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Binge or control? : assessment of the validity, treatment and underlying mechanisms of Binge Eating Disorder

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Chapter 4

Maladaptive core beliefs and eating disorder symptoms

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Summary

This study compared maladaptive core beliefs of eating-disordered groups (full and sub-threshold syndrome) and healthy controls and investigated the association between eating disorder symptoms and core beliefs. Participants were compared on self-report measures of core beliefs (YSQ) and eating disorder psychopathology (BITE). Anorexia nervosa (AN; both subtypes) and bulimia nervosa (BN) patients had significantly more core beliefs than healthy controls. Binge eating disorder (BED) patients had intermediate scores between AN and BN on the one hand and healthy controls on the other hand. No correlation was found between core beliefs and frequency of binge eating. Frequency of vomiting, laxative misuse and fasting was positively associated with all domains of core beliefs. Patients with eating disorders have some core beliefs, which are not directly related to eating, weight or shape. Frequency of purging and fasting behaviours is associated with more severe maladaptive core beliefs. Our data demonstrate the importance of identifying purging and fasting as significant clinical markers.

Introduction

According to cognitive-behavioural models, people with eating disorders judge themselves largely in terms of their eating habits, shape or weight (and often all three) and their ability to control these (Fairburn, Cooper, & Shafran, 2003). While cognitive behavioural models focus on maladaptive thinking patterns that are specific to eating disorders (negative automatic thoughts and dysfunctional assumptions), several studies have demonstrated that such patients also have dysfunctional cognitions or maladaptive core beliefs that are not directly related to food, weight or shape (Cooper, 1997; Leung et al., 1999; Waller et al., 2000; Waller, 2003; Waller et al., 2003). Such maladaptive core beliefs are considered in the schema-focused model devised by Young (1999). Young states that maladaptive core beliefs represent the deepest level of cognition. These core beliefs reflect a person's unconditional negative beliefs and feelings in relation to the environment. They refer to stable and enduring themes that develop during childhood. During childhood a belief is a means for the child to comprehend and manage the environment. Core beliefs are a priori truths that are implicit and taken for granted and are central to the organization of personality. In adulthood, these core beliefs are usually activated by events in the environment relevant to the particular belief (Schmidt, Joiner, Young, & Telch, 1995). For example the abandonment belief is activated during real or perceived separations. Core beliefs can be assessed with the Young Schema Questionnaire (Schmidt et al., 1995; Young, 1999).

Several studies found that patients with an eating disorder have more maladaptive core beliefs than healthy controls. The clinical eating-disordered subgroups, however, did not differ much in the extent of maladaptive core beliefs. Only a few differences were found between Anorexia Nervosa restrictive subtype (ANR), Anorexia Nervosa binge/purge subtype (ANB/P), Bulimia Nervosa (BN) and Binge Eating Disorder (BED). Waller et al. (2000) showed that the three bulimic groups could be differentiated by three core beliefs, namely 'defectiveness/shame', 'insufficient self-control' and 'failure-to-achieve'. Another study (Leung et al., 1999) which also assessed patients with ANR, but no patients with BED, found that subjects with BN showed a higher level of entitlement beliefs (beliefs that people should be able to do, say or have whatever they want immediately regardless of whether it hurts others or seems reasonable to them) than subjects with ANR. Finally, differences were found between BED and BN patients (Waller, 2003). Patients with BED had higher scores on the YSQ on three subscales (failure-to-achieve, dependence/incompetence and entitlement) than patients with BN.

At the symptomatic level Waller et al. (2000) found that the frequency of bingeing seems to be positively associated with the core belief 'emotional inhibition' and the frequency of vomiting with the belief 'defectiveness/shame'. They hypothesized that vomiting results from a need to escape from intolerable cognitions especially from beliefs of being internally flawed and inadequate which often leads to shame (defectiveness/shame), whereas bingeing reduces the experience of intolerable emotions (emotional inhibition). When such emotions

arise bingeing serves as a mechanism to reduce the experience of these emotions. Leung et al. (1999) did not find a predictor for binging and compensatory behaviours independent of the kind of eating disorder, but showed that in BN the frequency of bingeing was negatively associated with the core belief social undesirability which is the belief that one is unattractive to and disliked by others, and that in ANB/P the frequency of vomiting was positively correlated with failure-to-achieve which is the belief that one is incapable of performing as well as one's peers. Finally, high levels of abandonment beliefs might account for the presence of purging behaviours i.e. vomiting and laxatives misuse (Waller, 2003).

