mean scores between 0 and 23) and 4 subscales: restraint scale, eating concern scale, weight concern scale and shape concern scale.

Participants are asked to rate each item on a scale from 0 (not at all) to 6 (every day/ very intensively). The scale had a very high level of internal consistency in the current study, as determined by a Cronbach's alpha of 0.92.

To assess emotion regulation, the Emotion Regulation Questionnaire (ERQ, Gross & John, 2003) was used. The ERQ is a 10 item, self-report questionnaire, that assesses the tendency of an individual to use cognitive reappraisal (6 items), the adaptive strategy, and expressive suppression (4 items), the maladaptive strategy, by using two subscales. Each item is rated on a Likert scale (7 points, (1 = strongly disagree; 7 = strongly agree). Higher scores on the cognitive reappraisal subscale indicate higher levels of the adaptive strategy, whilst higher levels on the expressive suppression scale signify higher levels of the maladaptive strategy. The questionnaire has shown high internal consistency (0.79 for reappraisal and 0.73 for suppression) and test-retest reliability of 0.69 for both subscales (Gross & John, 2003). In this study, the scale had a good level of internal consistency overall, as determined by a Cronbach's alpha of 0.61, and the two scales separately had a high level of internal consistency, CR with a Cronbach's alpha of 0.79 and ES with a Cronbach's alpha of 0.81.

### **Statistical analyses**

All statistical analyses were conducted using the Statistical Package for Social Sciences (SPSS, version 25). All assumptions (homogeneity, homoscedasticity, normality) were tested. T-tests between emotion regulation scores (expressive suppression and cognitive reappraisal) were calculated to explore whether there was a significant difference between the means of the two groups. A Pearson correlation analysis was run between the same two emotion regulation strategies and eating pathology, measured with the EDEQ, to investigate whether there was a significant relationship between any of these elements. Finally, as a result of the previous analysis, a one-way ANCOVA was run to understand whether eating pathology was a variable influencing the levels of

emotion regulation, specifically expressive suppression, in the two groups, women recovered from an ED and controls.

## Results

There were no outliers in the data, as assessed by no cases with standardized residuals greater than  $\pm 3$  standard deviations.

There was homogeneity of regression slopes as the interaction term was not statistically significant,  $F(1, 130) = 2.17, p = .143$ . Standardized residuals for the interventions were normally distributed, as assessed by Shapiro-Wilk's test ( $p > .05$ ). There was homoscedasticity, as assessed by visual inspection of the standardized residuals plotted against the predicted values. There was homogeneity of variances, as assessed by Levene's test for equality of variances ( $p = 0.105$ ).

**Table 1**

*Demographic data of the two groups*

	Recovered group (N = 45)		Control group (N = 89)	
	N	%	N	%
<b>Nationality</b>				
Europe	27	62.2	61	68.5
North America	9	20	6	5.6
South America	6	13.3	16	16.9
Australia	2	4.4	3	3.4
Asia	1	2.2	3	2.2
<b>Age groups</b>				
18 – 21	8	17.8	13	14.6
22 – 25	15	33.3	46	51.7
26 – 30	12	26.7	23	25.8
31 – 35	6	13.3	3	3.4
36 – 40	2	4.4	0	0
41 – 45	2	4.4	1	1.1
46 – 50	0	0	1	1.1
51 – 55	0	0	2	2.2
<b>ED</b>				
AN	20	44.4		
BN	15	33.3		
BED	2	4.4		
Other	8	17.7		

The demographic characteristics of the sample is shown in table 1. It consisted of a total of 139 English speaking women, 45 in the “recovered” group and 89 in the “control” group. All of the participants were above the age 18; most of the sample was European. As per exclusion criteria, their BMIs were between 18.5 and 30, the most frequently chosen option being “between 18.5 and 25”. The most represented eating disorder in the recovered sample is anorexia nervosa (AN), followed by bulimia nervosa (BN); in the “other” group there are women who had more than one eating disorder, or EDNOS-AN and ENDOS-BN.

### **Emotion regulation**

Overall, when looking at the two emotion regulation strategies separately, it seems that the means of the HC and REC women do not show significant differences, which is later confirmed by an independent sample t-test. In regard to the expressive suppression strategy, the recovered group ( $M = 3.24$ ,  $SD = 1.46$ ) showed slightly higher levels than the control group ( $M = 3.07$ ,  $SD = 1.21$ ), whilst on the other hand, when looking at the other strategy, cognitive reappraisal, the control group ( $M = 4.79$ ,  $SD = 1.02$ ) showed marginally higher levels than the recovered group ( $M = 4.75$ ,  $SD = .77$ ).

