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**FATAL ATTRACTION: THE  
RELATIONSHIP BETWEEN PATIENTS  
AND THEIR EATING DISORDERS, AN  
INTERPERSONAL AND ATTACHMENT  
PERSPECTIVE**

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*“To live is to suffer, to survive is to find some meaning in the suffering”*

/F. Nietzsche

To my family,  
the old one and the new

# Fatal attraction: The relationship between patients and their eating disorders, an interpersonal and attachment perspective

## THESIS FOR DOCTORAL DEGREE (Ph.D.)

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## ABSTRACT

Eating disorders are severe psychiatric illnesses, causing immense suffering for patients, but also for their families and friends. Ambivalence about change and treatment resistance are common, and relapse rates are high. Patients with eating disorders tend to be highly self-critical and self-attacking, much more so than other psychiatric populations. In this project interpersonal- and attachment theoretical principles were applied in an attempt to understand how and why these disorders are so strongly associated with how patients evaluate and treat themselves (self-image). The first aim was to study connections between self-image and eating disorder symptoms in different groups, to learn more about the quality and strength of such associations (**Studies I and II**). Further, according to interpersonal theory, we treat ourselves a certain way because important others, attachment figures primarily, have treated us that way. Some patients with eating disorders seem to spontaneously conceptualize their illness as an entity or a voice that they relate to. Therefore, the second aim was to test whether eating disorders could be re-conceptualized as dyadic relationships, possibly triggering attachment mechanisms (i.e. guided by the same mechanisms as other important relationships), and influencing how patients treat themselves as a result (**Studies III and IV**).

All studies were cross-sectional. In **Studies I and II**, healthy, non-help-seeking and clinical groups of individuals aged 13-25 rated eating disorder symptoms and self-image. Boys (both healthy and clinical) were included in the first study, but all other samples were female. In **Studies III and IV** patients rated the relationship between themselves and their illness, attachment behaviours, symptoms and self-image. In **Studies I-II**, strong associations between specific aspects of self-image (primarily self-blame, and self-acceptance/love inversely) and symptoms were found. These associations were stronger in healthy girls compared to healthy boys, in clinical groups compared to healthy groups and in patients with anorexia nervosa compared to patients with bulimia nervosa. Older age seemed to weaken these associations except in the non-help-seeking group where associations were strong regardless of age. In **Study III**, patients seemed able to conceptualize their disorders as highly negative and enmeshed dyadic relationships. Higher eating disorder control and patient submission were associated with more severe symptomatology. Patients who reacted negatively toward their eating disorder had less symptoms and more positive self-image. In **Study IV**, attachment behaviours were correlated with aspects of the patient – eating disorder relationship, and as hypothesised from interpersonal theory and supporting attachment processes being active, for some individuals it seemed as if actions of their eating disorder matched their self-image.

Placing eating disorders within a relational framework offers an explanation for how and why symptoms are related to self-image. It also offers a language that may help some patients and clinicians understand and work towards letting go of the illness. A focus on intrapersonal processes in the patient – eating disorder relationship and their potential connection to attachment-related issues may inform therapist interventions that could facilitate the development of a secure therapeutic relationship, and ultimately aid recovery.

## LIST OF SCIENTIFIC PAPERS

- I. Forsén Mantilla, E., Bergsten, K., & Birgegård, A. (2014). Self-image and eating disorder symptoms in normal and clinical adolescents. *Eating Behaviors* 15(1), 125-131.
- II. Forsén Mantilla, E., & Birgegård, A. (2015). The enemy within: The association between self-image and eating disorder symptoms in healthy, non help-seeking and clinical young women. *Journal of Eating Disorders*, 3:30.
- III. Forsén Mantilla, E., Clinton, D., & Birgegård, A. (In press). Insidious: The relationship patients have with their eating disorders and its impact on symptoms, illness duration and self-image. *Psychology and Psychotherapy: Theory, Research and Practice*.
- IV. Forsén Mantilla, E., Clinton, D., & Birgegård, A. (2017). *The unsafe haven: Eating disorders as attachment relationships*. Manuscript submitted for publication.

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## LIST OF ABBREVIATIONS

APA	American Psychiatric Association
AN	Anorexia Nervosa
AN/BP	Anorexia Nervosa/binge-purge subtype
AN/R	Anorexia Nervosa/restrictive subtype
ASQ	Attachment Style Questionnaire
BED	Binge Eating Disorder
BMI	Body Mass Index
BN	Bulimia Nervosa
CBT	Cognitive Behavioural Therapy
CBT-E	Cognitive Behavioural Therapy-Enhanced
DBT	Dialectical Behavioural Therapy
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders-IV
DSM-5	Diagnostic and Statistical Manual of Mental Disorders-5
EDE-Q	The Eating Disorder Examination Questionnaire
EDFT	Eating Disorders Focused Family Therapy
EDNOS	Eating Disorder Not Otherwise Specified
IPT	Interpersonal Psychotherapy
M	Mean
MANCOVA	Multivariate Analyses of Covariance
MANOVA	Multivariate Analyses of Variance
OBE	Objective Binge-Eating
OSFED	Other Specified Feeding and Eating Disorders
SASB	The Structural Analyses of Social Behaviour
SD	Standard deviation
SEDI	The Structured Eating Disorder Interview
SSCM	Specialist Supportive Clinical Management
UFED	Unspecified Feeding or Eating Disorder

# 1 INTRODUCTION

Over the past few decades there has been a tendency within psychology and psychiatry to focus on the biological and neurological bases of psychopathology (Deacon, 2013). Genetic studies and neuroimaging studies grow in numbers and receive both funding and attention. Treatments tend to be highly symptom oriented, preferably medical, and primarily targeting maladaptive behaviours and cognitions of patients. Psychopathology is generally considered as psychological and behavioural dysfunctions, deviating from the norm. Attempts to understand psychological adversities as carrying subjective meaning or as filling some sort of function are rare. However, in a psychiatric landscape where boundaries between diagnoses are difficult to define, where comorbidity is the rule rather than the exception, and where there is great disagreement about which treatment, or combination of treatments, works best for whom, focusing the underlying mechanisms, functions and meanings of a psychopathology might prove more useful and informative than attempting to isolate and treat observable expressions of it.

The need to engage in meaningful interpersonal relationships is a fundamental human motivation, crucial for happiness, well-being and health (Baumeister & Leary, 1995). Forming and maintaining emotionally salient relational bonds is an innate, universal characteristic of human beings, taking place in a variety of settings and affecting cognitive, behavioural and emotional processes, as well as personality and self-evaluation (Baumeister & Leary, 1995). In addition, the loss of an important relationship is typically experienced as deeply distressing. Our social environments shape who we are and when our interpersonal relationships are problematic, threatened or dissolved, we suffer as a result. For example, interpersonal disruptions and difficulties have been linked to major depression (Dinger, et al., 2015), generalized anxiety, social phobia (Moak & Agrawal, 2009), and eating disorders (Arcelus, Haslam, Farrow & Meyer, 2013). Further, many influential and central psychological theories emphasize the profound importance of relationships, relational patterns, and interpersonal dynamics for psychological development as well as the development of psychopathology. Attachment theory, object relations theory, interpersonal theory and social reinforcement theory (Bandura, 1962; Bowlby, 1969; Klein, 1952; Sullivan 1953) all have in common that they view psychological functioning as a result of interactions with the individual's social environment.

Furthermore, humans have a tendency to place other, subjectively important, non-human objects within a relational framework, i.e. ascribing similar qualities and using the same language, as they would with more conventional relationships. The oldest known belief system, animism, centres on the belief that all things and phenomena (stars, mountains, animals, words, etc.) have agency and souls, and as such may act and react in various ways in relation to humans (Harvey, 2005). In modern religions, God and other unseen deities are confided in, looked up to, related to and seen as providing protection, comfort and guidance,

in a similar manner as for instance a caregiver or a partner. In children's films, inanimate objects such as toys, teapots, cars and trains are commonly assigned human-like behaviours and characteristics. In the movie *Cast Away*, the main character Chuck Noland, stranded on an uninhabited island, begins relating to a volleyball he names Wilson (Bradshaw & Zemeckis, 2000). Wilson becomes Chuck's only means of socialization and perhaps survival. When Wilson is lost, Chuck is absolutely devastated.

Within the *object relations* framework, Winnicott (1953) introduced the concept of transitional objects in reference to small children beginning to navigate between the internal and external world. The *transitional object*, like a favourite teddy bear or security blanket, provides a bridge between the earliest relationship with the mother and the outside world and helps in reducing the stress of being separated from the mother. It provides comfort at the same time as it helps the child explore ways of communicating internal reality and take in external reality. Even the perhaps most influential theoretical framework for understanding interpersonal relationships, *attachment theory* (Bowlby, 1969), recognizes how inanimate objects may fill "the role of an important, though subsidiary, attachment figure" (Bowlby, 1969, pp. 313), sought after when the primary attachment figure is unavailable, and especially in times of distress. In empirical psychological research, the attachment framework has indeed been successfully applied when examining how people relate to God in a series of studies (Birgegård & Granqvist, 2004; Granqvist, Ivarson, Broberg & Hagekull, 2007; Granqvist, Mikulincer, Gewirtz & Shaver, 2012) and additionally in psychiatric research, as a way of understanding underlying mechanisms in substance abuse (Schindler, Thomasius, Petersen & Sack, 2009). In a similar manner, Benjamin (1989) examined how psychiatric patients related to their auditory hallucinations, applying an interpersonal perspective, and Sandor (1996) investigated how substance abusers related to their drug of choice (opiate vs stimulant). In these studies, patients had coherent and well-articulated relationships with their voices and drugs of choice, respectively, and different qualities within these relationships seemed to impact the course of illness. This implies that these relationships might need to be addressed in treatment, especially since losing important relationships causes immense distress. Applying the relational perspective in order to examine and understand other psychiatric conditions too, might prove informative and clinically useful and can potentially provide insight into the subjective meaning and value patients ascribe their psychopathology.

In clinical and autobiographical accounts, patients with eating disorders often describe their illness as an entity or a voice, constantly criticizing them about food intake, body weight and shape and demanding them to compensate or fast (Noordenbos, Aliakbari, & Campbell, 2014; Pugh & Waller, 2016b; Serpell & Treasure, 2002). The voice is experienced as internal, yet alien from the self, and patients often describe their voice in relational terms, reporting both positive and negative interactions with it (Pugh & Waller, 2016b). In a recent quantitative study of the subjective meanings of anorexia nervosa, reoccurring themes were, feeling protected and safe, being valued, experiencing control, and avoiding negative emotions (Marzola, Panepinto, Delsedime, Amianto, Fassino & Abbate-Daga, 2016), all mirroring aspects of an interpersonal relationship. Moreover, in eating disorder treatments

like the Maudsley family therapy and narrative therapy, externalizing the illness and relating to it as a symbolic other is often an integral part.

Eating disorders is a group of psychiatric disorders that has proven hard to define and treat (Fairburn & Harrison, 2003), and as such research into underlying psychological mechanisms and the potential meaning patients attach to their disorders, is needed to gain a more complete understanding of these conditions. Placing eating disorders within a relational framework, attempting to enhance our understanding of how patients relate to their disorders and examining the consequences this might have for how the patient treats him/herself, symptom levels and illness duration, is one way of doing that.

## **1.1 EATING DISORDERS**

Eating disorders are multifaceted, severe illnesses causing immense suffering for the patients but also for the patients' families and friends. Many of those who enter specialized eating disorder treatment have been ill for many years (Clinton & Norring, 2002). In addition, reluctance about change and treatment resistance is common in eating disorder patients (Abbate-Daga, Amianto, De-Bacco & Fassino, 2013; Halmi, 2013), rates of dropout from treatment are high (Fassino, Piero, Tomba & Abbate-Daga, 2009) and unfortunately, so are relapse rates (Herzog, et al, 1999). As in psychiatry in general, a categorical approach to diagnosis based on the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5, American Psychiatric Association, 2013) to classify groups dominates the eating disorder field. In the DSM-5, feeding- and eating disorders have been integrated into one category, but since the feeding disorders (pica, rumination disorder and avoidant/restrictive food intake disorder) are not in focus here, they will not be elaborated upon in this text. According to DSM-5, an eating disorder may be defined as: "A persistent disturbance of eating or eating-related behaviour that results in the altered consumption or absorption of food and that significantly impairs physical health or psychosocial functioning" (American Psychiatric Association, 2013).