The first aim of this study is to enlarge upon the previous studies. This study is the first to compare directly the level of maladaptive core beliefs in four eating disordered groups (ANR, ANB/P, BNP and BED) and a healthy control group.

The second aim is to investigate whether specific core beliefs are associated with eating disorder psychopathology. Do specific core beliefs predict the occurrence of eating disorder behaviours like bingeing, vomiting, misuse of laxatives or fasting? Is there an association between core beliefs and BMI? In this study all patients with an eating disorder according to the DSM-IV were included so that differences and similarities between the separate eating disorders could be studied in a comprehensive way. Thus, besides including patients with anorexia nervosa (AN) and bulimia nervosa (BN) we also included patients with an eating disorder not otherwise specified or EDNOS. Patients with EDNOS have an eating disorder of clinical severity and meet all but one criteria of AN and BN (Fairburn et al., 2003; American Psychiatric Association, 1994). If the range of severity of eating disorder symptoms is expanded by the addition of EDNOS it should be possible to obtain a better understanding of the associations with core beliefs.

Method

Participants and Procedure

The research sample consisted of 106 patients (100 women and 6 men[1]) with a DSM-IV eating disorder and 27 healthy female controls.

All eligible patients who met criteria for an eating disorder according to the DSM-IV were sent the Young Schema Questionnaire (YSQ) (Young, 1999) and the Bulimic Investigatory Test Edinburgh (BITE) (Henderson & Freeman, 1987) and were asked in an accompanying letter to participate in the study.

As stated above, the study encompassed all patients with a DSM-IV eating disorder, including patients with EDNOS. EDNOS patients represent the largest diagnostic category in

[1] No differences in demographic characteristics, eating disorder symptoms and core beliefs were found between men and women. Men and women were also not different with regard to the association of severity of symptoms with core beliefs.

eating disorders; furthermore, patients with EDNOS closely resemble patients with AN and BN (Fairburn & Harrison, 2003). We hypothesized that patients with the same symptoms had the same underlying core beliefs.

To investigate the first question of this study all 106 patients were subdivided into four DSM-IV categories. For example, we combined patients who met all four criteria of AN, with patients who lacked one criteria of AN, thus for example patients with a BMI between 17.5 and 20 or patients with only a mild fear of getting fat (see table 1 for all EDNOS criteria). Combining full-syndrome and their EDNOS equivalent led to the following group sizes: ANR-extended (*N*= 16; ANR (full): *N*=7 and EDNOS ANR: *N*=9); ANB/P-extended (*N*=31; ANBP (full): *N*=12 and EDNOS ANBP: *N*=19); BNP-extended (*N*= 23; BN (full): *N*=16 and EDNOS BN: *N*=7) and BED (*N*= 36).

Table 1: EDNOS criteria

EDNOS ANR EDNOS ANBP	3 out of 4 AN criteria and:	BMI between 17.5 and 20 or (irregular) menstruation or mild disturbance of body image or mild fear of fatness
EDNOS BN	2 out of 3 BN criteria and:	binge eating or inadequate compensatory behaviours once a week or mild concern with body weight and shape
BED	See DSM-IV appendix B	

The healthy control group consisted of 27 subjects not suffering from eating disorders who were screened to exclude any present or past history of an eating disorder. Subjects were excluded from the control group if they had a score above 10 on the symptom scale of the BITE or a score above 5 on the severity scale of the BITE (Bulimic Investigatory Test Edinburgh)(Henderson et al., 1987).

Measures

At the first assessment all patients participated in a standardized semi-structured clinical interview conducted by a psychiatrist or psychologist specialized in eating disorders. Patients were classified according to DSM-IV criteria. Patients who had eating problems but did not fulfill the DSM-IV criteria for an eating disorder (AN, BN or EDNOS) were excluded from the study.

Each participant completed a Dutch version of the Young Schema Questionnaire (YSQ) (Young, 1999) and the Bulimic Investigatory Test Edinburgh (BITE) (Henderson et al., 1987).

