The Relationship Between Body Image and the Emotions Shame Pride and Self-Disgust in Autobiographical Memories

Kika Houben

Master Thesis – Klinische Psychologie

s3228061
September 2021
Department of Psychology
University of Groningen
Supervisor / Examiner: Mirjam Frey
Second reviewer: Paula von Spreckelsen

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List of Abbreviations

AMT:	Autobiographical Memory Test
AN:	Anorexia Nervosa
BN:	Bulimia Nervosa
ED:	Eating Disorder
ED-(N)OS:	Other Specified/Unspecified Feeding or Eating Disorder
EDE-Q:	Eating Disorder Examination – Questionnaire

Abstract

This study examines the influence of self-conscious emotions on the body image of female eating disorder patients. Specifically, we investigate the interaction between a negative body image and the self-conscious emotions shame, self-disgust and pride elicited in body-related memories. Female eating disorder patients (n = 13) were asked to complete a questionnaire comprising a body image score (subscales weight concern and shape concern from the Eating Disorder Examination – Questionnaire) and to recall memories related to their body parts (Autobiographical Memory Test – Concrete Version). Subsequently, they rated various emotions elicited by these memories. Both shame and self-disgust are associated with a negative body image, although only the latter correlation is statistically significant. Pride is not (inversely) correlated to a negative body image. In addition, we find marked differences in the emotions between body parts. The body parts waist and eyes elicit less negative and more positive emotions, whereas the body parts belly and legs elicit more negative and less positive emotions. These findings underline differences between self-conscious emotions and among various body parts, emphasizing the importance of targeted therapy addressing both negative and positive emotions related to specific body parts.

Keywords: negative body image, self-conscious emotions, the autobiographical memory, shame, self-disgust, pride, body parts.

The Relationship Between Body Image and the Emotions Shame, Self-Disgust and Pride in Autobiographical Memories

Eating disorders are a major and increasing challenge in modern society. While 5% of the population is diagnosed as suffering from eating disorders, related eating disorder concerns dominate the behaviour of a large share of the female population (Guarda, 2021). More than 80% of eating disorder cases do not receive treatment (Dakanalis et al., 2019). In addition, 35% of those who do receive treatment relapse within 18 months (Derrick, 2019). Particularly adolescents and young women suffer from eating disorder symptoms. Eating disorders are accompanied by emotional distress and medical complications. In this context, eating disorders increase the risk of depression, obesity, anxiety disorders and substance abuse (Stice & Shaw, 2002). Together, these findings underscore the need to better understand the factors contributing to the maintenance of eating disorders.

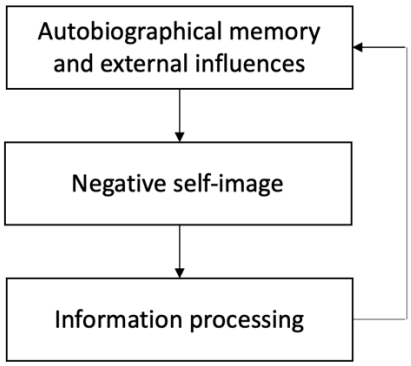
Eating disorders are defined as a severe disturbance in eating or eating-related behaviour, resulting in health and psychosocial impairments (American Psychiatric Association, 2013). The most well-known types are anorexia nervosa and bulimia nervosa (Bulik & Reichborn-Kjennerud, 2003). Anorexia nervosa is characterized by restricted food intake, significant low weight, fear of becoming fat and disturbed self-evaluation concerning shape and weight. Bulimia nervosa is characterized by binge eating, compensatory behaviour (e.g., vomiting, excessive exercise, use of laxatives) and self-evaluation dominated by body and shape (American Psychiatric Association, 2013).

Despite increasing research in eating disorders, incidence rates are on the rise and recovery rates remain low (Markham et al., 2005). Previous studies have established the important role of a negative self-image in sustaining eating disorders (Cash & Labarge, 1996). This negative self-image is derived from external influences and the autobiographical memory, and dominates the processing of information relating to one's physical body (Figure 1).

According to von Spreckelsen et al. (2018), eating disorders are marked by a preoccupation and dissatisfaction with one's own body. Patients evaluate themselves through the prism of their shape and weight, thereby creating a negative bias (Fairburn et al., 2003; Legenbauer et al., 2010).