An independent samples t-test showed that in the case of the maladaptive strategy, there was no statistically significant difference in the expressive suppression mean score between recovered women and the controls,  $t(132) = -.74$ ,  $p = .458$ . Similarly, in the case of the adaptive strategy, there was no statistically significant difference in the cognitive reappraisal mean score between recovered women and the controls,  $t(112.298) = -.22$ ,  $p = .827$ .

A Pearson correlation analysis showed that there was a statistically significant, small, positive correlation between eating pathology and expressive suppression,  $r(132) = .19$ ,  $p < 0.05$ . On the other hand, there was no correlation between eating pathology and cognitive reappraisal,  $r(132) = .01$ ,  $p > 0.05$ .

Finally, an ANCOVA analysis was run with expressive suppression as the dependent variable, group (recovered or controls) as the independent variable and eating pathology as the control variable. After adjustment for eating pathology, there was no statistically significant difference in expressive suppression levels between the two groups,  $F(1, 131) = .36, p = .547$ , partial  $\eta^2 = .003$ .

## Discussion

The main purpose of the current study was to investigate the role of two emotion regulation strategies, cognitive reappraisal and expressive suppression, in the framework of recovery from EDs. This study aimed to explore whether women who recovered from an ED in general, also recovered from the disorder in terms of emotion regulation strategies.

In line with the first set of hypotheses, women recovered from an ED do not significantly differ from women who have never had an ED in terms of emotion regulation strategies.

When looking at the adaptive strategy, cognitive reappraisal, there were no significant differences between recovered women and the control group, which confirms the first hypothesis that predicted that women recovered from an ED will not show significantly lower levels of cognitive reappraisal. On the other hand, in terms of the maladaptive strategy, expressive suppression, again there were no significant differences between recovered women and the controls, which confirms the second hypothesis that predicted that women recovered from an ED will not show significantly higher levels of expressive suppression.

There are very few studies with populations affected by EDs that look at the two emotion regulation strategies separately, and there are none that do so with a recovered population, which is also why the present study is even more important. Previous literature about emotion regulation in general that used recovered samples found results which indicated that the group of recovered women still had emotional and cognitive difficulties, after recovery (Danner et al., 2012). On the other hand, another study (Harrison et al., 2010) found that the recovered group reported normal

emotional regulation but then the same sample had difficulties with attentional bias to social stimuli and difficulties in recognizing emotional expressions from the eyes, which suggests that further exploration is needed in this field.

The third hypothesis aimed to explore whether there was an association between eating pathology and emotion regulation, specifically expressive suppression and cognitive reappraisal. The results only partially confirm the findings of previous studies: eating pathology was correlated with expressive suppression but not with cognitive reappraisal. This was an expected result, as it is indeed the maladaptive strategy which is correlating with eating pathology. This is in line with what Svaldi et al (2012) had found: eating pathology was indeed related to emotion regulation, including the two strategies measured by the ERQ. Furthermore, a review (Aldao et al., 2010) had found that maladaptive strategies such as expressive suppression were associated with higher levels of eating pathology.

When exploring this relation further, to establish whether there were any significant group differences between the set of recovered women and the controls on the expressive suppression variable after adjusting for eating pathology, the results showed that there was none, which confirmed the two previous hypotheses and it meant that eating pathology did not influence the relationship, which means that they are independent concepts from one another. As mentioned before, currently there are no previous studies which examine expressive suppression and cognitive reappraisal separately in a recovered population, so there is no preceding literature to compare this to, which makes this present study even more important and innovative.

Studies which have looked at other factors such as anxiety and depression in recovered samples, found mixed results: on one hand, some studies (Bosanac et al., 2007; Pollice, Kaye, Greeno, & Weltzin, 1997) found that the group of women recovered from an ED still had significant symptoms of anxiety and depression, whilst on the other hand, other studies (Herpertz-Dahlmann et al., 2001) found that long-term recovered women were as likely as the healthy control group to have anxiety and/or depression. Finally, one further study (Danner et al., 2012) found that

the group of recovered women had high anxiety levels, which indicated that they may still have had emotional and cognitive difficulties which are typical of EDs.