There are five main eating disorder diagnoses in DSM-5: anorexia nervosa (AN), bulimia nervosa (BN), binge-eating disorder (BED), other specified feeding or eating disorder (OSFED; reminiscent of eating disorder not otherwise specified [EDNOS] in DSM-IV), and unspecified feeding or eating disorder (UFED). AN is characterized by restrictive energy intake, fear of weight gain or behaviours interfering with weight gain, and disturbance of body image. The diagnosis is divided into two subtypes: 1) the restricting type (ANR), where recurrent binge eating or purging behaviour do not occur, and 2) the binge-eating/purging type (ANBP), where they do. AN most commonly develops during adolescence or young adulthood. AN has the highest mortality rate of all psychiatric disorders (Welch & Ghaderi, 2015) and the outcome of AN did not improve over the second half of the last century despite advances in treatment approaches (Steinhausen, 2002). BN is characterized by recurrent episodes (at least once a week for 3 months) of both binge eating and compensatory

behaviours. Binge eating is characterized by consuming large amounts of food in a short period of time and experiencing a loss of control over eating. To compensate for binge eating, patients with BN self-induce vomiting, misuse laxatives, diuretics or other medications, fast, or exercise excessively. BN peaks in young adulthood and BN patients are typically within the normal weight or overweight range. The essential feature of BED is recurrent episodes of binge eating, occurring on average at least once a week for 3 months. Binge eating is characterized by marked distress and individuals with BED typically feel ashamed of their eating problems. BED occurs in normal weight, overweight and obese individuals. OSFED applies to specific presentations of symptoms not fully meeting the criteria of any of the feeding- or eating disorders, but which nevertheless cause significant distress and clinical impairment. There are five subtypes: 1) atypical AN, 2) BN of low frequency and/or limited duration, 3) BED of low frequency and/or limited duration, 4) purging disorder, and 5) night eating syndrome. UFED applies when symptoms do not meet criteria for any of the other feeding- or eating disorders, but nevertheless causes the patient clinical distress or impairment. In younger patients (10-14 years of age), OSFED/UFED are the most common diagnoses (68%), followed by AN (25%), with only a few cases of BN (6%) and BED (1%), (Birgegård, Norring & Clinton, 2012). With increasing age, the diagnostic distribution changes: in adults (>18 years of age) BN is the most common diagnosis (42%), followed by OSFED/UFED (32%), AN (21%), and finally BED (5%). The classification of eating disorders has long been criticized for being arbitrary and for poorly representing clinical experience and empirical reality (Fairburn, Jones, Preveler, Hope & O'Connor, 1993). As we shall see, there are additional concerns related to defining and treating these individuals as fundamentally different based on the behavioural expressions of their psychopathology.

## **1.2 PREVALENCE, COMORBIDITY AND DIAGNOSTIC CROSSOVER**

Prevalence rates for full-syndrome eating disorder are between 0.2 - 7.7% depending on diagnosis, gender and age (Hoek & Van Hoeken, 2003; Hudson, Hiripi, Pope & Kessler, 2007; Isomaa, Isomaa, Marttunen, Kaltiala-Heino & Björkqvist, 2009; Mohler-Kuo, Schnyder, Dermota, Wei & Milos, 2016; Striegel-Moore, et al., 2003). The life-time prevalence for any eating disorder was found to be 3.5% (1.5% for males and 5.3% for females) in a recent, large, population-based study (Mohler-Kuo, et al., 2016). Mean age of eating disorder onset ranges between 15-17.1 depending on diagnosis (Smink, van Hoeken & Hoek, 2012). Eating disorders are predominantly found in females; the female-to-male ratio of any eating disorder is about 4:1 during adolescence and about 10:1 in adulthood (Striegel-Moore & Bulik, 2007; Reijonen, Pratt, Patel & Greydanus, 2003) and incidence rates are highest for females aged 15-24 (van Son, van Hoeken, Bartelds, van Furth & Hoek, 2006). A Norwegian study on 14 to 15 year-olds (Kjelsås, Børnstrøm & Gøtestam, 2004) found total eating disorder point prevalence rates of 7.6% among girls and 2.2% among boys. There is also a large group of high-risk individuals (prevalence rate 8.5% in young adult females) experiencing sub-clinical problems (Isomaa, et al, 2009). In addition, there is an estimated

large population of unrecorded cases, who do not seek help i.e. who suffer from full syndrome eating disorder but are not in treatment (Mohler Kuo, et al., 2016; Wijbrand Hoek & van Hoeken, 2003).

Psychiatric comorbidity is common in all eating disorders, with a majority of patients meeting criteria for at least 1 other lifetime DSM-IV disorder (Hudson, et al., 2007; Swanson, Scott, Crow & Le Grange, 2011; Ulfvebrand, Birgegård, Norring, Högdahl & von Hausswolff-Juhlin, 2015). The highest levels of comorbidity are found in patients with BN, BED and ANBP, and the lowest (though still high) are found in patients with ANR (Swanson, et al, 2011; Ulfvebrand, et al., 2015). The most common comorbid conditions are mood, anxiety and substance use disorders (Blinder, Cumella, & Sanathara, 2006). There is also an increased risk of attempting suicide, with findings suggesting individuals with BN attempt suicide more often than individuals diagnosed with other eating disorders (Franko & Keel, 2006). Completed suicides however, seem more common in individuals with AN (Franko & Keel, 2006).

Diagnostic crossover is also common among patients with eating disorders. Several studies suggest that crossing from restricting-type eating disorders to bulimic-type presentations is most common, with about 50% of AN patients developing binge-eating and/or purging behaviours within the first 3-5 years of illness (Eddy, Dorer, Franko, Tahilani, Thompson-Brenner & Herzog, 2008; Tozzi, et al, 2005). Diagnostic migration from BN to AN is less common, but nevertheless occurs (about 25% crossed from BN to AN in the study by Tozzi, et al, 2005), especially in individuals with a previous history of AN (Eddy, et al., 2008). A recent study found that 16% of BED patients received a different eating disorder diagnosis at follow-up, most commonly BN or OSFED/UFED but sometimes also AN, and the diagnostic flux was bidirectional with patients also crossing to BED from AN, BN or OSFED/UFED (Welch, et al., 2016).

### **1.3 THE TREATMENT OF EATING DISORDERS AND DIFFICULTIES ASSOCIATED WITH TREATMENT**

Developing empirically supported, efficacious treatments for individuals with eating disorders is of course a central goal for the field, and although progress has been made over the last two decades there is still work to be done. For adults with AN, there are no evidence-based treatments (Hay, Claudino, Touyz & Abd Elbaky, 2015). Specialist Supportive Clinical Management (SSCM), developed as a supportive control condition for various randomized controlled trials comparing psychological interventions for AN, has proven equally effective as for example cognitive behavioural therapy-enhanced (CBT-E), interpersonal psychotherapy (IPT) and psychoanalytic therapy (Zipfel, et al., 2014). For adolescents with AN, family based treatment and more specifically the Maudsley family therapy model (Eating Disorders Focused Family Therapy, EDFT), seem most effective with better outcome at follow-up than individual therapies and inpatient care (Carr, 2014).

For adult patients with BN, CBT-E is a well-established treatment option, superior to no treatment, other supportive treatment options, and psychopharmacological treatments (Agras & Hagler-Robinson, 2008). IPT is also effective, with lower drop-out rates than CBT and with similar results as CBT at one-year follow-up (Agras, Walsh, Fairburn, Wilson & Kraemer, 2000). Dialectical behavioural therapy (DBT) is another promising treatment option for BN patients, although more research is needed (Safer, Telch & Chen, 2017). For younger BN patients, family therapy was superior to supportive-expressive therapy in one study (Le Grange, Crosby, Rathouz & Leventhal, 2007), and in another study therapist-guided self-help (CBT-based) was superior to family therapy for the same population (Schmidt, et al., 2007).

For BED patients, both CBT and IPT appear effective in reducing the frequency of binge eating, although none of the treatments lead to weight loss (Brownley, Berkman, Sedway, Lohr & Bulik, 2007). DBT also seems like a promising treatment option for BED (Safer, et al., 2017). Weight loss treatments may also be effective in reducing binge-eating and improving the overall health of the patients, but this needs further investigation (Agras & Hagler-Robinson, 2008).

Little research has been devoted to developing and evaluating treatment interventions for patients diagnosed with OSFED or UFED. So at present, there are no evidence-based treatments available for these two large groups or constituent diagnostic subgroups, representing the majority of adolescent eating disorder patients and about one third of adult patients.

Besides the obvious concerns regarding lack of evidence-based treatments for the majority of patients, there are several other concerns in relation to treatment. The fact that as many as 50% of AN patients, about 30% of BN patients, and 25% of patients with OSFED, are still ill 10 or more years following treatment intake (Keel, Mitchell, Miller, Davis & Crow, 1999; Keel & Brown, 2010), indicates that there is still a lot to learn about treating these patients and that even among the patients for whom there are evidence-based treatments available, a significant number of individuals stay ill for a long period of time. There are potentially several reasons for this, but both research and clinical experience suggest that treatment resistance and reluctance to change plays a major part (Halmi, 2013). In AN, treatment resistance is a well-documented phenomenon (Abbate-Daga, Amianto, De-Bacco & Fassion, 2013; Vitousek, Watson & Wilson, 1998). BN, OSFED and BED patients seem in general slightly more motivated to engage in treatment, but at the same time many BN and BED patients are ashamed of their symptoms, and therefore reluctant to disclose and engage in treatment (Casanovas, et al., 2007; Fairburn & Cooper, 1984; Geller, et al., 2008; McKenna, 1989). Furthermore, even if BN and BED patients are more treatment seeking than AN patients, they are still ambivalent about change (Vitousek, Watson & Wilson, 1998). Bingeing and purging undoubtedly have both negative and positive reinforcing properties that make these patients afraid and unwilling to change (Leehr, Krohmer, Schag, Dresler, Zipfel & Giel, 2015; Smyth, et al, 2007; Stice, Burton & Shaw, 2004).

Another issue related to treatment is the high relapse rates reported: 40 % of AN patients and 35.3 % of BN patients relapsed after full recovery in one study (Herzog, et al, 1999), whilst another study found relapse rates of 33 % for AN and of 37 % for BN after achieving partial remission (Richard, Bauer & Kordy, 2005). Most eating disorder patients suffer from their symptoms and are able to see the negative consequences of their illnesses, evident by their experience of clinical impairment due to their eating disorder (Welch, Birgegård, Parling & Ghaderi, 2011), yet they nevertheless relapse to a high degree.

The lack of treatment interventions specifically designed to address eating disorders and comorbid conditions (e.g. major depression, substance use disorder, obsessive-compulsive disorder) conjointly, is yet another problem. Comorbidity may complicate treatment, is associated with poorer prognosis in both AN and BN and increases the risk for relapse (Berkman, Lohr & Bulik, 2007), thus interventions targeting both the eating disorder and any co-occurring conditions would potentially produce more persistent change and may additionally be more cost effective (Stice, South & Shaw, 2012).

A final issue concerns how recovery from treatment is defined. For many patients who have recovered in terms of physical and behavioural symptoms, lingering intrusive eating disorder thoughts and attitudes is not uncommon (Bardone-Cone, Harney, et al, 2010; Keski-Rahkonen & Tozzi, 2005). In AN, elevated eating disorder attitudes and thoughts also predict relapse after recovery (Carter, Blackmore, Sutandar-Pinnock & Woodside, 2004; Channon & DeSilva, 1985). In a study examining psychological well-being in remitted eating disorder patients, patients scored lower than controls in general and significantly lower in the domains of positive relations and self-acceptance (Tomba, Tecuta, Schumann & Ballardini, 2017). This suggests that for many, psychological underpinnings of the eating disorder remain even after symptoms disappear.

#### **1.4 UNDERLYING TRANSDIAGNOSTIC PSYCHOPATHOLOGY**

The complexities surrounding categorically defining and treating eating disorders implies that research into the maintaining psychological factors common to all eating disorder diagnostic groups (i.e. transdiagnostic factors), is needed to enhance our understanding of these disorders and how to treat them.

Body dissatisfaction, a drive for thinness, low self-esteem, high self-criticism and high perfectionism are all documented transdiagnostic risk factors for eating disorders (Arcelus, et al, 2013; Bailey & Ricciardelli, 2010; Ghaderi & Scott, 2001; Jacobi, Paul, de Zwaan, Nutzinger & Dahme, 2004; Striegel-Moore & Bulik, 2007). Once an eating disorder is developed, self-appraisal seem to become narrowly restricted to body shape, weight, and the ability to control them (Fairburn, Cooper & Shafran, 2013). As self-acceptance becomes contingent on eating disorder symptoms, failure to for example restrict food intake, will decrease self-acceptance, which consequently reinforces both behaviours and underlying psychopathology (Fairburn, et al., 2013). This vicious circle results in very negative self-

directed behaviours and views of the self, also compared to other psychiatric groups (Björck, Clinton, Sohlberg, Hällström & Norring, 2003; Jacobi et al., 2004).

Moreover, a connection between eating disorder symptoms and emotion regulation seems common in all eating disorders. Negative emotions are related to caloric intake in AN patients, to binge-eating in BED patients, and to binge-eating plus purging in BN patients, and several symptoms (restriction, exercise, binge-eating, purging behaviours) have been found to down-regulate negative affect (Crosby, et al, 2009; Haynos & Fruzzetti, 2011; Leehr, et al, 2015; Penas-lledo, Vaz Leal & Waller, 2002; Smyth, et al, 2007; Steinglass et al., 2010; Vansteelandt, et al 2007).