Figure 1.

Schematic Representation of Negative Bias in Eating Disorder Patients



Note. This study will focus mainly on the autobiographical memory

Body Image in Eating Disorders

This bias focusses on body image, which can be defined as a complex construct encompassing all aspects related to a person's self-perception, specifically concerning the physical body (von Spreckelsen et al., 2018). Eating disorder patients, in particular those suffering from anorexia nervosa and bulimia nervosa, perceive their own body as being larger than in reality. This stems from their desire to be thinner, reflecting an unfulfilled thin-ideal (Stice, 2001). Sociocultural influences, including parents, peers and media, portray a beauty image of women with a flat stomach and skinny legs. This beauty image dominates the affective, perceptual, behavioural and cognitive component of their negative attitude (Monteath & McCabe, 1997). Thin idealization among women takes root very early in life, as girls from the age of five commonly idealize a figure thinner than their own, illustrating the deep-seated nature of the problem (Wertheim et al., 2009).

The Autobiographical Memory

How we view our body is influenced both by current norms and our past experiences. Indeed, an individual's autobiographical memory is an important driver of a negative body image (Bomba et al., 2014). This autobiographical memory is a collection of personally experienced events that have largely shaped the sense of self (Conway & Pleydell-Pearce, 2000; Nandrino et al., 2006). As noted by Williamson et al. (2014), an obsession with body appearance dominates one's memory, making it easier to activate memories that confirm this image. For example, a patient with an eating disorder will readily recall a memory (e.g., 'I ripped my pants') that confirms their negative self-image (e.g., 'my legs are too fat'). Though the role of autobiographical memories has not yet been studied extensively, limited research did report dysregulations in the autobiographical memory of eating disorder patients, hindering recovery (Bomba et al., 2014; Laberg & Andersson, 2004). Thus, the role of an individual's autobiographical memory must be considered when seeking to change a negative self-image.

Self-Conscious Emotions and a Negative Body Image

Self-conscious emotions arise in processes of self-evaluation and are important to the body image. Negative self-conscious emotions reflect dissatisfaction during self-evaluation (de Hooge et al., 2011). Two important self-conscious emotions in eating disorders are shame and self-disgust. According to Powell et al. (2015), thin idealization predisposes females to be shameful and self-disgusted towards their own body. Thus, shame and self-disgust are derived from a negative self-evaluation relative to an ideal. In addition, affect-loaded memories are retrieved more often and thus influence information processing (Conway & Pleydell-Pearce, 2000). In this context, shame and self-disgust can become important drivers of a negative body image. In short, the discrepancy between the actual and ideal self creates negative emotions, and the inability to change and control these emotions can contribute to the persistence of eating disorders (Nandrino et al., 2006).

The Self-Conscious Emotion Shame

The critical role of shame in eating pathologies is a recurrent notion in the literature. According to Goss and Allan (2009), shame can be internal and external. Internal shame refers to negative self-evaluation, unfavourable past experiences and feelings of inadequacy. External shame refers to upward comparison, thereby considering oneself inferior to others. Both internal and external shame arises when a person feels incompetent, failing to uphold the social standard (de Hooge et al., 2011). Shame can be seen as a combination of anger, sadness, anxiety and disgust in self-evaluation (Goss & Allan, 2009). Specifically, shame can stem from body dissatisfaction and thin idealization, and may lead to eating disorder symptoms (Markham et al., 2005).

The Self-Conscious Emotion Self-Disgust

Similar to shame, disgust is directed at the self when a person fails to live up to their ideals (Powell et al., 2015). Early studies of eating disorders focused on disgust towards food consumption and bulimic behaviour (e.g., vomiting) (Powell et al., 2015; Troop et al., 2000). More recently, studies have established the essential role of disgust directed at the self (Marques et al., 2021). This self-directed disgust is often seen as a self-conscious emotion, serving similar functions to shame (Fox & Power, 2009). However, there are subtle differences. While shame derives from perceptions of social inadequacy and personal failure, self-disgust stems from a feeling of revulsion and self-criticism (Powell et al., 2015; von Spreckelsen et al., 2018). Self-disgust is defined as both a primary and a secondary emotion, internalized very early in life. Children at a very young age can experience self-disgust from self-criticism (Powell et al., 2015). Thus, self-disgust has a powerful impact. Understanding the different roles of shame and self-disgust from autobiographical memories among eating disorder patients could help find ways to mitigate the negative body image and underpin sustained recoveries.