The results of this study may be relevant for clinical applications regarding the treatment of EDs in women. It suggests the idea that one may want to address both emotion regulation strategies when working on a patient's recovery from an ED, aiming to reduce the maladaptive strategy, expressive suppression, and at the same time improving the lack of further adaptive one, cognitive reappraisal. Furthermore, it may be useful information to consider for diagnosis and for defining recovery, which is not clear cut yet, suggesting that emotion regulation strategies may improve with a general recovery from an ED. The slightly different recovery criteria may be one of the reasons why the results of this study were slightly different from other ones (Harrison et al., 2010, Danner et al., 2012).

This study is important for the fact that it adds to the growing literature about recovery from EDs and more specifically the role that two emotion regulation strategies play in recovery. The sample was international and varied across age groups.

There are some limitations in the study that should be mentioned. The ERQ (Emotion Regulation Questionnaire; Gross & John, 2003) does not have a scoring manual and therefore there are no cut off points or boundaries to indicate what level is severe or what is "normal", something which would have been very useful for this study. Furthermore, quite a few participants from both groups reported through feedback to the investigators that they found the EDEQ (Eating Disorder Examination Questionnaire, Fairburn, & Beglin, 1994) to be quite confusing and lead to many of them stopping and exiting the survey, therefore resulting in fewer responses.

There is no clear definition of recovery from an ED, therefore this study had to establish its own classification, with the aid of some previous literature (Bardone-Cone et al., 2010; Holle et al., 2008), and it is still debated whether full recovery is possible. When comparing fully recovered women, partially recovered ones, healthy controls and those with an active eating disorder, a study (Bardone-Cone et al., 2010) found that a full recovery is possible, as the fully recovered group had

the same levels on all eating disorder-related measures used as the healthy controls. In regard to psychosocial skills, both the fully and partially recovered groups had a functioning comparable to the control group (Bardone-Cone et al., 2010). Furthermore, data for this present study was collected online, through a survey and thus a self-report, whilst most previous studies which had a recovered population used in person interviews, which is an aspect to be considered in future research. Another feature to consider for future research, which would have been an interesting and useful addition to this study, is having a control group of women currently affected by an ED, as a comparison for the emotion regulation strategies levels. Finally, the group of recovered women in this study had different types of EDs that were not looked at separately, whilst some previous research had compared the two emotion regulation strategies in women with AN, BN and BED separately (Danner, Sternheim, & Evers, 2014), which would be an interesting factor to include in future research, as the previously mentioned paper showed that distinguishing between ED subtypes is important when researching emotion regulation strategies.

In conclusion, due to the increased prevalence of EDs (Galmiche et al., 2019), there is also a need for more studies in this field and deeper knowledge, and not just about EDs in general but more specifically about everything that contributes to an ED, such as the emotional, physical and social aspects.

The present study has highlighted the small number of existing literature which focuses on recovered women, and also the lack of literature that explores emotion regulation strategies, in this case expressive suppression and cognitive reappraisal, in a recovered sample. The results of this study indicate that recovering from an ED is complex, and that it includes an emotional recovery too, for example recovering emotion regulation functions by decreasing the maladaptive strategies and increasing the adaptive ones. Understanding the nature and processes of a disorder is very important, but it is equally important to understand what comes after the disorder, once someone is considered recovered, to better help maintain recovery and thrive for a better future.



## References

- Aldao, A., & Nolen-Hoeksema, S. (2010). Specificity of cognitive emotion regulation strategies: A transdiagnostic examination. *Behaviour Research and Therapy, 48*(10), 974–983.  
doi:10.1016/j.brat.2010.06.002
- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*(2), 217–237.  
doi:10.1016/j.cpr.2009.11.004
- American Psychological Association. (2013). Feeding and Eating Disorders. In *Diagnostic and statistical manual of mental disorders* (5th ed.).  
doi:10.1176/appi.books.9780890425596.dsm10
- Arcelus, J., Mitchell, A., Wales, J., & Nielsen, S. (2011). Mortality Rates in Patients With Anorexia Nervosa and Other Eating Disorders A Meta-analysis of 36 Studies. *Archives of general psychiatry, 68*. 724-31. doi:10.1001/archgenpsychiatry.2011.74
- Bardone-Cone, A. M., Harney, M. B., Maldonado, C. R., Lawson, M. A., Robinson, D. P., Smith, R., & Tosh, A. (2010). Defining recovery from an eating disorder: Conceptualization, validation, and examination of psychosocial functioning and psychiatric comorbidity. *Behaviour Research and Therapy, 48*(3), 194–202.  
doi:10.1016/j.brat.2009.11.001
- Bosanac, P., Kurlender, S., Stojanovska, L., Hallam, K., Norman, T., Mcgrath, C., . . . Olver, J. (2007). Neuropsychological study of underweight and “weight-recovered” anorexia nervosa compared with bulimia nervosa and normal controls. *International Journal of Eating Disorders, 40*(7), 613-621. doi:10.1002/eat.20412
- Danner, U. N., Sanders, N., Smeets, P. A. M., van Meer, F., Adan, R. A. H., Hoek, H. W., & van Elburg, A. A. (2012). Neuropsychological weaknesses in anorexia nervosa: Set-shifting, central coherence, and decision making in currently ill and recovered women. *International Journal of Eating Disorders, 45*(5), 685–694. doi:10.1002/eat.22007