Most patients also become extremely preoccupied with food, weight and dieting, so much so that it may influence their ability to concentrate and engage in cognitively challenging activities, as well as their social life. Many become socially withdrawn, and interpersonal difficulties such as low assertiveness, higher levels of social anxiety and social maladjustment, as well as fear of intimacy and interpersonal distrust, have been linked to eating disorders (Arcelus, et al, 2013; Levinson & Rodebaugh, 2016; Williams, Power, Millar & Freeman, 1993). In addition, research has demonstrated that patients with eating disorders, irrespective of diagnosis, display more insecure patterns of attachment (i.e. the way of relating to significant others based on early interpersonal experiences in relation to primary caregivers; Bowlby, 1969) compared to controls (Caglar-Nazali, et al, 2014; Tasca & Balfour, 2014; Ward, Ramsey & Treasure, 2000). Insecure interpersonal attachment patterns may also explain many of the other interpersonal difficulties mentioned, may influence emotion regulation and negative self-evaluation, and may have implications for treatment (Tasca & Balfour, 2014).

## **1.5 AN EATING DISORDER AS A RELATIONSHIP**

Another important unifying feature of eating disorders seems to be the way many patients describe and attach meaning to their illnesses. In qualitative accounts, patients often spontaneously describe their illness as an entity or voice that they engage with and relate to (Tierney & Fox, 2011). This inner voice or entity is experienced as separate from the patient and as acting independently, but with powerful influence over the patient (Tierney & Fox, 2010). Initially the voice may be experienced as positive, helping the individual achieve the thin ideal and providing confidence, a sense of control and security. But as the illness progresses, the voice may become more critical and dominating and takes priority over other social relationships (Serpell & Treasure, 2002; Tierney & Fox, 2011).

Observations like these are especially common in the clinical literature on AN, with frequent references to an *anorexic voice* that comments on the individual's eating, weight and shape (Pugh, 2016; Pugh & Waller, 2016a; 2016b; Tierney & Fox, 2011). A stronger, more powerful and malevolent voice seems associated with more symptoms, longer illness duration, more severe compensatory behaviours, and severe and enduring forms of AN (Pugh

& Waller, 2016a; 2016b). Lower BMI seems related to a greater wish to fight the anorexic voice, yet at the same time a greater sense of being unable to get away from the voice (Pugh & Waller, 2016b). The relationship between patients and their anorexic voice has been compared to an abusive relationship, due to the voice's coercive nature and impact on self-esteem (Tierney & Fox, 2011). In spite of the voice being harsh and critical, patients often experience affiliation towards it (Tierney & Fox, 2010), and this duality could possibly be a contributing factor to why patients are often ambivalent about change and recovery. Learning to question the voice, regaining control and power over and above that of the illness, appears important for recovery (Duncan, Sebar & Lee, 2015). Although the clinical literature has primarily focused the anorexic voice, descriptions of eating disorders as personified others are reported by patients with other eating disorder diagnoses as well (Noordenbos, et al, 2014; Serpell & Treasure, 2002), but much less is known about these groups.

The idea that an eating disorder can be experienced as a symbolic other is also implied by treatment models incorporating externalization of the disorder as a way of creating distance and encouraging objectivity (Scott, Hanstock & Patterson-Kane, 2013). However, there is also criticism against externalization; there is a risk of removing responsibility from patients, and some argue this way of conceptualizing the illness is a result of therapist socialization, rather than a personal construction by patients (Pugh, 2016).

If instead conceptualizing an eating disorder as part of an *intrapersonal relationship*, i.e. an internal relationship between the eating disorder as a significant other on the one side and the part of the patient that in this sense is separate and relates to the illness on the other, interactions between the two will be in focus. This may avoid removing responsibility from the patient, since both parts in the relationship are responsible when interacting. If eating disorders can be perceived, and are valued, in similar ways as partners in important relationships, this could offer insights about the meaning patients attach to their illnesses and how that in turn potentially influences both the development and maintenance of the disorder, as well as recovery. As we shall see, such a conceptualization may also help understand the negative self-evaluation so typical of patients with eating disorders.

## **1.6 ATTACHMENT THEORY, INTERPERSONAL THEORY, AND EATING DISORDERS**

In this thesis, attachment theory (Bowlby, 1969) and interpersonal theory (Benjamin, 1993; Sullivan, 1953) form the theoretical basis for examining and understanding the alleged intrapersonal relationship between patients and their eating disorders. It is proposed that this relationship may be understood on the basis of attachment, i.e. in similar ways as we understand our most basic and significant relationships: like the relationship between a parent and child. As such, it is suggested that the intrapersonal relationship between patients and their eating disorders is governed by the same mechanisms as more conventional interpersonal relationships and therefore may influence self-evaluation, interpersonal

behaviours, feelings about treatment, psychological well-being, and the course of illness. These theoretical frameworks are leading in understanding how people relate to significant others and they have a sound empirical base. In the following sections, these theoretical frameworks, and their relevance in relation to conceptualizing eating disorders as intrapersonal relationships, will be presented.

## 1.7 ATTACHMENT THEORY

Bowlby (1969) described the concept of attachment as an innate motivational behavioural system, which functions to keep the infant safe by providing proximity to a protective caregiver, an attachment figure. Early experiences with attachment figures form mental representations of self in relation to others, referred to as *internal working models*. Depending on the quality of those early relationships, different types of attachment patterns will arise (Ainsworth, Blehar, Waters & Wall, 1978). Such patterns include *secure* attachment, where continuously available and responsive attachment figures allow the infant to confidently explore the environment whilst seeking closeness to caregiver when in distress. Inconsistent responsiveness from attachment figures may instead result in the child maximizing attention to attachment-related information, attempting to stay constantly close to the caregiver, called *anxious/ambivalent* attachment. Rejection or neglect by attachment figures may result in the child inhibiting attention to attachment-related information and increasing self-reliance, termed *avoidant* attachment. The need to seek proximity to a protective other, a safe haven, is the attachment system's primary operating strategy (Bowlby, 1969), and being separated from one's safe haven causes distress. The attachment figure is also perceived as a secure base, from which the individual can safely explore the environment and other social relationships, but return to for guidance and advice when needed.

In adulthood, attachment strategies are often directed towards friends and romantic partners, involving psychological rather than physical proximity. Even other entities such as God, a pet, or belonging to a certain group, can serve attachment functions in adulthood and become targets of proximity seeking behaviour (Mikulincer & Shaver, 2016; Zilcha-Mano, Mikulincer & Shaver, 2012). For example, Granqvist and colleagues (2012) found correspondence between interpersonal attachment orientation and attachment to God, in that attachment insecurities in close relationships contributed to corresponding insecurities in attachment to God. They also found that subliminal threat priming (words like failure or death) heightened cognitive access to God-related concepts and that priming with God-related stimuli heightened access to positive, secure-base related concepts (faster reactions to words like loving and accepting). Schindler, Thomasius, Petersen, and Sack (2009) studied whether substance abuse can act as an attachment substitute and found links between heroin abuse and fearful avoidance, cannabis abuse and secure and dismissing representations, and ecstasy abuse and insecure attachment in general. The hypothetical intrapersonal relationship between patients and their eating disorders could potentially also be interpreted within an

attachment framework. In the following section, findings that give indirect support to conceptualizing eating disorders as attachment relationships are reviewed.

## **1.8 THE PATIENT – EATING DISORDER RELATIONSHIP CONCEPTUALIZED AS AN ATTACHMENT RELATIONSHIP**

In terms of seeking proximity to ones eating disorder as a safe haven, findings in qualitative studies suggest the powerful need to stay close to one's eating disorder despite negative consequences such as losing other important relationships and giving up other things in life (Serpell, Treasure, Teasdale & Sullivan, 1999; Williams & Reid, 2012). Patients often describe their eating disorder as helping them to deal with and avoid negative emotions, feel safe and protected (Colton & Pistrang, 2004; Williams & Reid, 2012). There is also quantitative research supporting the notion that proximity to one's eating disorder is sought after in times of danger, threat, and distress. For example, being bullied in childhood/adolescence increases short-term risk for symptoms of AN, BN, and associated eating disorder features (Copeland, Bulik, Zucker, Wolke, Lereya & Costella, 2015). In addition, emotional abuse in childhood, mediated by inadequate emotion regulation, has been linked to eating disorder symptoms in undergraduate students (Burns, Fischer, Jackson & Harding, 2012). It is as though these different adverse and distressing events may cause certain individuals to engage in eating disorder symptoms as a way of dealing with the negative emotions they experience. Further, for eating disorder patients, symptoms seem to get accentuated in times of distress (e.g. Crosby, Wonderlich, Engel, Simonich, Smyth & Mitchell, 2009; Steinglass, et al, 2010), and engaging in them seems to reduce negative affect (Leehr, et al, 2015; Vansteelandt, Rijmen, Pieters, Probst & Vanderlinden, 2007). The long illness durations often reported (Keel, Mitchell, Miller et al, 1999; Steinhausen, 2002), the high relapse rates (Herzog, et al, 1999), and the findings showing that learning more adaptive emotion regulation strategies helps reduce symptom levels and avoid relapse (Ben-Porath, Federici, Wisniewski & Warren, 2014; Federici & Kaplan, 2008; Lenz, Taylor, Fleming & Serman, 2014), further suggest that patients seek and maintain proximity to their eating disorder for long periods of time, that separating from it is difficult, and that it potentially functions as a maladaptive strategy for regulating negative affect.

Regarding whether an eating disorder may be experienced as a secure base, statements from qualitative studies often imply that symptoms can be experienced as encouraging the individual to reach certain goals, provide direction, and make the individual feel special and strong (Surgenor, Plumridge & Horn, 2003; Weaver, Wuest & Ciliska, 2005). Eating disorder patients tend to have high personal expectations (for a review see: Franco-Paredes, Mancilla-Diaz, Vazquez-Arevalo, Lopez-Aguilar & Alvarez-Rayon, 2005), perform well cognitively (Gillberg, Råstam, Wentz & Gillberg, 2007; Lopez, Stahl & Tchanturia, 2010) and academically (Ahrén-Moonga, Silverwood, af Klinteberg & Koupil, 2009; Dura & Bornstein, 1989). Moreover, many patients attach positive value to their symptoms and regard their symptoms as ego-syntonic, i.e. consistent with needs, goals, and ideals (Roncero, Belloch,

Pepina & Treasure, 2013; Vitousek, Watson & Wilson, 1998). Roncero and co-workers (2013), found that the more ego-syntonic thoughts about eating and weight related behaviours were, the more interference they caused and the more patients tried to follow them- i.e. eating disorder - related thoughts that were aligned with the individual's goals were seen as providing good guidance and as advice worth following. In research on the anorexic voice, pathological eating attitudes and illness duration are positively associated with patients' perceiving the voice as helpful and omnipotent (Pugh & Waller, 2016b), while many patients feel affiliation toward their voice despite it being harsh and forceful (Tierney & Fox, 2010). Taken together, these studies provides circumstantial support for how an eating disorder may be perceived as a strong and wise secure base that patients are likely to comply with.

Resisting separation from and loss of one's attachment figure is a strong inclination on part of the attached individual (Bowlby, 1982). Regarding separation from or loss of an eating disorder, findings in qualitative studies clearly show the ambivalence and difficulties patients experience in relation to separating from their illnesses (Tan, Hope & Stewart, 2003; Williams & Reid, 2012). Furthermore, as has been mentioned earlier, long illness duration, treatment resistance, drop-out from treatment, and high relapse rates are common in eating disorders (e.g. Abbate-Daga, Amianto, De-Bacco & Fassino, 2013; Fassino, et al., 2009; Federici & Kaplan, 2008; Halmi, 2013) and suggest that patients are somehow inclined to cling on to their eating disorder. Common for most patients is an intense fear of losing control over eating and a determination to manipulate food intake and energy expenditure for weight control purposes (Vitousek, Watson & Wilson, 1998). These symptoms are inevitably in conflict with treatment approaches where the goal is to normalize eating and weight, to reduce compensatory behaviours, and where the control over what, when, and how much the patient eats may be taken away from the patient. Since many individuals experience their symptoms as helpful and in line with their pursuit for thinness, relinquishing these symptoms might be highly difficult. Finally, 50% of AN patients, 28% of BN patients, and 25% of patients with EDNOS, (now OSFED) are still ill 10 or more years following intake (Keel & Brown, 2010), indicating that for many, losing one's eating disorder is indeed unthinkable.