The Self-Conscious Emotion Pride

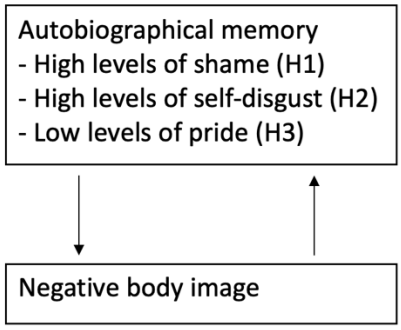
By contrast, positive self-conscious emotions, such as pride, underpin a feeling of self-confidence. While shame and self-disgust imply a rejection of the self, pride can be seen as an embracement of the self, regardless of the opinion of others (Salice, 2020). In this research, pride will be used as a point of reference for the opposite of shame and self-disgust.

Hypotheses: Shame, Self-Disgust and Pride, and a Negative Body Image

The literature underscores the complexity of eating disorders. While existing research has established a role played by the negative body image, a crucial next step is to identify factors related to the perseverance of this body image. Previous studies suggest a relationship between the autobiographical memory, the self-image and the negative emotions involved (Bomba et al., 2014; Conway & Pleydell-Pearce, 2000). The autobiographical memory is important to the sense of self and thus may contribute to the negative body image. Self-conscious emotions have a great impact on autobiographical memories, that may contribute to the persistence of a negative body image. In turn, the negative body image can bias information processing, acting as a feedback loop for storing autobiographical memories and self-conscious emotions (Figure 2).

Figure 2.

Hypotheses



Note. The lines represent the association between the negative body image and the emotions

In this study, self-conscious emotions are measured on the basis of a survey of specific memories arising in response to body-related words (i.e., belly, legs, stomach, etc.). To assess their relevance, the emotions shame and self-disgust are juxtaposed with the emotion pride (Fox and Power, 2009). The following hypotheses are tested: H1) In autobiographical memories related to body parts, higher levels of shame are associated with a more negative body image; H2) In autobiographical memories related to body parts, higher levels of self-disgust are associated with a more negative body image; H3) In autobiographical memories related to body parts, higher levels of pride are associated negatively with a more negative body image.

Methodology

Participants

Our study involves 13 eating disorder patients, ranging from 18 till 52 years, with M = 26.42 and SD = 9.23. All patients were selected on the basis of the following eligibility criteria. First, on ethical grounds, participants were at least 16 years old. Second, only females were selected. This is because females experience higher levels of body dissatisfaction on account of gender specific societal pressures to be thin (Stanford & McCabe, 2002). Third, all participants were under active treatment. Specifically, selected patients have been diagnosed with an eating disorder of anorexia nervosa (AN), bulimia nervosa (BN) or other specified/unspecified feeding or eating disorder (ED-(N)OS) according to the DSM-5 criteria. In addition, all patients were in treatment at the facilitating centres Accare, GGZ Friesland and Lentis / PsyQ Groningen. As recalling memories about their body could have raised feelings of discomfort, we have sought to ensure adequate aftercare. We did not request patients' body mass indexes (BMIs) because we focus on subjective self-appraisal. Our patients were mainly Dutch (N = 12), with one Slovakian participant (N = 1). We approached patients through the facilitating treatment centres. Participation was voluntary; in exchange for participation, patients received a voucher worth €17,00. All patients gave informed consent before participation. As all participants were

aged 18 years or more, approval by a legal guardian was not necessary. The study was approved by the Ethics Committee of Psychology of the University of Groningen beforehand (NL70618.042.19). Based on the available literature, we expected high effect sizes (f^2 = .50) (von Sprecksels en et al., 2018). To detect high effect sizes (f^2 = .50, α = .05) with good power (.80), we needed 23 participants. Unfortunately, we were unable to collect this many participants. Consequently, we obtained relatively low power (.57). The power calculations were conducted in G*power 3.1.9.