The YSQ is a 205-item self-report questionnaire developed to measure 16 core beliefs or early maladaptive schemas. The items are answered on a 6-point Likert scale ranging from 1 ('totally inapplicable to me') to 6 ('describes me perfectly'). The core beliefs are grouped in four domains or higher order factors according to Lee et al. (1999a). In their study Lee et al. undertook a higher-order factor analysis to investigate the psychometric properties of the YSQ in a clinical sample (N=433). Fourteen of the 16 core beliefs hypothesized by Young (1999) emerged as independent factors. The only core belief that did not emerge was 'Social Undesirability (the belief that one is unattractive to and disliked by others). The other core belief that did not emerge as a separate independent factor was 'Emotional Inhibition (the belief that one must inhibit emotions and impulses because any expression of feelings would harm others or lead to loss of self-esteem, embarrassment, retaliation or abandonment)'. This core belief was found to consist of two independent factors, 'Emotional Inhibition' and 'Fear of Loss of Control'. Of the original 205 items 21 items were deleted because they failed to load above 0.40 on any scale. In our study we used the division into core beliefs and domains according to Lee et al. (1999). The four higher order factors (a to d) and the sixteen core beliefs (1 to 16) are:

a) Disconnection (the sense of being unlikable or unlovable. Individuals who score high on this factor appear to expect that their emotional needs will not be met, believe that there is something wrong with them and hence try to hide their true self and/or to mistrust others). This domain includes the following core beliefs:

1. Abandonment/instability (the belief that close relationships will end imminently).
2. Defectiveness/shame (the belief that one is internally flawed and inadequate, which often leads to shame).
3. Emotional deprivation (the belief that one's primary emotional needs will never be met by others).
4. Mistrust/misuse (belief that others will intentionally take advantage in some way).
5. Social isolation (the belief that one is isolated from the world, different from other people and/or not part of any community).
6. Emotional constriction (the belief that one must inhibit emotions and impulses because any expression of feelings would harm others or lead to loss of self-esteem, embarrassment, retaliation or abandonment).

b) Impaired autonomy (the expectation about oneself and the environment that interferes with one's perceived ability to separate, survive, function independently or perform successfully. It includes the sense of perceiving oneself as a failure, having to depend on or to defer to others, of being vulnerable, and of being unable to have sufficient self-control or self-discipline to perform effectively). This factor includes the following core beliefs.

7. Dependence/incompetence (the belief that one is not capable of handling day-to-day responsibilities competently and independently).

8. Vulnerability to harm and illness (the belief that one is always on the verge of experiencing a major catastrophe).

9. Enmeshment (the lack of individual identity due to emotional over-involvement with others).

10. Failure to achieve (the belief that one is incapable of performing as well as one's peers).

11. Subjugation (the belief that one must submit to the control of others in order to avoid negative consequences),

12. Insufficient self-control/self-discipline (the belief that one cannot control one's impulses or feelings).

c) Impaired limits (Deficiency in internal limits, responsibility to others or long-term goal-orientation; leads to difficulty in respecting the rights of others, cooperating with others, making commitments or setting and meeting realistic personal goals. People with high scores on these scales have difficulty in respecting the rights of others, making commitments, setting and meeting personal goals and tolerating unpleasant emotional experiences.). This factor includes the following core beliefs.

13. Entitlement/grandiosity (the belief that people should be able to do, say or have whatever they want immediately regardless of whether it hurts others or seems reasonable to them)

14. Fear of loss of control (the belief that one must inhibit emotions and impulses; the reason for this inhibition is a fear of loss of control)

The third core belief that loaded on this factor, also loaded on the factor 'Impaired autonomy', namely, insufficient self-control/self-discipline (the belief that one cannot control one's impulses or feelings).

d) Over control (represents an emphasis on over-controlling one's feelings and choices, an emphasis on performance, duty, perfectionism and following rules). The factor includes the following core beliefs.

15. Self-sacrifice (the belief that one has to sacrifice one's own needs in order to help others)

16. Unrelenting standards / hypercriticalness (the belief that one should strive for unrealistic standards).

Item mean scores are calculated for each scale. A higher score on a scale indicates a more dysfunctional level of that core belief. In a study by Waller et al. (2000) the YSQ was found to be valid and reliable for eating disorders.

The BITE (Henderson et al., 1987) is a 33-item self-report questionnaire developed to assess the presence and severity of bulimic symptoms. We used the BITE to obtain a frequency index for the eating disorder symptoms in the patient groups. Frequency of vomiting, fasting and misuse of laxatives was measured on a seven-point scale (never, occasionally, once a month, once a week, two or three times a week, once a day, two or three

times a day and five times a day or more). Frequency of bingeing was measured on a six-point scale (never, once a month, once a week, two or three times a week, daily and two or three times daily). Frequency of fasting was measured on a five-point scale (once, occasionally, once a week, two or three times a week, every second day). The BITE has a symptom scale and a severity scale. These scales were used primarily to assess the healthy control group. A higher score on the symptom scale reflects a more disordered eating pattern. A symptom score below 10 falls within normal limits. A higher score on the severity scale reflects a higher severity of bingeing and purging as defined by their frequency. A high score on the severity scale alone may confirm the occurrence of psychogenic vomiting or laxative misuse in the absence of binge eating. A score below 5 on this scale is considered to be clinically not significant. The BITE has been found to be both valid and reliable (Henderson et al., 1987). In addition, the BITE seems to be effective in assessing levels of eating disorder symptomatology within nonclinical samples (Meyer, Leung, Feary, & Mann, 2001).