## **1.9 INTERPERSONAL THEORY: HOW AN EATING DISORDER MAY BECOME AN ATTACHMENT RELATIONSHIP**

Interpersonal theory (Benjamin 1974; Henry, 1994; Sullivan 1953) is closely related to attachment theory and shares its primary assumptions, but focuses on interpersonal relating throughout life, and provides a detailed model for understanding and investigating adult interpersonal relationships. Interpersonal behaviours in attachment relationships and how these affect self-evaluation are in focus, and there is a strong belief that interpersonal behaviours can be connected to both causes and cures of mental illness (Sullivan, 1953). Interpersonal behaviours are assumed to occur along the dimensions of dominance and affiliation, and in dyadic interactions, actions by one person tend to match reactions by the other, a principle known as complementarity (Benjamin, 1974).

Expanding on Bowlby's theory of early relationships providing templates for internal working models of interpersonal behaviour, interpersonal *copy process theory* was developed by Benjamin (2003). The theory focuses on how internal working models of attachment are applied and expressed later on in life and aims to increase the precision in how the links between past and present interpersonal behaviour can be understood. Benjamin proposes three ways of linking adult behaviour with behaviour in early attachment relationships: *Identification*, where present interpersonal behaviour copies that of important others; *Recapitulation*, where present interpersonal behaviours copy how one used to behave in response to important others; and *Introjection*, where present ways of relating to oneself reflect how important others used to treat one. Copy process patterns are considered to be driven by attachment-based needs to maintain psychological proximity to important others (Benjamin, 2003). As the potential intrapersonal patient – eating disorder relationship may have important consequences for how patients' treat themselves the process of introjection is in focus here. According to Benjamin, introjection occurs in attachment relationships, but not in other relationships. Through introjecting the interpersonal patterns of attachment relationships, one's self-image (formally the *introject*, i.e. self-directed behaviour and evaluation) is formed. The key idea is that salient and repeated features of early interpersonal interactions are internalized, facilitating the development and maintenance of an individual's internal working models<sup>1</sup>. By incorporating these relationship patterns into one's self-image, proximity to caregivers and a psychological sense of felt security can be maintained. Since the primary motive for copying these interpersonal relationships onto the intrapersonal is the provision of psychological proximity, even maladaptive relationship patterns will be introjected and actively maintained. This means that early mistreatment of an individual will be reflected in that person's self-image later in life, and that social interactions later in life will be interpreted in ways confirming the introjected relationship and the resulting self-image. Thus, frequent criticism from an important other results in a critical self-image, and as such, criticism from others will be noticed, inferred, or elicited to confirm that self-image and maintain proximity to the important other. As will become evident in the next section, there is extensive research highlighting the connection between self-neglect, -criticism, -attack, and – control on the one hand, and eating disorders on the other. If the eating disorder is managed by attachment, then these aspects should be introjected. That is, eating disorder admonitions such as “you are fat” or “you lack self-discipline” will eventually become part of how an individual treats and evaluates him/herself: self-punishment, self-attack and self-oppression become habitual and pervasive across life roles and domains.

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<sup>1</sup> Introjection as a concept within psychoanalytic theory is more widely defined, and includes internalising other external experiences besides interpersonal ones. In the present text however, introjection is used according to Benjamin's definition.

## 1.10 SELF-IMAGE AND EATING DISORDERS

The construct of self-image (Benjamin, 1974) offers a multifaceted operationalization of how a person tends to behave towards and evaluate him- or herself<sup>2</sup>. It captures an evaluative component, similar to that of self-esteem (Rosenberg, 1989) but in terms of self-loving to self-rejecting behaviours. It also captures self-regulatory behaviours (i.e. degree of self-control vs. letting go, Benjamin, 1974). As such, using self-image when investigating underlying psychological mechanisms in eating disorders serves several purposes: it contributes high precision regarding aspects in self-evaluation/treatment particularly salient to eating disorders, and could help explain the potential patient – eating disorder relationship via the theoretical concept of introjection.

Eating disorder patients' self-image profiles are diagnostically distinct and significantly more negative than controls (Björck, et al, 2003). A negative self-image has been identified as a risk factor for eating disorders (e.g. Fairburn, et al, 1999), is associated with poor outcome (Björck, Clinton, Sohlberg & Norring, 2007) and predicts dropout from treatment (Björck, Björck, Clinton, Sohlberg & Norring, 2009). More specifically, high levels of self-hate increase the risk of poor outcome in eating disorders (Björck, et al, 2007), and different aspects of self-image predict outcome and suicidality in different eating disorder diagnostic groups (Andersén & Birgegård, 2017; Birgegård, Björck, Norring, Sohlberg & Clinton, 2009; Forsén Mantilla, Norring & Birgegård, 2017). Aspects of self-image thus contain valuable information about symptoms, prognosis and outcome, but until now, the reason why these strong associations may occur has rarely been discussed or explained.

If an eating disorder resembles an important relationship partner, according to interpersonal theory, the eating disorder could overshadow and take precedence over earlier introjected patterns of relating to both self and others and/or be a result of such patterns. This implies either that certain ways of relating to the self are manifested in terms of eating disorder symptoms, or indeed that eating disorder symptoms influence self-image via introjection. Either way, the eating disorder could constitute a way of confirming and maintaining a negative self-image and psychological proximity to an introjected important other. Much like in an abusive relationship (Tierney & Fox, 2011), the demands of the eating disorder undermines the patient's ability to trust the part of the self that is separate from and relates to the eating disorder, and the more omnipotent the eating disorder becomes, the more likely is the patient to blame and attack that part of the self for not meeting the demands of the illness. With increasing interpersonal isolation, the "authority" of the eating disorder may become even more exclusive and pervasive, and the opinions and worries of others subordinate. As a result, the eating disorder could become the primary influence on self-image. Depending perhaps on how well the eating disorder helps regulating negative affect (i.e. as safe haven) in relation to how lacking the individual's own such resources are, its influence on self-image

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<sup>2</sup> Previously in this text terms such as self-directed behaviours, self-treatment and self-evaluation have been used. These will now be subsumed under the term self-image.

could vary. When the eating disorder is the most vital relationship one has, perhaps as a consequence of increasing social isolation, it will have an undue impact on the self-image. There is empirical support for SASB-defined introjection, i.e. a link between treatment from others and self-image (Critchfield & Benjamin, 2008), but the idea that an eating disorder may have attachment qualities, and as such could be introjected influencing patients' self-images, has not been tested previously.

### **1.11 THE STRUCTURAL ANALYSIS OF SOCIAL BEHAVIOUR**

The Structural Analysis of Social Behaviour (SASB, Benjamin, 1974; 2000) is a model based on interpersonal- and attachment theory, which encompasses self-image and interpersonal behaviours in a useful way. It is organized in a circumplex around two dimensions: Affiliation (love to hate) and Autonomy (control to autonomy), and the theory describes how these dimensions relate to corresponding interpersonal behaviours and self-image. There are three surfaces in the SASB, each representing a specific interpersonal focus; surface 1, focusing on another person (transitive action), surface 2, focusing on own reactions (intransitive reaction) and surface 3, internalized actions towards oneself (self-image/introject). On the transitive and intransitive surfaces, it has been suggested that behaviours linked to attachment quality are found mainly along the affiliation dimension, with adaptive behaviours occurring primarily in the right sector of each surface and maladaptive in the left (Benjamin, 1993). The autonomy dimension, which captures key elements of behaviour regulation in all three surfaces, seems to account for enmeshment/separation in attachment relationships (Pincus, Dickinson, Schut, Castonguay & Bedics, 1999), and is implied in the concept of exploration and guidance in attachment (Bowlby, 1977). On surface 3, the affiliation dimension conceptually approximates self-esteem (Pincus, Gurtman & Ruiz, 1998) with the autonomy dimension, and combinations of the two dimensions, accounting for self-regulation. Figure 1 shows the SASB model with its three surfaces. Points along the perimeter display combinations of the two underlying dimensions and form eight clusters. SASB variables have been shown empirically to relate to, for example, attachment, parental behaviours, social behaviours, social functioning, emotion regulation, self-esteem, and various types of psychopathology (Armeliu & Granberg, 2000; Björck, et al., 2003; Critchfield & Benjamin, 2008; Erickson & Pincus, 2005; Håkanson & Tengström, 1996; Jeanneau & Armeliu, 2000; Monell, Högdahl, Forsén Mantilla & Birgegård, 2015; Pincus, et al., 1999; Pincus, et al., 1998; Ybrandt, 2007).

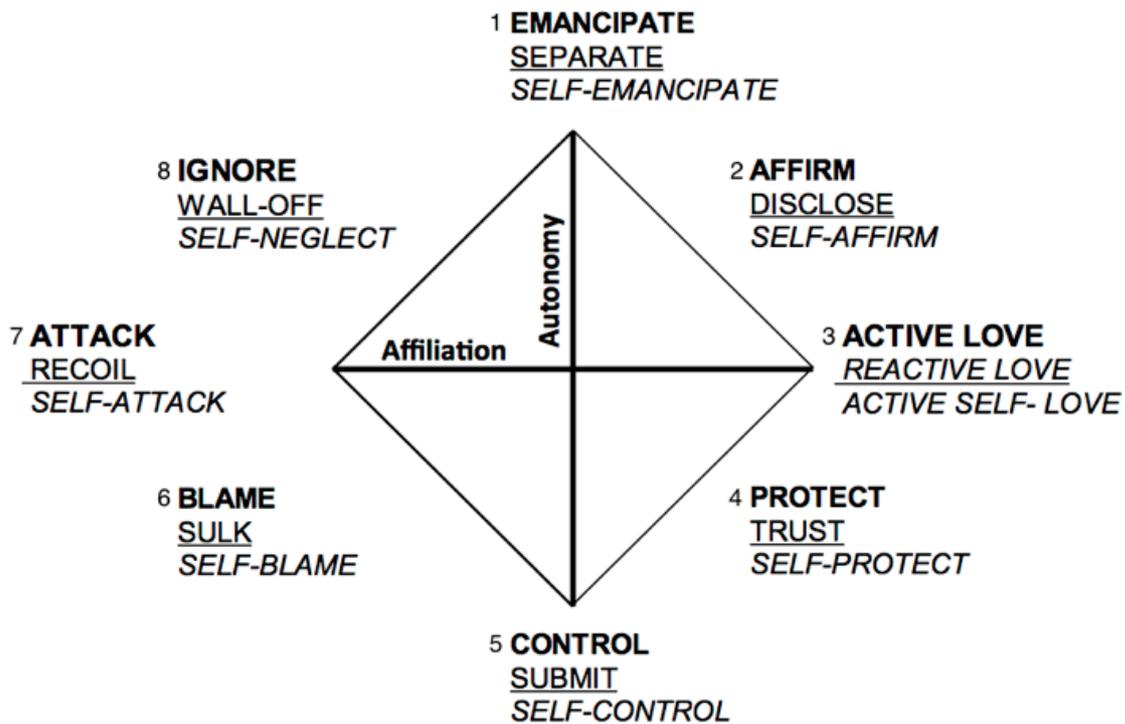


Figure 1. The simplified Structural Analysis of Social Behaviour (SASB) model (cluster version, all surfaces). Bold=Surface 1 (focus on other), underlined=Surface 2 (focus on self), italics=Surface 3 (self-image). From L. S. Benjamin (1996) *Interpersonal diagnosis and treatment of personality disorders* (2nd ed.). New York: Guilford Press. © The Guilford Press.

The SASB model has been successfully used to examine relationships other than human interpersonal relationships. Benjamin (1989) examined how psychiatric patients related to their auditory hallucinations using SASB. The patients had interpersonally coherent relationships with their voices and there were qualitative differences in relationships depending on diagnostic group. In another study, Sandor (1996) investigated how substance abusers related to their drug of choice (opiate vs stimulant). Both groups had well-articulated relationships with their drug of choice. Opiate abusers rated their drugs higher on protection and lower on control and attack, whereas stimulant abusers rated their drugs higher on sulking. Both groups felt love for their drugs and both groups submitted to their drug. No previous study has examined the patient - eating disorder relationship using the interpersonal SASB framework and method. If it is applicable, it could provide highly specific information about how patients perceive the influence of their disorder and respond to it, which may also give rise to ideas for tailored clinical interventions grounded in attachment- and interpersonal theory. It may also help explain previously observed associations between eating disorder symptoms and self-image variables in terms of introjection.

## **1.12 A HYPOTHETICAL MODEL**

Summarizing the background presented above, the overall hypothesis in this thesis project is that internalized aspects of eating disorders may function as a significant and emotionally salient relationship: governed by attachment behaviours, and influencing symptom levels through self-image. The studies in this thesis all examine different aspects of these guiding ideas. In the final study the overall summary model, assuming that the intrapersonal patient – eating disorder relationship and self-image mediate the link between attachment security and symptom levels, is also directly tested.

## **1.13 THE PRESENT PROJECT**

The overall aim of the thesis is to enhance the understanding of psychological processes in relation to eating disorders, through examining the perspective of eating disorders resembling intrapersonal relational partners, activating attachment mechanisms, influencing self-image via introjection, and in turn symptoms.