Materials

Eating Disorder Examination - Questionnaire

The Eating Disorder Examination Questionnaire (EDE-Q) is a self-report questionnaire to assess behaviours, attitudes and feelings related to eating disorders over the past 28 days (Faiburn & Beglin, 1994). The EDE-Q has 28 items, comprising 4 subscales: restraint, eating concern, shape concern and weight concern. Participants rate each item on a 7-point Likert scale to indicate the number of days (0 = no days, 6 = every day) on which attitudes, behaviours or feelings related to eating disorders occurred. Scores of 4 or more indicate clinical severity. The study focuses on the subscales ‘shape concern’ and ‘weight concern’, as these measure the affective-evaluative and cognitive-behavioural aspects of body image (von Spreckelsen et al., 2018). However, we removed the last two items of the shape concern subscale of the EDE-Q due to methodological issues. Still, we merged the two subscales by adding them up as an indicator for body image. The combined shape and weight concern shows adequate internal consistency within this study (α = .72).

Autobiographical Memory Test - Concrete Version

The Autobiographical Memory Test (AMT) is a cueing method to elicit memories (Bomba et al., 2014). Due to corona, the AMT was conducted online, involving two versions: one with abstract words and one with concrete words. Our focus is on the latter, concrete

version. Participants were presented with body-related words; ‘my belly’, ‘my legs’, ‘my nose’, ‘my waist’, ‘my body hair’, ‘my breasts’, ‘my cheeks’, ‘my butt’, ‘my upper arms’ and ‘my eyes’, and are asked to retrieve a memory related to the cueing words. The online tool presents the cue words visually and verbally with a text box to write down the memories.

Subsequently, after each presented word, participants are asked to rate six different emotions (dissatisfaction, pride, acceptance, disgust, happiness and shame) according to the extent to which these influence their memories. The emotions are scored on visual analogue scales (VAS) from 1 (not at all) to 100 (very much). Afterwards, other aspects are scored that are not relevant to our study, therefore, we will not elaborate.

Procedure

This study is part of a larger research project examining how body-related autobiographical memories affect patients with an eating disorder. Thus, while multiple measurements were administered, this study only examined two, namely the AMT – Concrete and the subscales shape and weight concern from the EDE-Q (Appendix A). The study has an experimental within-participant design, including two different measurement occasions. Participants were randomly assigned to sequence A or sequence B, determining whether a participant started with the concrete or abstract memory test respectively.

The data collection was conducted on-line using Google meets and Qualtrics. In two sessions participants were asked to write down their memories when presented with the cueing body-related words. Subsequently, participants were asked to rate these memories and complete several measurements. In closing, participants were debriefed about the study. The study took approximately 100 minutes spread evenly over two sessions.

Data Analysis

The data analysis was performed using SPSS (Version 26.0). Data were collected from the concrete AMT version and from the subscales of the EDE-Q, encompassing the body image

and the self-conscious emotions. Means and standard deviations were measured; assumptions for correlation were checked (i.e., ordinal, interval or ratio scale, paired observations and monotonic relationship). Following this, correlations were calculated between the body image score, which was collected from the combined subscales weight and shape concern of the EDE-Q, and the emotions H1) shame; H2) self-disgust; and H3) pride.

Results

Descriptive Statistics

Means, standard deviations and correlations of shame, self-disgust, pride and body image are shown in Table 1. The body image score indicates clinically severe negative body images (EDE-Q: $M = 5.43$, $SD = 1.21$; $X > 4$; Luce et al., 2008; Mond et al., 2006). The shame ratings are highest ($M = 41.83$, $SD = 18.43$), followed by self-disgust ($M = 32.52$, $SD = 17.93$) and pride ($M = 19.55$, $SD = 11.05$).

Table 1.

Means, Standard Deviations and Correlation Coefficients Between Shame, Self-Disgust, Pride and Body Image

Emotions	N	M	SD	1	2	3	4
1. Shame [a]	13	41.83	18.43	-			
2. Self-Disgust [a]	13	32.52	17.93	.830**	-		
3. Pride [a]	13	19.55	11.05	.050	-.248	-	
4. Body image [b]	13	5.45	1.24	.449	.551*	-.098	-

Note. [a] Responses to the recalled memories on the VAS scale from 1-100

[b] EDE-Q subscales (shape concern and weight concern) score from 1-7

*p < 0.05. ** p < 0.01.