- Danner, U. N. & Sternheim, L. & Evers, C. (2014). The importance of distinguishing between the different eating disorder (sub)types when assessing emotion regulation strategies. *Psychiatry Research*. 215. doi:10.1016/j.psychres.2014.01.005
- Davies, H., Schmidt, U., Stahl, D. & Tchanturia, K. (2011), Evoked facial emotional expression and emotional experience in people with anorexia nervosa. *International Journal of Eating Disorders*, 44: 531-539. doi:10.1002/eat.20852
- Fairburn, C. G., & Beglin, S. J. (1994). Eating Disorder Examination Questionnaire. *PsycTESTS Dataset*. doi:10.1037/t03974-000
- Fairburn, C. G., & Harrison, P. J. (2003). Eating disorders. *The Lancet*, 361(9355), 407–416. doi:10.1016/s0140-6736(03)12378-1
- Galmiche, M., Déchelotte, P., Lambert, G., & Tavolacci, M. (2019). Prevalence of eating disorders over the 2000-2018 period: a systematic literature review. *The American journal of clinical nutrition*. 109. 1402-1413. doi:10.1093/ajcn/nqy342
- Gratz, K., & Roemer, L. (2004). Multidimensional Assessment of Emotion Regulation and Dysregulation: Development, Factor Structure, and Initial Validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*. 26. 41-54. doi:10.1007/s10862-008-9102-4
- Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Review of General Psychology*, 2(3), 271–299. doi:10.1037/1089-2680.2.3.271
- Gross, J. J. (2002). Emotion Regulation: Affective, Cognitive, and Social Consequences. *Psychophysiology*. 39. 281-91. doi:10.1017/S0048577201393198
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *Journal of Personality & Social Psychology*. 85. 348-62. doi:10.1037/0022-3514.85.2.348

- Gross, J. J., & Levenson, R. W. (1993). Emotional suppression: Physiology, self-report, and expressive behavior. *Journal of Personality and Social Psychology*, 64(6), 970–986. doi:10.1037/0022-3514.64.6.970
- Gross, J. J., & Munoz, R. F. (1995). Emotion regulation and mental health. *Clinical Psychology: Science and Practice*, 2, 151 - 164. doi:10.1111/j.1468-2850.1995.tb00036.x
- Harrison, A., Mountford, V., & Tchanturia, K. (2014). Social anhedonia and work and social functioning in the acute and recovered phases of eating disorders. *Psychiatry research*. 218. doi:10.1016/j.psychres.2014.04.007
- Harrison, A., Sullivan, S., Tchanturia, K., & Treasure, J. (2009). Emotion Recognition and Regulation in Anorexia Nervosa. *Clinical psychology & psychotherapy*. 16. 348-56. doi:10.1002/cpp.628
- Harrison, A., Sullivan, S., Tchanturia, K. & Treasure, J. (2010). Emotional functioning in eating disorders: Attentional bias, emotion recognition and emotion regulation. *Psychological medicine*. 40. 1887-97. doi:10.1017/S0033291710000036
- Harrison, A., Tchanturia, K., & Treasure, J. (2010). Attentional Bias, Emotion Recognition, and Emotion Regulation in Anorexia: State or Trait?. *Biological psychiatry*. 68. 755-61. doi:10.1016/j.biopsych.2010.04.037
- Haynos, A. F., Roberto, C. A., & Attia, E. (2015). Examining the associations between emotion regulation difficulties, anxiety, and eating disorder severity among inpatients with anorexia nervosa. *Comprehensive Psychiatry*, 60, 93–98. doi:10.1016/j.comppsy.2015.03.004
- Heatherton, T. F., & Baumeister, R. F. (1991). Binge eating as escape from self-awareness. *Psychological Bulletin*, 110(1), 86–108. doi:10.1037/0033-2909.110.1.86
- Herpertz-Dahlmann, B., Müller, B., Herpertz, S., Heussen, N., Hebebrand, J., & Remschmidt, H. (2001). Prospective 10-year Follow-up in Adolescent Anorexia Nervosa—Course, Outcome, Psychiatric Comorbidity, and Psychosocial Adaptation. *Journal of Child Psychology and Psychiatry*, 42(5), 603-612. doi:10.1111/1469-7610.00756