In the first study, associations between aspects of self-image and eating disorder symptoms are investigated in healthy and clinical children, both boys and girls. In the second study associations between aspects of self-image and eating disorder symptoms are investigated in adolescent and young adult groups of females (healthy, clinical, and non-help-seeking). In the third study, patients' ability to conceptualize their eating disorder in terms of a dyadic relationship and the potential impact of this relationship on symptom levels, illness duration, and self-image, was investigated. Degree of dissonance between patients and their eating disorders (i.e. the mismatch between the eating disorder's actions and the patient's reactions), and its impact on symptoms, illness duration, and self-image, was also investigated. In the fourth and final study, it was examined whether attachment mechanisms were activated in the patient – eating disorder relationship and if this then helps explain associations between self-image and symptoms in terms of introjection. A summary model was also posited and tested, in which individual differences in attachment security was thought to impact eating disorder symptoms via the patient – eating disorder relationship and its association with self-image.

To my knowledge, this is the first project investigating eating disorders in terms of internalised dyadic relationships, using systematic quantitative methods. Applying attachment theory and interpersonal theory in understanding the patient – eating disorder relationship and the connections between eating disorders and self-image may extend our understanding of the psychology involved in these complex conditions and offer insights about the potential subjective meaning and value patients attach to their disorders. This may in turn increase our understanding of why patients suffering from these disorders are often paradoxically ambivalent about recovery. It may also open new possibilities for adapting these fundamental theories to incorporate and measure intrapersonal relationships, and as such provide a new dimension of theoretical understanding of these disorders. It may offer a way of quantitatively studying a phenomenon that has only been qualitatively studied in the past, and

as such potentially contribute knowledge about variations between groups, and generalizability. It may also guide treatment, for instance in terms of what present and past relational patterns that need to be explored, and what the patient might need to begin separating from his/her eating disorder.

## **1.14 AIMS**

The detailed aims of the specific studies were:

**Study I.** To investigate associations between self-image aspects and eating disorder symptoms in a clinical and a healthy sample of adolescent boys and girls, and to investigate differences between the groups regarding such associations.

**Study II.** To examine and compare associations between self-image aspects and eating disorder symptoms in healthy, non-help-seeking, and clinical young women. To investigate diagnostic differences regarding associations between self-image aspects and eating disorder symptoms.

**Study III.** To examine the relationship between patients and their eating disorders, its potential effect on eating disorder symptoms, self-image, and illness duration, and possible diagnostic differences regarding the quality of the patient – eating disorder relationship. To examine the potential effects of dissonance between patients and their eating disorders on symptoms, self-image, and illness duration.

**Study IV.** To investigate attachment behaviours in relation to the patient – eating disorder relationship and to test whether eating disorder actions are introjected, matching the patients' self-images. To test the hypothetical model in which the patient – eating disorder relationship and self-image are assumed to mediate the relationship between attachment behaviours and eating disorder symptoms.

## 2 METHODS

A methodological overview is presented in Table 1.

Table 1. *An overview of participants, measures and statistical analyses.*

Study	I	II	III	IV
<b>Participants</b>	Healthy ( $N=482$ ): 238 girls, 244 boys.  Clinical ( $N=855$ ): 813 girls, 42 boys. Age range=12-15 yrs.	Healthy ( $N=388$ ).  Non-help-seeking ( $N=227$ ).  Clinical ( $N=6384$ ): AN=1567; BN=1755; EDNOS <sup>3</sup> =3062). All females. Age range=16-25 yrs.	Clinical ( $N=150$ ; AN=55, BN=33, EDNOS=62). All females. Age range 16-25 yrs.	Clinical ( $N=148$ ; AN=54, BN=33, EDNOS=61). All females. Age range 16-25 yrs.
<b>Attrition</b>	29% and 14%	59%, na, 15%	68%	68%
<b>Measures</b>	EDE-Q; SASB self-image; SEDI	EDE-Q; SASB self-image; SEDI	EDE-Q; SASB self-image; SASB relationship Intrex (surface 1+2); SEDI	EDE-Q; SASB self-image; SASB relationship Intrex (surface 1+2); ASQ; SEDI
<b>Statistical analyses</b>	Stepwise regression	Stepwise regression; Independent samples $t$ -test	MANCOVA with post hoc Scheffé; Stepwise regression; Independent samples $t$ -test; Chi-square	Pearson's $r$ ; Lin's concordance correlations; Paired samples $t$ -test; Double mediation analysis

*Note.* EDE-Q=eating disorder examination questionnaire; SASB=structural analysis of social behaviour; SEDI=structured eating disorder interview; na=not applicable; AN=anorexia nervosa; BN=bulimia nervosa; EDNOS=eating disorder not otherwise specified; MANCOVA=Multivariate analysis of covariance; ASQ=attachment style questionnaire

### 2.1 PARTICIPANTS

The thesis includes registry data from Stepwise, a large-scale naturalistic quality assurance database and data collection system for clinicians within specialized eating disorder care in Sweden (Birgegård, Björck, & Clinton, 2010), additional data from a selected clinical sample,

<sup>3</sup> All patients in these studies were assessed using DSM-IV. Hence, this group of patients was diagnosed with EDNOS (rather than the comparable DSM-5 diagnosis, OSFED).

data from three smaller samples of healthy controls, and one sample of non-help-seeking individuals.

Participants in **Study I** comprised one sample of healthy adolescent boys ( $n=244$ ) and girls ( $n=238$ ) drawn from schools in a small Swedish community (Östhammar), and one clinical sample of adolescent boys ( $n=42$ ) and girls ( $n=813$ ) with a DSM-IV eating disorder diagnosis in Stepwise. Age ranged from 12 to 14 in the healthy sample (girls:  $M=13.46$ ,  $SD=.50$ ; boys:  $M=13.48$ ,  $SD=.50$ ), with age estimate being based on the grade the participants were in. In the clinical sample, age ranged between 13 and 15 years (girls:  $M=14.26$ ,  $SD=.76$ ; boys:  $M=14.07$ ,  $SD=.87$ ). Attrition in the healthy sample was due to 171 adolescents being absent from school (for reasons unknown) on the day of data collection and 22 adolescents not fully completing the forms. Attrition in the clinical sample was due to incomplete registrations (12 patients), lack of consent to research (57 patients) and unspecific nature of eating disorder diagnosis (70 patients).

In **Study II** participants were all females and in the age range 16-25 years. The healthy sample was recruited in high schools in the Stockholm region and at Stockholm University. For the age group 16-18 year olds ( $M=16.7$ ,  $SD=.62$ ), 203 out of a possible 705 participants completed the questionnaires fully (response rate=30%). For the older group (19-25;  $M=22$ ,  $SD=1.84$ ), 185 out of 251 potential participants completed the questionnaires fully (response rate=74%). The non-help-seeking sample was recruited via online advertisements and a newspaper; 138 participants in the age range 16-18 years ( $M=16.8$ ,  $SD=.75$ ) and 89 in the age range 19-25 ( $M=21.2$ ,  $SD=1.77$ ) completed the questionnaires. This sample was originally intended to encompass subclinical, high-risk individuals, but symptom levels (see Results section) indicated that they were in fact ill but not in treatment. The clinical sample included female patients in the age range 16-25 years registered in Stepwise. After excluding males (231), patients with incomplete registrations (7), patients lacking eating disorder diagnosis (199), patients with unspecific eating disorder diagnosis (358) and patients not consenting to research participation (290), 2295 patients in the 16-18 age range and 4089 patients in the 19-25 age range remained (85% of original sample).

Participants in **Study III** and **Study IV** were 16-25 year old ( $M=20.5$ ,  $SD=2.7$ ) female eating disorder patients recruited via five specialized eating disorder treatment units. Data came from Stepwise and from additional questionnaires sent out to patients agreeing to participate. Inclusion criteria besides sex, eating disorder diagnosis and age, were no previous eating disorder treatment and an intention to treat the patient as an outpatient within specialized eating disorder care. Out of 471 eligible participants, 202 never responded when contacted about participation, 9 declined participation, 63 failed to send in their forms, 6 had been in previous eating disorder treatment and 12 had incomplete forms. The remaining sample in **Study III** consisted of 150 patients (32%), 55 diagnosed with AN, 33 diagnosed with BN and 62 diagnosed with EDNOS. Attrition analyses were carried out showing no significant differences between the total sample of eligible participants and the final sample regarding symptoms, BMI, age, self-image, and diagnostic distribution. The same clinical sample was

in focus in **Study IV**, but as another 2 patients had incomplete data on a form specific for this study, the remaining sample consisted of 148 patients: 54 with AN, 33 with BN and 61 with EDNOS. Again, attrition analyses showed no significant differences.

## 2.2 MEASURES

### 2.2.1 The Structural Analysis of Social Behaviour (SASB: Studies I-IV)

Figure 1 shows a simplified version of the SASB model (Benjamin, 1996), where end points of the two dimensions Affiliation and Autonomy and their combinations, form eight clusters of behaviours for each of the three surfaces. Items are formulated as statements and are rated on a 0 to 100 scale, with higher scores indicating greater agreement. In **Studies I-IV** self-image was assessed using the 36-item SASB intrex for Surface 3 (Benjamin, 2000). It measures self-directed behaviour centred on and around the two axes. The instrument discriminates well between clinical and normal samples (Benjamin, 2000), and between eating disorder diagnostic groups (Björck, et al., 2003). Both the original and the Swedish version have good internal consistency, with cluster alphas above .76 (Armeliu, 2001; Benjamin, 2000) and factor analyses confirm the underlying structure (Benjamin, 1974; 2000). In the different samples, alphas for the Clusters have varied. In **Study I**, five of the self-image Clusters (Self-affirmation, Self-love, Self-control, Self-blame, Self-hate) had acceptable alphas ( $>.70$ ) in both samples and for both boys and girls, and were thus analysed. In **Study II**, again five Clusters (Self-affirmation, Self-love, Self-protection, Self-blame, Self-hate) yielded acceptable alphas in all samples and age groups, and thus remained to be analysed. In the clinical sample in **Studies III** and **IV** only one Cluster (Self-emancipation) had alpha  $<.70$ , and was excluded from analysis.

In **Study III** and **Study IV**, patients also rated the 72-item SASB Intrex relationship form (Benjamin, 1996), in which actions towards the self from another (Surface 1) and own reactions in response to the actions of another (Surface 2) are assessed. In these studies, patients rated how their eating disorders acted towards them and how they reacted in response to their eating disorders. The original version has good test-retest reliability in psychiatric populations and good internal validity with alphas  $>.82$  (Benjamin, 2000). The Swedish version has acceptable alphas ( $>.65$ ) for the dimensional endpoints of Surface 1 and 2 (Armeliu & Hakelind, 2007). In **Study III**, both the Clusters and the affiliation dimension of Surface 1 and 2 were analysed. As alphas for the Clusters varied from low to good in the sample the following adjustments were made. On Surface 1, Clusters 2, 3, 5 and 6 had acceptable alphas (ranging from .69 to .80), with Clusters 1 and 7 attaining acceptable alphas ( $>.71$ ) when one item in each cluster (items 23 and 27) was removed, and so the optimized versions of these Clusters were used. Clusters 4 and 8 on Surface 1 had alphas below .65 and were excluded from the analyses, although descriptive data on them are presented. On Surface 2, Clusters 3, 4, 5 and 7 had acceptable alphas (ranging from .73 to .81). Cluster 2 attained acceptable alpha (.69) when one item (item 35) was removed, and consequently this

version of the cluster was used. Clusters 1, 6 and 8 had alphas below .65 and were excluded from analyses. For the affiliation dimension (**Study III** and **Study IV**), alphas for positive affiliation (Cluster 2, 3, 4) and negative affiliation (Cluster 6, 7 and 8) were acceptable for both Surfaces (i.e.  $>.67$ ). For the autonomy dimension (**Study IV**), alphas for autonomy (8, 1, and 2) and control (4, 5 and 6) were also acceptable for both Surfaces (i.e.  $>.67$ ).

### **2.2.2 The Eating Disorder Examination Questionnaire (EDE-Q: Studies I-IV)**

This self-report measure consists of 36 items measuring the core pathology of eating disorders (Fairburn & Beglin, 1994). For participants younger than 18 years, a version of the instrument specifically adopted to suit adolescents (Carter, Stewart & Fairburn, 2001) was used. The queried time-frame in this version is 14 days instead of 28, and the language is more age-appropriate. Items are scored on a 7-point scale except frequencies of core eating disorder behaviours (e.g. objective binge-eating, purging, taking laxatives), which are assessed as number of occurrences. It results in a Global scale score and four subscale scores; Eating concern, Shape concern, Weight concern, and Restraint. The EDE-Q is commonly used and has good psychometric properties (Berg, Peterson, Frazier & Crow, 2011) and reference data from age appropriate Swedish populations (Forsén Mantilla & Birgegård, 2016; Welch, et al., 2011).