Assumptions

As the variables for emotions were not normally distributed, Spearman's correlations were calculated to measure the strength of the relationship between paired data. The

assumptions for Spearman's correlations were met and the existence of monotonic relationships were established (Appendix B).

Hypothesis 1

Shame is expected to correlate positively with body image, i.e., higher shame rating would be associated with a higher EDE-Q-subscale score, reflecting a negative body image. Our results show that the higher shame ratings are correlated with a more negative body image, but the correlation is not significant (r = .449, p = .062). Therefore, we reject hypothesis 1.

Hypothesis 2

Similarly, we expect a positive correlation between self-disgust and negative body image, i.e., higher self-disgust rating would be associated with a higher EDE-Q subscale score, reflecting a negative body image. In line with our expectations, higher self-disgust ratings are significantly correlated with a more negative body image (r = .551, p = .025). Thus, we accept hypothesis 2. In addition, we establish that self-disgust is more strongly correlated with a negative body image than shame.

Hypothesis 3

In contrast, we expect pride to negatively correlate with a negative body image, i.e., higher pride rating would be associated with a lower EDE-Q subscale score, reflecting a less negative, thus more positive, body image. Our results show a neglectable correlation between pride and a negative body image (r =-.098, p = .375; Akoglu, 2018), which means that higher or lower pride ratings do not relate to body image. Thus, we reject hypothesis 3.

Post-Hoc Analysis

While this study establishes a statistically significant relationship between self-disgust and a negative body image, the relationships between shame and body image, and between pride and body image are not statistically significant. This may be attributed to the marked differences between the appreciation of body parts. Thus, correlations between the emotions

for each body part separately with general body image score, EDE-Q subscales score, are investigated.

Means and standard deviations for all measured body parts and their correlation to a negative body image are shown in Table 2. At a descriptive level, the highest ratings for shame and self-disgust are given for belly (*M* = 66.92, *SD* = 36.06; *M* = 65.62, *SD* = 38.43), legs (*M* = 53.46, *SD* = 37.04; *M* = 49.00, *SD* = 33.85) and butt (*M* = 55.85, *SD* = 31.97; *M* = 49.23, *SD* = 38.83). For pride, the highest ratings are given for waist (*M* = 34.69, *SD* = 35.78), butt (*M* = 26.69, *SD* = 35.00) and eyes (*M* = 30.08, *SD* = 36.43). In addition, we find significant correlations between a negative body image and both shame ratings regarding legs (*r* = .778, *p* = .001) and butt (*r* = .566, *p* = .022), and self-disgust rating regarding legs (*r* = .745, *p* = .002). Yet, again, no significant correlation is found for pride.

Table 2.

Means and Standard Deviations of Shame, Self-Disgust and Pride in Response to the Separate Body Parts, and Correlation Coefficients with Body Image

Body parts	Shame			Self-Disgust			Pride		
	M	SD	Body-Image[b]	M	SD	Body-Image[b]	M	SD	Body-Image[b]
Belly[a]	66.92	36.06	.404	65.62	38.43	.320	10.54	23.66	.104
Legs[a]	53.46	37.04	.778**	49.00	33.85	.745**	15.77	24.01	-.058
Breast[a]	38.92	31.14	-.334	23.54	29.57	.071	14.00	22.77	.240
Body hair[a]	44.77	38.68	.234	35.77	34.13	.444	13.77	21.03	.309
Nose[a]	25.31	34.86	-.264	21.23	34.02	.081	20.85	34.72	-.105
Waist[a]	32.54	35.43	.246	31.92	35.11	.428	34.69	35.78	-.183
Cheeks[a]	40.00	43.16	.233	32.77	36.77	.124	11.23	24.75	-.228
Butt[a]	55.85	31.97	.566*	49.23	38.83	.133	26.69	35.00	-.024
Upper arms[a]	42.85	39.97	.229	44.77	39.16	.154	17.85	27.05	-.052
Eyes[a]	17.69	32.60	.196	15.31	33.18	-.011	30.08	36.43	-.105

Note. [a] Responses to the recalled memories on the VAS scale from 1-100

[b] Spearman correlation to EDE-Q subscales (weight concern and shape concern) score from -1 till 1

*p < 0.05. ** p < 0.01.