- Holle, A. V., Pinheiro, A. P., Thornton, L. M., Klump, K. L., Berrettini, W. H., Brandt, H., . . . Bulik, C. M. (2008). Temporal Patterns of Recovery Across Eating Disorder Subtypes. *Australian & New Zealand Journal of Psychiatry, 42*(2), 108-117. doi:10.1080/00048670701787610
- Lazarus, R. S., & Alfert, E. (1964). Short-circuiting of threat by experimentally altering cognitive appraisal. *The Journal of Abnormal and Social Psychology, 69*(2), 195–205. doi:10.1037/h0044635
- Manuel, A., & Wade, T. D. (2013). Emotion regulation in broadly defined anorexia nervosa: Association with negative affective memory bias. *Behaviour Research and Therapy, 51*(8), 417–424. doi:10.1016/j.brat.2013.04.005
- Meyer, C., Leung, N., Barry, L., & Feo, D. D. (2009). Emotion and eating psychopathology: Links with attitudes toward emotional expression among young women. *International Journal of Eating Disorders. doi:10.1002/eat.20659*
- Morgan, J. F., Reid, F., & Lacey, J. H. (2000). The SCOFF questionnaire: a new screening tool for eating disorders. *The Western journal of medicine, 172*(3), 164–165. doi:10.1136/ewjm.172.3.164
- Niedenthal, P. M., Ric, F., & Krauth-Gruber, S. (2006). *Psychology of emotion: Interpersonal, experiential, and cognitive approaches* (Chapter 5, *Regulation of Emotions*, pp. 155-194). New York, NY: Psychology Press.
- Oldershaw, A., Dejong, H., Hambrook, D., Broadbent, H., Tchanturia, K., Treasure, J., & Schmidt, U. (2012). Emotional Processing Following Recovery from Anorexia Nervosa. *European Eating Disorders Review, 20*(6), 502–509. doi:10.1002/erv.2153
- Pollice, C., Kaye, W. H., Greeno, C. G., & Weltzin, T. E. (1997). Relationship of depression, anxiety, and obsessiveness to state of illness in anorexia nervosa. *International Journal of Eating Disorders, 21*(4), 367-376. doi:10.1002/(sici)1098-108x(1997)21:43.0.co;2-w

- Pompili, M., Mancinelli, I., Girardi, P., Ruberto, A., & Tatarelli, R. (2004). Suicide in anorexia nervosa: a meta-analysis. *The International journal of eating disorders*, *36* 1, 99-103. doi:10.1002/eat.20011
- Rowell, M., Macdonald, D., & Carter, J. (2016). Emotion regulation difficulties in anorexia nervosa: Associations with improvements in eating psychopathology. *Journal of Eating Disorders*. doi:10.1186/s40337-016-0108-0
- Smink, F., van Hoeken, D, & Hoek, H. (2012). Epidemiology of Eating Disorders: Incidence, Prevalence and Mortality Rates. *Current psychiatry reports*. *14*. 406-14. doi:10.1007/s11920-012-0282-y
- Striegel-Moore, R. H., & Bulik, C. M. (2007). Risk factors for eating disorders. *American Psychologist*, *62*(3), 181–198. doi:10.1037/0003-066X.62.3.181
- Striegel-Moore, R. H., Rosselli, F., Perrin, N., DeBar, L., Wilson, G. T., May, A., & Kraemer, H. C. (2009). Gender difference in the prevalence of eating disorder symptoms. *The International journal of eating disorders*, *42*(5), 471–474. doi:10.1002/eat.20625
- Svaldi, J., Griepenstroh, J., Tuschen-Caffier, B., & Ehring, T. (2012). Emotion regulation deficits in eating disorders: A marker of eating pathology or general psychopathology?. *Psychiatry research*. *197*. 103-11. doi:10.1016/j.psychres.2011.11.009
- Zucker, N. L., Losh, M., Bulik, C. M., LaBar, K. S., Piven, J., & Pelphrey, K. A. (2007). Anorexia nervosa and autism spectrum disorders: Guided investigation of social cognitive endophenotypes. *Psychological Bulletin*, *133*(6), 976–1006. doi:10.1037/0033-2909.133.6.976