### **2.2.3 The Structured Eating Disorder Interview (SEDI: Studies I-IV)**

All patients were initially assessed with this semi-structured interview in order to determine eating disorder diagnosis. The SEDI is based on the diagnostic categories specified in DSM-IV, but results can be transformed to approximate eating disorder diagnoses as represented in DSM-5 too. Patients answer 20-30 questions depending on which criteria they fulfil. Its concordance with the Eating Disorder Examination Interview (Cooper & Fairburn, 1987) regarding presence of eating disorder is 90.3% (sensitivity=.91, specificity=.80), and 81.0% with regards to specific DSM-IV eating disorder sub-diagnosis (Kendall's Tau-b .69,  $p<.001$ ; De Man Lapidoth & Birgegård, 2010). Clinicians are presented with a preliminary suggested diagnosis and weigh in other clinical data as well as the totality of the Stepwise assessment to establish a final diagnosis.

### **2.2.4 The Attachment Style Questionnaire (ASQ: Study IV)**

This 40-item instrument developed by Feeney, Noller, and Hanrahan (1994) assesses attachment behaviours dimensionally on a 6-point scale. It focuses how the respondent relates to others in general without specifying a specific target for the attachment behaviour. Its subscales represent five dimensions of behaviours: Confidence, Need for approval, Preoccupation with relationships, Discomfort with closeness and Relationship as secondary.

Due to high inter-scale correlations, “Discomfort with closeness” and “Relationship as secondary” ( $r=.53, p<.001$ ) were combined into one avoidant dimension, and “Preoccupation with relationships” and “Need for approval” ( $r=.52, p<.001$ ) into one anxious/ambivalent dimension, when analysed in **Study IV**. ASQ has good validity and reliability both in its original form (Feeney, et al., 1994; Mikulincer & Shaver, 2007) and in its Swedish translation (Håkansson & Tengström, 1996).

## **2.3 PROCEDURE**

All studies are cross-sectional, meaning that data was derived from one occasion in the different study groups. How data collection commenced will be specified separately for each study below, but as the Stepwise assessment is identical for all patients, this procedure will be described first.

### **2.3.1 Stepwise assessment**

For the clinical groups (**Studies I-IV**), the Stepwise assessment occurred within patients’ first three visits to a specialized eating disorder treatment unit. Prior to the assessment, patients receive information about the procedure and about research participation being voluntary via an electronically registered opt-out procedure. The Stepwise assessment is carried out by clinicians and starts off with the Structured Clinical Interview for DSM-IV Axis 1 disorders (SCID-I; First, Spitzer, Gibbon & Williams, 2002), the SEDI and clinical ratings of functioning and eating disorder severity. After this, the patient completes self-report questionnaires (EDE-Q, SASB, and other instruments not considered here). During the first part of the assessment the clinician is seated at the computer recording the responses with the patient seated opposite. When completing the self-report questionnaires, the patient sits at the computer recording his/her responses. The assessment takes about 45 minutes in total. Information obtained from Stepwise included in this thesis was: eating disorder diagnosis, age, BMI, sex, EDE-Q, and SASB self-image.

### **2.3.2 Study specific procedures**

The collection of data (on EDE-Q and SASB self-image) from the healthy sample in **Study I** was carried out during school hours in the classrooms. Data was collected over a two-week period. The research administrator followed a protocol for instructions and procedure. Participants were informed about the voluntary nature of participation and about their responses being confidential. Prior to data collection, letters were sent to teachers and parents about the aim and procedure of the study. Parents were encouraged to contact the project supervisor if they had questions or did not want their child to participate. No parents objected.

Data for the clinical sample was obtained from Stepwise. The Stockholm Ethical Review board has approved the use of both samples in this study (Dnr 2013/82-31/4).

The healthy sample in **Study II** was recruited partly via high schools (16-18 year olds) and partly via Stockholm University (19-25 year olds). Regarding the younger group, letters were sent to parents and teachers informing about the study and encouraging parents to contact the project supervisor if they had questions or concerns. No parents objected to their child participating. Teachers informed students about the study, but there was also information available on the schools' intranet and on posters around the schools. All were informed that participation was voluntary and confidential. Students completed the questionnaires (EDE-Q, SASB self-image, and some other questionnaires not considered here) via a secure online connection during school hours. All participants gave their informed consent prior to filling out the questionnaires. Completion of the questionnaires took about 30 minutes. The student health team was well informed about the study in case participation should raise worry or concern for any of the students. Regarding the older student sample, they were recruited via lectures, ads around the university and via a drop-in on-site at a university department. All participants were informed about participation being voluntary and confidential and all had to give their written informed consent prior to participating. Completing the questionnaires (EDE-Q, SASB self-image and other measures not considered here) took about 30-40 minutes. Individuals who dropped in completed the forms on site; other participants received the material by post together with a pre-paid response envelope. Participants were rewarded course credit or a gift certificate (approx. USD 15, for more details on this data collection see Monell, et al., 2015). The sample of non help-seekers was recruited via advertisements online and via a local newspaper. The ads called for participants with some concerns about their shape and weight and with a wish to improve their self-esteem. Individuals responding to the ad received an email with a secure link to the online forms. Prior to filling out the forms, individuals had to state whether they had been in, or were in eating disorder treatment. This was in an attempt to ensure this sample comprised high-risk individuals and not individuals with full eating disorder. They also gave their informed consent prior to starting the investigation. Participants judged as in the risk zone of developing an eating disorder were offered a place in a prevention program or advised to seek eating disorder treatment if judged as too ill for the prevention intervention. The final sample most likely consisted of both subclinical and ill individuals with the common factor of not having had any treatment. The clinical sample came from Stepwise. The Stockholm Ethical Review board has approved this study (Dnr 2013/82-31/4).

In **Studies III-IV**, patients were recruited via five selected eating disorder treatment units in Sweden. In relation to conducting the Stepwise assessment, clinicians at the participating units informed eligible participants (inclusion criteria: eating disorder diagnosis, female, 16-25 years of age, intention to treat the patient within eating disorder care as an outpatient) about the study and subsequently contacted by a research assistant informing them further and asking them about participation. Clinicians and the research assistant adhered to protocols of how to inform patients about the study. Patients who agreed to participate

received additional forms (SASB Relationship Intrex, ASQ, and one other measurement not included here) by mail, along with informed consent and a pre-stamped return envelope. Completed forms were rewarded with a gift card of 100 SEK (approx. 15 USD). The Stockholm Ethical Review board has approved these studies (Dnr 2013/968-31/5).

## 2.4 STATISTICAL ANALYSIS

When describing the symptom profiles for the different groups in **Study I**, the critical cut-off scores for eating disorder risk on the EDE-Q global scale were adopted (Ekeröth & Birgegård, 2014): non-AN girls  $\geq 2.17$ ; AN girls  $\geq 2.0$ ; AN and non-AN boys  $\geq 1.06$ . Cronbach's alpha values of the EDE-Q scales and the SASB clusters were examined. Variables with  $\alpha < .70$  for both boys and girls in either sample were excluded. This resulted in the exclusion of three SASB clusters (Cluster 1: self-emancipation, Cluster 4: self-protection and Cluster 8: self-neglect). Using stepwise regression analysis, associations between aspects of self-image and eating disorder symptoms were investigated. Prior to analysis, bivariate outliers were defined as observations with jack-knife residuals beyond the critical  $t$  for  $p < .01$ . This resulted in elimination of between 1.6% and 5% of the participants in the different groups. Jack-knife residuals are studentized deleted residuals distributed as  $t$  with  $df = n - k - 2$ , where  $k$  is the number of predictors (Kleinbaum, Kupper & Muller, 1988). This outlier elimination procedure controls for different group sizes and number of predictors.

In **Study II** descriptive statistics on SASB clusters and EDE-Q scales are first presented. The distribution of variables was checked prior to analysis, and as two variables (SASB Cluster 7 [self-hate] in the healthy samples, and SASB Cluster 2 [self-acceptance] in the 16–18 year old BN patients) had skewed distributions, the logarithms of these were calculated and used in subsequent analyses. Cronbach's alpha of SASB clusters and EDE-Q were examined, and found to be  $< .70$  for the same three clusters as in **Study I** (see above), hence resulting in the exclusion of these. The results were then analysed using stepwise regression with EDE-Q global score as dependent variable and the SASB clusters as independent variables. Prior to the analysis, the outlier elimination procedure applied in **Study I** was again applied. This resulted in elimination of between 0.7 and 4.2% of the participants in the different groups. Outliers were removed consecutively from the models (i.e. after removing potential outliers the procedure was repeated until no further outliers were found), before the Stepwise regressions were computed. Due to having large clinical groups, there was a risk of over including predictor variables in the regression models. Therefore only variables significant at the .001 level (.01 for the healthy and non-help-seeking samples due to smaller sample sizes) and contributing more than 1% independent variance to the models are reported.

In **Study III**, descriptive statistics for the clusters on both SASB relationship surfaces are presented for each diagnostic group. To investigate diagnostic differences in how patients relate to their eating disorders, two MANOVAs with post hoc Scheffé tests were conducted (one comparing eating disorder actions and one patient reactions). The analyses were also

carried out as MANCOVA's, adding illness duration and eating disorder symptom level as covariates. Outliers, standardized scores of (+/-) 3 or more from the mean, in total six scores from five clusters and four individuals) were removed before the analyses. Also, one patient had incomplete data on SASB self-image and EDE-Q, and was hence excluded from the analyses involving these measurements. Investigating whether certain aspects of the patient – eating disorder relationship were associated with specific eating disorder symptoms and illness duration in the group as a whole, stepwise regression analyses were conducted in which clusters of each surface (1 and 2) predicted the EDE-Q subscales restraint, eating concerns, shape concerns, weight concerns, as well as illness duration independently, whilst controlling for initial symptom status. Prior to the regression analyses the same outlier elimination procedure as in the previous studies was applied and resulted in the elimination of between 0 and 15 scores. Finally, degree of dissonance between eating disorder actions and patient reactions and its potential importance for eating disorder symptoms, self-image and illness duration, was examined. Following SASB conventions two new variables were created: weighted scores<sup>4</sup> of Clusters 2, 3, and 4 (Affirm, Active Love and Protect for Surface 1 and Disclose, Reactive Love and Trust for Surface 2) were combined into positive affiliation and Clusters 6, 7, and 8 (Blame, Attack and Ignore for Surface 1 and Sulk, Recoil and Wall-off for Surface 2) were combined into negative affiliation. Cluster 5 was used to measure low autonomy (Cluster 1 was excluded due to low alpha on Surface 2). Scores of patients' reactions were subtracted from the scores of the eating disorders' actions in each of the variables. Scores with a positive sign meant that the eating disorder was acting more intensely, whereas scores with a negative sign meant the patient was reacting more intensely (i.e. for affiliation, who is rated as more hostile or friendly in the relationship, and for autonomy, whether the patient separates or submits more or less than the eating disorder frees or controls). The variables were then coded into dummy variables representing patients reacting more and less intensely than their eating disorders were acting. Independent samples t-tests were used to test for differences between the groups on EDE-Q subscales, self-image clusters and illness duration. Chi-square tests were used to test for differences in presence/absence of key eating disorder behaviours (purging, OBE, using laxatives, using diuretics and exercising excessively). To reduce Type I error in all analyses conducted, Bonferroni adjustment was applied, yielding a study-wide  $\alpha=.002$  for significance.

In **Study IV** we started off examining Pearson's  $r$  correlations between the three ASQ dimensions (avoidant, anxious/ambivalent and secure) and the weighted vector scores (see footnote 4) for SASB affiliation and autonomy for each surface (eating disorder actions and patients' reactions). Bivariate outliers were removed using jack-knife residuals prior to analysis, in a similar manner as in previous studies. This resulted in the elimination of 0-4 values in the different pairs. Also, as was mentioned above, one patient lacked data on SASB

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<sup>4</sup> Weights were assigned according to Benjamin (2000) based on each cluster's proximity to the Affiliation dimension (Clusters 3 and 7 are multiplied by 7.8, and the diagonal clusters by 4.5), divided by 16.8 (the sum of the weights, which deviates from Benjamin (2000) but is preferred since it brings the weighted score back to the original scale of 0 to 100).

self-image and EDE-Q, and was hence excluded from the analyses involving these measurements. For the hypothesis of introjection to be supported, concordance between patient's Introject (self-image, Surface 3) and eating disorder actions (Surface 1) should be higher than concordance between patients' reactions (Surface 2) and Introject. Benjamin (2000), recommends defining two profiles as matching when Pearson's correlation  $r \geq .71$  or more, equivalent to at least 50% shared variance. To assess introjection in this study, we decided to use Lin's concordance correlation coefficient, taking into account both distance between scale points and similarity in profile (thus constituting a more conservative test than Pearson's  $r$ ). The 8-point profile for eating disorder actions (Surface 1) was correlated with the 8-point self-image profile (Surface 3) within subjects. The mean coefficient for introjection was then contrasted using paired samples  $t$ -test, with the mean coefficient of patient reactions (Surface 2) and self-image (Surface 3). We checked for univariate outliers prior to analysis, but no value exceeded  $\pm 3$  from the mean. Finally we tested a double mediation model (using the PROCESS macro for SPSS developed by Hayes, 2013) where the relationship between attachment security<sup>5</sup> and eating disorder symptoms was assumed to be mediated by eating disorder control/autonomy and Self-blame (Figure 2). Prior to analysis, Mahalanobi's distance scores were checked but as no value exceeded the critical point (at  $p = .001$ ), no value was deleted. To assess effect sizes for indirect effects, partially standardized effect sizes were examined and statistical inferences for indirect effects were based on the confidence intervals (CIs) of 10 000 bootstrap samples. For all the above-mentioned analyses, IBM SPSS Statistics (versions 22-24) was used.