Discussion

The main objective of this study is to expand knowledge about one of the key factors driving eating disorders, namely the negative body image. The negative body image is a well-known factor in the persistence and high relapse rate of eating disorders (von Spreckelsen, 2018). In this study, different emotions related to a negative body image have been examined among young women with eating disorders. The novel aspect of this research is that emotions are studied in reference to autobiographical memories and their relation to the negative body image. The study shows that a clinical sample of eating disorder patients suffer from severe negative body images and experience high levels of shame and self-disgust in relation to body-related autobiographical memories. Both shame and self-disgust are correlated to a negative body image, but only the latter is statistically significant. This suggests a stronger relation between self-disgust and a negative body image than between shame and a negative body image. Furthermore, in contrast to our expectations, pride is not correlated with the body image. Pride may depend more on situational factors, complicating the relation between pride from autobiographical memories and a negative body image (Yagasaki, 2013).

Shame and Self-Disgust in Relation to the Negative Body Image

Eating disorder patients experience high levels of both shame and self-disgust. While shame ratings are overall higher than self-disgust ratings at a descriptive level, negative body image has a stronger correlation with self-disgust than shame. This may be attributed to our small clinical sample and accompanying low power but could also reflect the different natures of shame and self-disgust. Shame is a prominent emotion in eating disorders and thus high ratings of shame were expected in this eating disorder sample. However, shame may be more context dependent than self-disgust (Yagasaki, 2013). Self-disgust is closer to a basic emotion, embedded in the self (Powell et al. 2015). Shame may arise more easily on account of external circumstances, whereas self-disgust may be rooted more internally and therefore may be more

strongly related to the negative body image. Furthermore, the lack of statistical significance between shame and a negative body image may also be attributed to patients' struggle in recognizing and processing emotions (Fox, 2009). Memory suppression, emotional inhibition or lack of acknowledgement may influence the negative body image indirectly (Boma et al., 2014; Geller et al., 2000; Fox, 2009). In reverse, the negative body image can accentuate negative emotions, but also decrease emotional expression. Future research could consider the influence of difficulties eating disorder patients experience in expressing and processing their emotions.

Still, we find a significant correlation between self-disgust and negative body image. This is in line with the literature: disgust directed at the body is seen as an emotion of rejection and may be crucial in perpetuating the negative body image of eating disorder patients (Fox & Power, 2009; Fox & Froom, 2009). In other words, self-disgust is a persistent cognitive-affective construct, important to one's sense of self.

Pride in Relation to Body Image

In our study, pride is not associated with a negative body image, thereby rejecting the hypothesis of a negative correlation. In contrast to shame and self-disgust, pride reflects a positive self-appraisal. Pride is linked to high self-esteem and involves a feeling of goal-achievement (Salice, 2020). A priori, this contrasts with the feeling of goal failure that is associated with a negative body image: not reaching your ideal body. However, in our study, pride is not found to be correlated to a negative body image. This may reflect the complexity of pride in eating pathologies. Patients may be disappointed by not reaching their body ideal, on the one hand, but proud of their eating discipline and their thinness, on the other hand (Goss & Allan, 2009). Similar to shame, pride is context dependent (Yagasaki, 2013). Accordingly, a patient may feel proud in reference to a memory when she felt thin, yet she may not be proud

of her body at a later moment. This may explain why pride is not correlated to body image and emphasizes the need for caution when building on pride in therapy.

Differences Among Body Areas

To our knowledge, this is one of the first studies of eating disorder patients that examines emotions in relation to specific body parts. Patients show marked differences in the appreciation of different body areas. At a descriptive level, patients show highest ratings of shame and self-disgust in reference to memories about their belly, butt and legs. This confirms existing research: women are generally most concerned about body parts vulnerable to weight gain (Stanford & McCabe, 2002). However, it is interesting to note that legs show the strongest correlation with a negative body image measured by the EDE-Q subscales shape concern and weight concern. In a study by Cuzzolaro et al. (2006), both normal-weight women and eating disorder patients reported higher levels of discomfort with their legs than their belly. This may reflect a difference in the perceived salience of body parts. Lower body parts, particularly legs, are shown to be of greater salience in the context of the whole body compared to upper body parts (Monteath & McCabe, 1997; Stanford & McCabe, 2002). Although participants attached greater feelings of shame to their belly, their legs may nonetheless have a greater influence on the negative body image; legs are more difficult to hide and thus have a larger influence on body image.