Statistical analysis

ANOVA tests and post-hoc Tukey's HSD tests were used to compare demographical variables and the YSQ scores of the four eating-disordered groups (ANR, ANB/P, BN and BED) and the healthy control group. In the case of nominal and ordinal variables Kruskall-Wallis and post-hoc Mann-Whitney *U* tests were used.

To determine the transdiagnostic dimensional associations, the core beliefs (in ANR, ANBP, BN and BED combined) were correlated (Pearson's *r*) with the severity of eating disorder symptoms (binging, vomiting, fasting and misuse of laxatives) (BITE). The healthy controls were excluded from this analysis.

Results

Characteristics of the sample

A significant difference was found between the mean BMI (ANOVA $F(4, 133) = 70.3$; $p < 0.01$) and age (ANOVA; $F(4, 133) = 3.20$, $p = 0.015$) of the groups. Post-hoc tests revealed that the restricted and binge/purge anorexics had a lower mean BMI (M=15.5, S.D.=2.16 and M= 15.8, S.D. = 2.16, respectively) than the bulimics and the normal controls (M= 25.6, S.D. = 7.43 and M=23.4, S.D.=4.08, respectively). The subjects with BED had the highest BMI, which differed significantly from all other groups (M= 38.9; S.D.= 9.67). The mean ages for ANR, ANB/P, BN, BED and healthy controls were 26.5 years (S.D.= 8.7), 28.9 years (S.D. = 8.9), 30.3 years (S.D.= 9.4), 35.0 (S.D.= 10.3) and 33.9 years (S.D. = 11.1) respectively. Post-hoc analysis revealed that the only significant difference was between patients with BED and patients with ANR. The former were significantly older than the latter.

To provide information on the clinical severity of the sample age of onset and duration of illness were investigated. No differences were found between the (eating disorder) groups regarding age of onset (M=18.2, S.D. =7.3; ANOVA, $F(3, 105) = 0.065$; p=0.978). A

significant overall difference was found between the groups regarding duration of illness (ANOVA, $F(3, 105) = 5{,}1$; $p < 0.01$). Post hoc tests revealed that for patients with BED (M=17.2, S.D.= 11.0) the duration of illness was twice as long as for patients with ANR (M= 7.8, S.D. = 5.6) or ANBP (M=10.7, S.D.=8.4).

A Kruskall-Wallis test revealed no differences between the frequency of bingeing of patients with ANB/P, BN and BED ($X^2 = 2.82$, df=2, p= 0.24). By definition patients with ANR and healthy controls do not binge. No differences were found between the frequency of vomiting and misuse of laxatives in patients with ANB/P and BN (Mann-Whitney U, df=1, p=0.65, and $p = 0.96$ respectively). By definition, patients with ANR, BED and healthy controls do not vomit and misuse laxatives. No differences were found in the frequency of fasting in patients with ANR, ANB/P and BN ($X^2 = 11.4$, $df = 3$, $p = 0.33$). By definition BED patients do not fast.

Patterns of core beliefs

Table 2 shows a significant overall difference on all four YSQ higher factors (ANOVA; $p< 0.01$) between the four eating-disordered groups and the healthy control group. Post-hoc Tukey HSD tests showed that the patients with an eating disorder had significantly more pathological core beliefs about themselves than the healthy controls on all four factors. Post-hoc Tukey tests showed significant differences between some eating-disordered subgroups (see table 2 for details). Overall, patients with BED had significantly fewer maladaptive core beliefs than patients with ANB/P.

Table 2 : Young Schema Questionnaire domains (according Lee et al. 1999) of patients with anorexia nervosa, restricting type (ANR), anorexia nervosa, binge-purge type (ANBP), bulimia nervosa (BN), binge eating disorder (BED) and control group (C).