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<sup>5</sup> The Confidence scale was used as it most strongly correlated with eating disorder symptoms ( $r = -.38, p < .001$ ). I also tested substituting the Confidence scale with the each of the other two ASQ scales, with the overall result remaining robust (data not shown).

### 3 RESULTS

The results of this thesis project will be presented separately for each study.

#### 3.1 STUDY I

##### 3.1.1 Descriptive data on SASB clusters and EDE-Q global scale

Table 2 shows descriptive data on self-image and eating disorder symptoms for the clinical and healthy boys and girls. Healthy girls expressed lower overall autonomy compared to boys (48% and 34%, respectively, below zero on the autonomy vector score), but in general both groups had positive self-images (82% of girls and 95% of boys scoring above zero on the affiliation axis). Among the healthy girls, 24% scored risk-level eating disorder symptoms, while the same number for the boys was 18%. In the clinical sample, both boys and girls were largely controlled (girls=80%, boys=66%). Most clinical boys (81%) displayed an overall positive self-image, compared to less than half of the girls (47%). Mean differences in EDE-Q scores differed between samples, with healthy individuals scoring significantly lower than clinical individuals (see Forsén Mantilla & Birgegård, 2016, for further analysis and discussion).

Table 2. Means and standard deviations for SASB clusters and EDE-Q global scale.

Subscales	Healthy sample (N = 482)		Clinical sample (N = 855)	
	Girls (n = 238)	Boys (n = 244)	Girls (n= 813)	Boys (n= 42)
	M (SD)	M (SD)	M (SD)	M (SD)
Self-affirmation	63.6 (22.95)*	71.4 (17.33)	38.5 (25.94)*	52.8 (27.77)
Self-love	58.9 (21.28)	61.6 (18.04)	36.1 (23.37)*	53.2 (25.94)
Self-control	53.2 (18.03)*	56.5 (16.44)	55.8 (19.28)	55.1 (23.71)
Self-blame	28.8 (23.96)*	20.3 (18.68)	46.7 (26.55)*	26.6 (22.58)
Self-hate	21.0 (20.71)*	16.4 (17.09)	36.9 (26.37)*	16.6 (18.74)
EDE-Q Global	1.4 (1.34)*	.6 (.81)	3.2 (1.65)*	2.1 (1.57)

Note: SASB = Structural Analysis of Social Behaviour; EDE-Q = Eating Disorder Examination Questionnaire.

\*=significant at the 0.05 level in comparison with the boys in the same sample.

### 3.1.2 Associations between eating disorder symptoms and self-image aspects: healthy sample

For both boys and girls in this sample, Self-blame and inversely Self-affirmation contributed significantly to global eating disorder symptom level (Table 3). Self-blame was the strongest predictor out of the two in both groups. The association between self-image and eating disorder symptoms was notably stronger among the girls than among the boys ( $R^2=.31$  vs.  $R^2=.08$ ,  $p$  for difference  $<.001$ )<sup>6</sup>.

Table 3. Stepwise regression results using SASB cluster subscales to predict eating disorder symptoms on the EDE-Q: Healthy sample

Models	$r^2$	$R^2$	$t$	$p$	$\beta$
<i>Girls</i>					
Step 1: <i>Self-blame</i>	.27	.27	4.97	.000	.36
Step 2: <i>Self-affirmation</i>	.03	.31	-3.29	.001	-.24
<i>Boys</i>					
Step 1: <i>Self-blame</i>	.06	.06	2.69	.008	.19
Step 2: <i>Self-affirmation</i>	.02	.08	-2.13	.034	-.15

Note: SASB = Structural Analysis of Social Behaviour; EDE-Q = Eating Disorder Examination Questionnaire.

### 3.1.3 Associations between eating disorder symptoms and self-image aspects: clinical sample

For boys, higher Self-blame and lower Self-love were associated with more eating disorder symptoms (Table 4), with Self-love contributing more to the model than Self-blame. For girls, again, Self-blame and inversely Self-affirmation were most strongly associated with symptoms (Table 4), contributing almost equally to the model. The associations between self-image aspects and eating disorder symptoms were remarkably strong in both groups (explained variance  $>60\%$  for both boys and girls).

<sup>6</sup> The full models  $R$ s of the groups were compared using a  $z$ -test (Simple Interactive Statistical Analysis: SISA).

Table 4. Stepwise regression results using SASB cluster subscales to predict eating disorder symptoms on the EDE-Q: Clinical sample

Models	$r^2$	$R^2$	$t$	$p$	$\beta$
<i>Girls</i>					
Step 1: <i>Self-blame</i>	.55	.55	15.39	.000	.46
Step 2: <i>Self-affirmation</i>	.09	.64	-13.80	.000	-.41
<i>Boys</i>					
Step 1: <i>Self-love</i>	.62	.62	-5.66	.000	-.62
Step 2: <i>Self-blame</i>	.07	.69	2.83	.000	.31

Note: SASB=Structural Analysis of Social Behaviour; EDE-Q=Eating Disorder Examination Questionnaire.

## 3.2 STUDY II

### 3.2.1 Descriptive data on SASB clusters and EDE-Q global scale

Descriptive data on self-image and eating disorder symptoms is presented in Table 5. The healthy groups scored the lowest on the EDE-Q Global scale, and displayed largely positive self-images. The non-help-seeking groups and the clinical groups scored similarly on both symptoms and self-image aspects. Out of the diagnostic groups (Table 5), BN patients had the most negative self-images and the highest EDE-Q scores (all differences were significant at the .001 level, data not shown).

Table 5. Means and standard deviations for SASB clusters and EDE-Q in all groups.

Subscales	Healthy sample (N=388)		Non-help-seeking sample (N=227)		Clinical sample (N=6384)							
	16-18 (n=203)	19-25 (n=185)	16-18 (n=138)	19-25 (n=89)	16-18 (n=2295)				19-25 (n=4089)			
					Total	AN	BN	EDNOS	Total	AN	BN	EDNOS
						(n=702)	(n=427)	(n=1166)		(n=865)	(n=1328)	(n=1896)
	<i>M (sd)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Self-affirmation	67.7 (22.9)	63.4 (21.0)	39.8 (23.5)	32.1 (21.7)	34.1 (22.2)	36.5 (23.8)	29.8 (20.1)	34.3 (21.6)	28.5 (19.3)	30.6 (20.6)	26.8 (18.6)	28.8 (19.1)
Self-love	63.9 (20.6)	63.8 (18.9)	36.1 (22.6)	33.2 (20.9)	33.4 (21.1)	34.5 (22.1)	30.6 (19.9)	33.8 (20.9)	30.5 (19.6)	30.7 (20.4)	29.1 (18.9)	31.4 (19.6)
Self-protection	64.2 (18.9)	65.4(15.8)	42.6 (19.8)	39.8 (18.9)	45.0 (20.0)	47.6 (20.3)	40.9 (19.0)	44.9 (19.9)	40.9 (19.5)	41.3 (20.0)	39.8 (19.0)	41.4 (19.5)
Self-blame	22.0 (19.2)	30.1 (21.9)	51.2 (26.0)	56.5 (24.1)	52.9 (24.6)	51.0 (25.4)	59.2 (23.4)	51.7 (24.2)	57.7 (23.0)	57.8 (24.0)	60.2 (21.9)	56.0 (23.1)
Self-hate	15.2 (16.7)	18.0 (17.6)	38.7 (27.4)	40.8 (26.6)	40.7 (25.2)	39.8 (26.2)	47.8 (24.6)	38.6 (24.4)	44.7 (24.2)	46.5 (25.1)	47.3 (23.7)	42.0 (23.9)
EDE-Q Global	1.70 (1.4)	1.73 (12.0)	3.56 (1.3)	3.94 (1.2)	3.6 (1.4)	3.27 (1.5)	4.25 (1.1)	3.56 (1.4)	3.90 (1.2)	3.59 (1.4)	4.18 (1.0)	3.84 (1.2)

Note. SASB=Structural Analysis of Social Behaviour; EDE-Q=Eating Disorder Examination Questionnaire; AN=anorexia nervosa; BN=bulimia nervosa; EDNOS=eating disorder not otherwise specified.

### 3.2.2 Associations between SASB clusters and eating disorder symptoms: healthy sample

In the younger group (16-18), Self-affirmation alone was strongly associated with EDE-Q scores (Table 6). In the 19-25 year olds, it was instead Self-blame that was exclusively associated with EDE-Q scores (the difference between age groups in variance explained was not significant).

Table 6. *Stepwise regression results using SASB cluster subscales to predict eating disorder symptoms: healthy sample.*

Models	$r^2$	$R^2$	$t$	$p$	$\beta$
<i>16-18 year olds</i>					
Step 1: Self-affirmation	.36	.35	-9.27	<.001	-.60
<i>19-25 year olds</i>					
Step 1: Self-blame	.30	.30	8.06	<.001	.55

*Note.* SASB=Structural Analysis of Social Behaviour

### 3.2.3 Associations between SASB clusters and eating disorder symptoms: non-help-seeking sample

Higher Self-blame and lower Self-affirmation (to an almost equally strong degree) were associated with more eating disorder symptoms in the 16-18 year olds (Table 7). In the 19-25 year olds, higher Self-blame and lower Self-love associated with more eating disorder symptoms, contributing significantly and equally to the model. The explained variance of both models was substantial (52% in both age groups).

Table 7. Stepwise regression results using SASB cluster subscales to predict eating disorder symptoms: non-help-seeking sample.

Models	$r^2$	$R^2$	$t$	$p$	$\beta$
<i>16-18 year olds</i>					
Step 1: Self-affirmation	.45	.45	-4.93	<.001	-.40
Step 2: Self-blame	.53	.52	4.72	<.001	.39
<i>19-25 year olds</i>					
Step 1: Self-love	.46	.45	-3.59	.001	-.39
Step 2: Self-blame	.53	.52	3.57	.001	.39

Note. SASB=Structural Analysis of Social Behaviour

### 3.2.4 Associations between SASB clusters and eating disorder symptoms: clinical sample

In the whole group of 16-18 year olds, higher Self-blame and lower Self-affirmation and Self-love were associated with eating disorder symptoms, explaining a total of 55% of the variance (Table 8). For young AN patients, Self-blame and Self-affirmation (in the expected directions) explained 61% of the variance in symptoms. In the young BN group, Self-blame and Self-love (in the expected directions) contributed most, explaining 39% of the variance. In the young EDNOS patients, higher Self-blame and lower Self-love predicted eating disorder symptoms explaining 53% of the variance. In the 19-25 year olds as a group, higher Self-blame and lower Self-love and Self-affirmation were associated with more symptoms, together explaining 42% of the variance (Table 9). For older AN patients, Self-blame and Self-love explained 52% of the variance in the expected directions. For the BN group, three clusters contributed significantly to the model: Self-blame and Self-hate positively and Self-love negatively, together explaining 37% of the variance. For older EDNOS patients, Self-blame, Self-love and Self-affirmation predicted eating disorder symptoms (explaining 39% of the variance) in the expected directions. All differences between diagnostic categories and

age groups<sup>7</sup> were significant with  $ps < .05$ , except between the two BN groups and between the older BN and EDNOS groups.

Table 8. *Stepwise regression results using SASB cluster subscales to predict eating disorder symptoms: clinical sample, 16-18.*

Models	$r^2$	$R^2$	$t$	$p$	$\beta$
<i>Full age group</i>					
Step 1: Self-blame	.46	.46	20.77	<.001	.40
Step 2: Self-affirmation	.54	.54	-9.16	<.001	-.23
Step 3: Self-love	.55	.55	-7.57	<.001	-.19
<i>AN</i>					
Step 1: Self-blame	.54	.54	14.03	<.001	.48
Step 2: Self-affirmation	.61	.61	-10.85	<.001	-.37
<i>BN</i>					
Step 1: Self-love	.32	.32	-8.20	<.001	-.39
Step 2: Self-blame	.40	.39	6.71	<.001	.32
<i>EDNOS</i>					
Step 1: Self-blame	.45	.45	16.12	<.001	.43
Step 2: Self-love	.53	.53	-13.88	<.001	-.37

*Note.* SASB=Structural Analysis of Social Behaviour; AN=Anorexia nervosa; BN=Bulimia nervosa; EDNOS=Eating disorder not otherwise specified.