By contrast, memories about the butt, waist and eyes show the highest pride ratings at a descriptive level. Interestingly, the butt elicits both high pride ratings as well as high shame and self-disgust ratings. Yet, pride in reference to memories about the butt shows the weakest correlation with body image. This finding might be explained by patients who are proud of a memory related to the butt, however, they may not be proud of their butt in the context of their whole body. Still, memories about the waist and eyes did elicit high levels of pride and low

levels of shame and self-disgust. Future research could look into the effects of emphasizing the positively annotated body parts, i.e., the waist and eyes, to diminish the negative body image.

Implications

Current treatment for mental disorders focusses both on emphasizing strengths and alleviating weaknesses (Flückiger et al., 2009). In relation to negative and positive emotions, treatment could seek to alleviate negative affects towards specific body parts, such as legs and the belly, while accentuating positive attitudes towards body parts such as the waist and eyes. In addition, enhancing the body image could decrease persistent feelings of self-disgust. Self-disgust is a strong negative emotion, often rooted in early youth, that can dominate negative memories. In reverse, regulating feelings of self-disgust attached to autobiographical memories could make them less persistent, decreasing their influence on information processing. With regard to shame and pride, treatment could place more emphasis on considerations in the external context that counterbalance the negative influences on the body image. For instance, if voluptuous women could play a more prominent role in media, a different reference for the beauty image could be provided.

Strengths and Limitations

This study has various strengths. First, we use a clinical sample of eating disorder patients, a group where a negative body image is definite. Our sample is representative of our target population, increasing internal validity. Second, we measure self-conscious emotions in a novel context. The autobiographical memory is not extensively studied in research. Third, our study measures self-conscious emotions from the autobiographical memory for body parts separately. As shown in our results, the scores differ greatly among the body parts. This allows greater insight in the responses of emotions.

Our results are also subject to limitations. First, our limited time frame in combination with strong inclusion criteria led to a relatively small sample size. The low power may have

influenced the accuracy of our results. The reported emotions show high standard deviations, indicating a high level of dispersion among the values. Second, we did not account for individual differences, for instance, the amount of time in therapy, level of self-esteem, comorbid disorders, perfectionism and global psychosocial functioning (Wertheim et al., 2009). In addition, we did not consider family history or childhood abuse. Given the strong influence of family and past traumatic experiences on eating disorder behaviours, it would be interesting to include this in a future study (Bomba et al., 2014). Third, due to methodological issues we were unable to incorporate the last two items from the EDE-Q. The subscale shape-concern is therefore shortened, possibly affecting the results. Fourth, the inclusion criteria of our sample led to solely female eating disorder patients. This is both a weakness and a strength, allowing for focused conclusions but restricting from further generalization. We did not include male participants, nor did we include non-eating disorder individuals. Diversity of samples could add valuable information. Fifth, due to corona, we were unable to conduct the interviews in person. The Autobiographical Memory Test is usually conducted verbally. The online environment provided more time to think about which memory to write down, increasing the risk for social desirability bias. Sixth, our study is based on correlations. As a consequence, we cannot make any causal inferences on the direction of the variables.

Avenues for Future Research

Future research can advance the findings in this study. First, expanding our sample size and adding control groups could allow for more accurate conclusions. To obtain sufficient power, the sample should comprise at least 23 participants. By expanding that sample size, different statistical analyses can be applied. Second, causal directions might be better tested in a longitudinal study. Third, research could establish the effects of self-conscious emotions on the negative body image without reference to the autobiographical memory. By doing so, shame, self-disgust and pride may hold a different relation to body image. Fourth, our study did

not include patients' emotional regulatory processes. Emotional expression or suppression, e.g., disgust avoidance, could influence the effect on a negative body image. Fifth, research could establish whether distinguishing between body areas could enhance the effects of treatment in eating disorders. While our study suggests this could be the case, confirmation is important.