	Group					Post-hoc	
	ANR Mean (SD) N=16	ANBP Mean (SD) N=31	BN Mean (SD) N=23	BED Mean (SD) N=36	Control group Mean (SD) N=27	ANOVA F (df)	Tukey HSD
Disconnection	3,14 (1,23)	3,59 (0,80)	3,07 (0,91)	2,49 (0,87)	1,43 (0,37)	26,7* (4, 127)	ED-groups > C; ANBP > BED
Impaired Autonomy	3,01 (1,06)	3,45 (0,84)	3,10 (0,87)	2,48 (0,78)	1,53 (0,34)	24,5* (4, 128)	ED-groups >C; ANBP > BED
Impaired Limits	3,07 (1,02)	3,40 (0,73)	3,23 (0,86)	2,73 (0,81)	1,66 (0,37)	22,2* (4, 128)	ED-groups > C; ANBP > BED
Overcontrol	3,52 (0,94)	3,90 (0,90)	3,70 (0,79)	2,95 (0,86)	2,07 (0,46)	22,8* (4, 127)	ED-groups > C; ANBP = BN > BED

* $p < 0.001$

Correlations between specific eating disorder psychopathology and core beliefs

The healthy controls were excluded from this analysis. In the following analysis BMI and age are used as covariates given the significant differences that were found between AN patients and BED patients. Another reason to use BMI as a covariate was a significant negative correlation that has been found between BMI and maladaptive core beliefs. A low BMI is associated with more severe maladaptive core beliefs (disconnection: $r = -0.30$; $p<0.001$); impaired autonomy $r = -0.29$; $p<0.01$; over-control $r = -0.31$; $p<0.01$). Other studies found some evidence that a low BMI induces cognitive dysfunctioning (Lena, Fiocco, & Leyenaar, 2004).

The results of the correlation analyses (Pearson's *r*) were as follows. No significant correlations were found between the frequency of binge eating (all eating disorders) and any of the four factors.

Significant correlations were found between frequency of vomiting, laxatives misuse and fasting and all four factors (see table 3). A higher frequency of compensatory behaviours is associated with more severe maladaptive core beliefs.

Table 3: Associations (Pearson's *r*) in ANR, ANBP, BN and BED combined between YSQ higher order factors (according to Lee et al., (1999a) and frequency of binge eating, vomiting, laxative abuse and fasting controlling for BMI and age.

	Binge eating *r* (CI)	Vomiting *r* (CI)	Laxative abuse *r* (CI)	Fasting *r* (CI)
Disconnection	0,04 (CI: -0.16 – 0.24)	0,24* (CI: 0.04 – 0.42)	0,36** (CI: 0.22 – 0.56)	0,30** (CI: 0.18 – 0.53)
Impaired autonomy	0,17 (CI: -0.17 – 0.23)	0,26* (CI: 0.14 – 0.50)	0,36** (CI: 0.22 – 0.56)	0,28** (CI: 0.17 – 0.52)
Impaired limits	0,14 (CI: -0.06 – 0.33)	0,27* (CI: 0.12 – 0.48)	0,32** (CI: 0.15 – 0.51)	0,27** (CI: 0.10 – 0.47)
Overcontrol	0,08 (CI: -0.12 – 0.28)	0,19 (CI: 0.05 – 0.43)	0,34** (CI: 0.18 – 0.53)	0,25** (CI: 0.16 – 0.50)

** $p < 0.01$* $p < 0.05$

Discussion

The study compared core beliefs in patients with ANR, ANB/P, BN and BED and in a group of healthy controls. In this way differences and similarities between all types of eating disorders could be investigated directly. Patients with an eating disorder (AN (both subtypes), BN and BED) had significantly unhealthier core beliefs than healthy controls on all the four factors of maladaptive core beliefs. Patients with AN (both subtypes) and BN did not differ in the degree of unhealthy core beliefs. With regard to the nature and severity of the core beliefs,

patients with BED had an intermediate score between AN and BN on the one hand and the healthy controls on the other hand. However, the core beliefs of BED patients seem to be more similar to the core beliefs of BN or AN patients than to those of healthy subjects. This confirms the results of previous studies (Waller et al., 2000; Leung et al., 1999; Dingemans et al., 2002).

Our results show that the frequency of inappropriate compensatory behaviours like vomiting, laxative misuse and fasting, are positively associated with all four higher order factors of maladaptive core beliefs unrelated to BMI and age. Patients who engage (more frequently) in compensatory behaviours have more severe unhealthy beliefs about themselves and their environment than patients who do not. Frequency of binge eating does not seem to be associated with severity of maladaptive core beliefs. This suggests that engaging in inappropriate compensatory behaviours is linked to more disturbed thinking patterns. This might also explain the lower scores of BED patients on the Young Schema Questionnaire (YSQ), since BED patients do not engage in inappropriate compensatory behaviours, by definition. Beumont et al. (1995) found that patients who purged were more disturbed on all psychopathological characteristics measured by the Eating Disorder Examination (EDE)(Cooper et al., 1987) than were those who did not purge. Also, O'Kearney et al. (1998) found that purgers were more disturbed than nonpurgers on measures of specific eating disorder psychopathology, for example sense of ineffectiveness, bulimic tendencies drive for thinness and body dissatisfaction, which was unrelated to weight, level of anxiety or general distress. Our data showed that cognitions or core beliefs that are not related to eating disorder psychopathology are distorted in patients with an eating disorder and even more in patients who engage in purging behaviours and fasting. These data demonstrate the importance of identifying purging and fasting as significant clinical markers. The frequency of these behaviours can be regarded as an indicator of the severity of the illness (Keel et al., 2004; Tobin, Johnson, & Dennis, 1992).

According to cognitive behavioural models, an over-evaluation of eating, shape and weight is the 'core psychopathology' of eating disorders (Fairburn et al., 2003). This leads to strict dieting which leads to binge eating. Purging behaviours are seen as a way to minimize weight gain (Fairburn et al., 2003; Jansen, Vandenhout, & Griez, 1990; Heatherton, Herman, & Polivy, 1992; Heatherton et al., 1991). However, our results suggest that purging and fasting behaviours in eating disorders might also serve another role besides that of simply minimizing weight gain caused by binge eating. This result concurs with the results of several other studies on the function of purging. In a small study Jeppson et al. (2003) found that purging behaviours also contributed to a marked sense of empowerment or control or an expression of opposition or rebellion. Furthermore, some patients reported that purging was a punishment or self-defeating behaviour. Also, most patients described the feeling of well-being (i.e. relief, relaxation, numbness) immediately after completing the purge.

In this study we also found that BMI is negatively associated with maladaptive core beliefs. A lower BMI is associated with a higher number of maladaptive core beliefs. However, in this cross-sectional study we cannot say anything about the direction of the causal relation between these two variables. It cannot be ruled out that a low BMI results in more disturbed core beliefs, because previous studies produced some evidence that a low BMI induces cognitive dysfunctioning (Lena et al., 2004; Polivy, 1996; Jones, Duncan, Brouwers, & Mirsky, 1991)

One of the strengths of our study is the inclusion of patients with a DSM-IV EDNOS diagnosis. By adding EDNOS patients we extended the range of clinical severity to include subthreshold cases. On a behavioural level this allowed us to examine the relationship between core beliefs and eating disorder psychopathology in an extended dimensional fashion. Another strength is the grouping of the sixteen core beliefs into four higher order factors as proposed by Lee et al. (1999). In this way we reduced type I errors and minimized chance findings. The variety in the results of studies investigating core beliefs in eating disorders suggests that we should use these higher order domains or the overall mean score of the YSQ as a general indication of core beliefs and /or dysfunctional thinking style which leads to unhealthy life patterns. The sixteen core beliefs and also the four higher-order factors are highly correlated. Because of the small number of subjects used in other studies that investigated core beliefs in eating disorder, correlations might be found by chance.

The study has some limitations. First of all, the group sizes were not equal and were small. Secondly, we did not assess co-morbid axis I disorders (such as mood or anxiety disorders). Thirdly, the study is based on cross-sectional data only. This implies that no statements can be made about the causal relationships between core beliefs and eating disorder psychopathology. Finally, large differences were found in the duration of illness especially between patients with AN and BED. However, no differences were found in the age of onset in the four diagnostic groups, which means that eating disorders in general tend to develop during adolescence. An explanation for the large differences in the duration of illness might be that BED, when compared to AN and BN, is a less severe eating disorder (Dingemans et al. 2002). Persons with more severe disorders are more likely to perceive a need for treatment (Sareen, Hassard, Menec, Stein, & Campbell, 2005). Patients with AN and BN will therefore seek help sooner than patients with BED.

Longitudinal studies are needed in order to investigate whether core beliefs constitute a vulnerability factor for the development of eating disorder pathology or can be better conceptualized as a concomitant or consequence of having an eating disorder. This study showed that there are some indications that the degree of inappropriate compensatory behaviours is linked to severity of domains of core beliefs. Future studies should be done in larger samples in which the association between the separate core beliefs can investigated and should address comorbid disorders and symptoms.