Conclusion

This study indicates that there is a complex relation between the body image, autobiographical memories and self-conscious emotions. Eating disorder patients suffer from a negative body image that needs to be changed to enhance prospects of sustained recovery. Our findings indicate that self-disgust from the autobiographical memory in reference to different body parts is correlated to a negative body image. Self-disgust is a powerful emotion and can be crucial to the negative self-image. Treatment could take self-disgust in consideration when trying to diminish the negative body image. For instance, controlling for feelings of self-disgust attached to previous memories could make these memories less enduring, possibly diminishing the persistent negative body image. In contrast, while shame is also rated high on average from the autobiographical memory, it is not significantly correlated to a negative body image. This may be attributed to our small clinical sample or other influencing variables. Similarly, pride is not found to be related to the body image. Future research could distinguish between different forms of shame and pride, e.g., internal and external, in order to establish their specific roles in eating pathologies. Moreover, both shame and pride vary depending on the context, therefore external circumstances should be taken into consideration when studying these emotions. Finally, this study establishes considerable differences in the emotions related to autobiographical memories of different body parts. This underscores the importance of distinguishing between body parts within the body image.

In sum, this study sheds light on the challenges in combatting eating disorders. Eating disorder patients struggle with a disturbed body image and negative affect-loaden

autobiographical memories. Recovery may be improved by focusing on changing the negative body image, by differentiating amongst body areas, and taking the autobiographical memory and self-conscious emotions in consideration. Kate Moss once said: *"Nothings tastes as good as skinny feels"*, illustrating the distorted emotions of eating disorder patients. To enhance recovery prospects, the body image should be given a positive attitude. Nothing tastes as good as healthy feels.

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Appendix A

Administered Tests
Autobiographical Memory Test – Abstract: participants were presented with abstract words (attractive, thick etc.) and asked to recall a personal experience. Afterwards, they were asked to rate the abstractness of cues.
Autobiographical Memory Test – Concrete: participants were presented with concrete words (belly, eyes etc.) and asked to recall a personal experience. Afterwards, they were asked to rate the extent to which they want to escape that memory and the extent to which they feel dissatisfied with their own body.
Self-Disgust in Eating Disorder Scale (**SDES):** assesses levels of self-disgust directed at the own body
Eating Disorder Examination – Questionnaire (EDE-Q): self-report questionnaire that assesses eating disorder symptomology
Disgust Avoidance Measurement (DA): measures the extent to which participants want to avoid feelings of disgust
Beck Depression Inventory – version 2 (BDI-II): self-report questionnaire that measures depressive symptoms

Appendix B

Figure 2.

Scatterplot Shame on Body Image

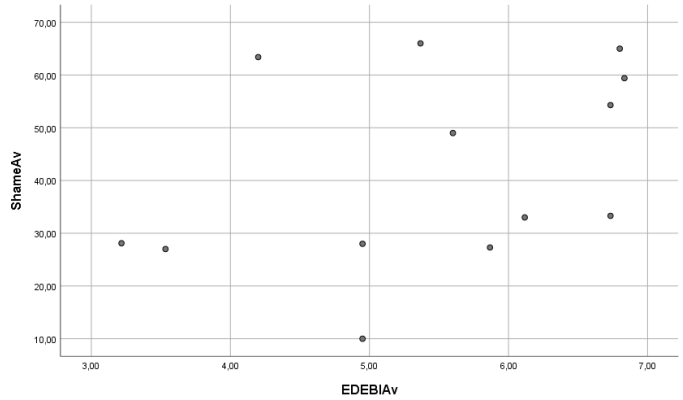

Figure 3.

Scatterplot Self-Disgust on Body Image

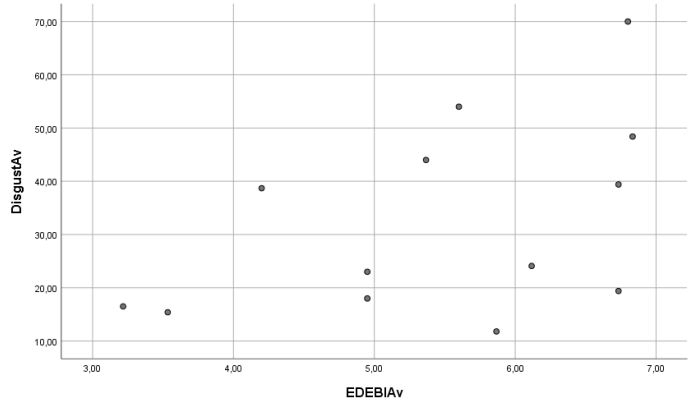

Figure 4.

Scatterplot Pride on Body Image