<sup>7</sup> The full models  $R$ s of the different groups were compared using a  $z$ -test (Simple Interactive Statistical Analysis: SISA).

Table 9. Stepwise regression results using SASB cluster subscales to predict eating disorder symptoms: clinical sample, 19-25.

Models	$r^2$	$R^2$	$t$	$p$	$\beta$
<i>Full age group</i>					
Step 1: Self-blame	.34	.34	21.10	<.001	.33
Step 2: Self-love	.41	.41	-10.81	<.001	-.22
Step 3: Self-affirmation	.42	.42	-8.95	<.001	-.18
<i>AN</i>					
Step 1: Self-love	.46	.46	-13.07	<.001	-.44
Step 2: Self-blame	.52	.52	10.11	<.001	.34
<i>BN</i>					
Step 1: Self-blame	.30	.30	8.75	<.001	.29
Step 2: Self-love	.36	.36	-9.30	<.001	-.26
Step 3: Self-hate	.37	.37	4.79	<.001	.16
<i>EDNOS</i>					
Step 1: Self-blame	.31	.31	13.32	<.001	.31
Step 2: Self-love	.38	.38	-7.16	<.001	-.21
Step 3: Self-affirmation	.39	.39	-6.46	<.001	-.19

Note. SASB=Structural Analysis of Social Behaviour; AN=Anorexia nervosa; BN=Bulimia nervosa; EDNOS=Eating disorder not otherwise specified.

### 3.3 STUDY III

#### 3.3.1 Descriptive data on perceived eating disorder actions and patients' own reactions

In Table 10, data on how the diagnostic groups scored their eating disorders actions (SASB Surface 1) and their own reactions in response (SASB Surface 2) are presented. In general, the eating disorder was perceived as Controlling (Cluster 5), Blaming (Cluster 6) and as lacking Acceptance (Cluster 2). Patients in all three diagnostic groups tended to react by primarily submitting (Cluster 5) to their eating disorder's Control, and Sulk (Cluster 6) in response to its Blame<sup>8</sup>. There were no significant differences on any of the clusters of either surface between diagnostic groups.

#### 3.3.2 Associations between aspects of the patient – eating disorder relationship with eating disorder symptoms and illness duration

Table 11 presents the results of the stepwise regression analyses<sup>9</sup>. Higher eating disorder control (Surface 1, Cluster 5) was significantly associated with more Restraint, Eating Concern, Shape concern and Weight concern, explaining between 12% and 18% of the variance in each variable). The more patients submitted to their eating disorders (Surface 2, Cluster 5), the more Restraint, Eating concerns, Shape concerns and weight concerns they experienced (explaining between 7% and 13% of the variance in each variable). Neither eating disorder actions nor patients' reactions were associated with illness duration.

#### 3.3.3 The dissonance between the eating disorder's actions and the patient's reactions

With regard to dissonance in positive affiliation (where patients reacted either more [ $n=90$ ] or less [ $n=59$ ] positively than the eating disorder acted), it had no impact on self-image, eating disorder symptoms, or illness duration. But with regards to dissonance in negative affiliation (where  $n=38$  reacted more and  $n=111$  reacted less negatively than the eating disorder acted), patients reacting more negatively scored significantly higher on Self-acceptance, Self-love and Self-protection, and lower on Restraint, Shape concern, Weight concern, and global EDE-Q, compared to patients who reacted less negatively towards their eating disorder

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<sup>8</sup> The scores on these clusters are also high in comparison with normative data on conventional interpersonal relationships (Benjamin, 2000);  $\approx 5-1$  *SD* higher in Control/Submit and  $\approx 2.5-3$  *SD* higher in Blame/Sulk.

<sup>9</sup> These analyses were also conducted including all original SASB clusters regardless of alpha (for exploratory purposes). The overall pattern of results was similar to the results presented above.

Table 10. *Patients' experiences of how the eating disorder acts (SASB Surface 1) and how the patient reacts to the eating disorder (SASB Surface 2).*

Eating disorder acting (Surface 1)	Emancipate	Affirm	Active Love	Protect	Control	Blame
	<i>M (SD)</i>					
AN ( <i>n</i> =55)	27.4 (20.0)	22.5 (22.1)	29.9 (20.8)	44.3 (18.7)	72.0 (19.4)	69.8 (23.9)
BN ( <i>n</i> =33)	30.2 (17.9)	25.9 (21.7)	36.3 (23.7)	48.7 (18.5)	72.1 (16.9)	72.7 (16.9)
EDNOS ( <i>n</i> =62)	23.6 (15.5)	14.2 (15.5)	22.4 (15.1)	43.7 (17.6)	70.1 (19.7)	75.7 (19.8)
Patient reacting (Surface 2)	Separate	Disclose	Reactive Love	Trust	Submit	Sulk
	<i>M (SD)</i>					
AN ( <i>n</i> =55)	38.9 (18.7)	37.0 (18.4)	23.1 (19.6)	41.3 (23.6)	56.1 (22.6)	52.4 (21.3)
BN ( <i>n</i> =33)	39.4 (18.1)	38.3 (20.8)	30.6 (23.1)	43.3 (23.6)	61.8 (19.5)	54.4 (22.3)
EDNOS ( <i>n</i> =62)	37.2 (13.6)	36.6 (19.1)	21.1 (15.9)	39.5 (21.7)	59.1 (22.9)	54.2 (20.1)

Note: SASB=Structural Analysis of Social Behaviour; AN=Anorexia nervosa; BN=Bulimia nervosa; EDNOS=Eating disorder not otherwise specified.

Table 11. *Stepwise regression results using eating disorder actions (SASB Surface 1) and patients' reactions (SASB Surface 2) to predict EDE-Q subscale scores and duration of illness.*

Dependent variables	Eating disorder acting (SASB surface 1):						Patient reacting (SASB surface 2):					
	<i>Step</i>	Independent variables	$R^2$	$\beta$	$t$	$p$	<i>Step</i>	Independent variables	$R^2$	$\beta$	$t$	$p$
EDE-Q Restraint	1	Controlling	.17	.42	5.55	<.001	1	Submitting	.13	.35	4.59	<.001
EDE-Q Eating Concern	1	Controlling	.18	.42	5.7	<.001	1	Submitting	.12	.35	4.56	<.001
EDE-Q Shape Concern	1	Controlling	.14	.37	4.9	<.001	1	Submitting	.07	.27	3.4	.001
EDE-Q Weight concern	1	Controlling	.12	.35	4.59	<.001	1	Submitting	.08	.28	3.50	.001
Duration of illness	1	None	-	-	-	-		None	-	-	-	-

Note: EDE-Q=Eating Disorder Examination Questionnaire; SASB=Structural Analysis of Social Behaviour.(Table 12)<sup>10</sup>. Patients reacting less negatively still scored their eating disorders as acting negatively towards them, more so than the patients reacting more negatively ( $M=-31.7$ ,  $SD=24.8$ , and  $M=-12.5$ ,  $SD=17.6$ , respectively, on the affiliation vector of Surface 1;  $t=4.3$ ,  $p<.001$ , effect size  $d=.89$ ). The patients reacting more negatively also scored lower on submission in response to their eating disorder ( $M=45.2$ ,  $SD=21.9$ ), than patients reacting less negatively ( $M=63.2$ ,  $SD=20.2$ ;  $t=-4.62$ ,  $p<.001$ , effect size  $d=.70$ ). Groups based on the control/submission dimension did not differ significantly on any of the variables.

Table 12. Comparisons between those patients reacting with more negative affiliation on SASB Surface 2 toward their eating disorder and those with less negative affiliation, on SASB self-image clusters (Surface 3), EDE-Q subscales and duration of illness (in years).

Measure	More negative	Less negative	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
	reaction to eating disorder ( <i>n</i> =38)	reaction to eating disorder ( <i>n</i> =111)			
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )			
SASB Self-emancipation	35.8 (16.6)	30.1 (16.9)	1.81	ns	
SASB Self-affirmation	41.4 (23.5)	27.0 (17.9)	3.47	<.001	.69
SASB Self-love	40.7 (20.8)	28.5 (17.8)	3.49	<.001	.63
SASB Self-protection	51.0 (20.5)	38.0 (20.0)	3.43	<.001	.64
SASB Self-control	55.3 (15.2)	58.4 (20.8)	-.97	ns	
SASB Self-blame	48.6 (30.5)	59.9 (22.5)	-2.09	ns	
SASB Self-attack	34.4 (27.0)	47.5 (26.0)	-2.65	ns	
SASB Self-neglect	34.8 (26.5)	41.8 (23.1)	-1.53	ns	
EDE-Q Restraint	2.9 (1.3)	3.8 (1.5)	-3.41	<.001	.64
EDE-Q Eating Concern	2.7 (1.3)	3.4 (1.8)	-3.05	ns	
EDE-Q Figure Concern	3.9 (1.6)	4.9 (1.3)	-3.28	<.001	.69
EDE-Q Weight Concern	3.2 (1.7)	4.2 (1.5)	-3.30	<.001	.62
EDE-Q Total Score	3.2 (1.3)	4.1 (1.2)	-3.87	<.001	.72
Illness duration	4.3 (3.7)	5.1 (3.7)	1.17	ns	

Note: SASB=Structural Analysis of Social Behaviour. EDE-Q= Eating Disorder Examination Questionnaire.

<sup>10</sup> Cross-tabulating the affiliation variables and diagnoses and running Chi-square tests to examine differences within each affiliation variable showed no significant differences, i.e. diagnosis did not seem to impact reaction group membership.

### 3.4 STUDY IV

#### 3.4.1 Correlations between attachment behaviours and aspects of the patient – eating disorder relationship

In relation to attachment behaviours, SASB Autonomy was more important than Affiliation on both Surfaces 1 and 2 (Table 13)<sup>11</sup>. Higher scores on eating disorder autonomy (Emancipation) were significantly related to greater attachment security and lower avoidance and anxiety. Likewise, patients reacting with higher autonomy (Separation, i.e. lower submission) were significantly more secure and less avoidant and anxious (Table 13). More reject/attack from the eating disorder (lower eating disorder affiliation) significantly related to higher attachment anxiety and patients reacting with higher affiliation towards their eating disorders experienced lower attachment security.

Table 13. Descriptive statistics and Pearson's *r* between attachment behaviours and affiliation and autonomy of both eating disorder and patient.

	ED affiliation	ED autonomy	Patient affiliation	Patient autonomy
Secure	.123	.366**	-.218*	.466**
Avoidant	-.047	-.233*	.159	-.416**
Anxious	-.241*	-.359**	-.083	-.335**

Note: ED= eating disorder. \*= $p < .05$ , \*\*= $p < .001$

#### 3.4.2 Introjection of the eating disorder's actions

About one third of the sample (28.5%)<sup>12</sup> had highly similar self-image- (Surface 3) and eating disorder action (Surface 1) profiles ( $r_c$ 's > .71)<sup>13</sup>. Considerably fewer participants had self-image profiles (Surface 3) that matched their own reactions (Surface 2; 12.2% with  $r_c$ 's > .71). Contrasting the match between eating disorder actions (Surface 1) and self-image (Surface 3;

<sup>11</sup> Correlations for each diagnostic group were also computed, but the overall pattern was similar, with a possible addition that in BN patients, the affiliation vector seemed slightly more important in relation to attachment behaviours than in the other two groups. Due to the lack of statistical power diagnostic difference will not be treated further.

<sup>12</sup> Using the less conservative Pearson's *r*, as recommended by Benjamin (2003), this number was 33%.

<sup>13</sup> Comparing the group with highly similar self-image and eating disorder action profiles with the group with a lower match, the diagnostic spread was similar but illness duration was shorter and symptom levels lower in the group with more introjection (illness duration:  $M=3.8$ ,  $SD=3.7$ ;  $M=5.3$ ,  $SD=3.7$  respectively, with  $t=2.29$ ,  $p < .05$  and EDE-Q total score:  $M=3.5$ ,  $SD=1.2$ ;  $M=4.0$ ,  $SD=1.3$  respectively, with  $t=2.21$ ,  $p < .05$ ).

introjection) with the match between patients' reactions (Surface 2) and self-image (Surface 3), there was a significant difference with the mean coefficient for the former ( $M=.34$ ,  $SD=.40$ ) being higher than the mean coefficient for the latter ( $M=.21$ ,  $SD=.41$ :  $t=-4.99$ ,  $p<.001$ )<sup>14</sup>. This implies the presence of introjection of eating disorder's actions.

### 3.4.3 Double mediation model of attachment security on eating disorder symptoms

Figure 2 presents the result for the mediation model as standardized coefficients for each path ( $a_1$ ,  $a_2$ ,  $b_1$ ,  $b_2$ ,  $d_{21}$ ,  $c'$ ).

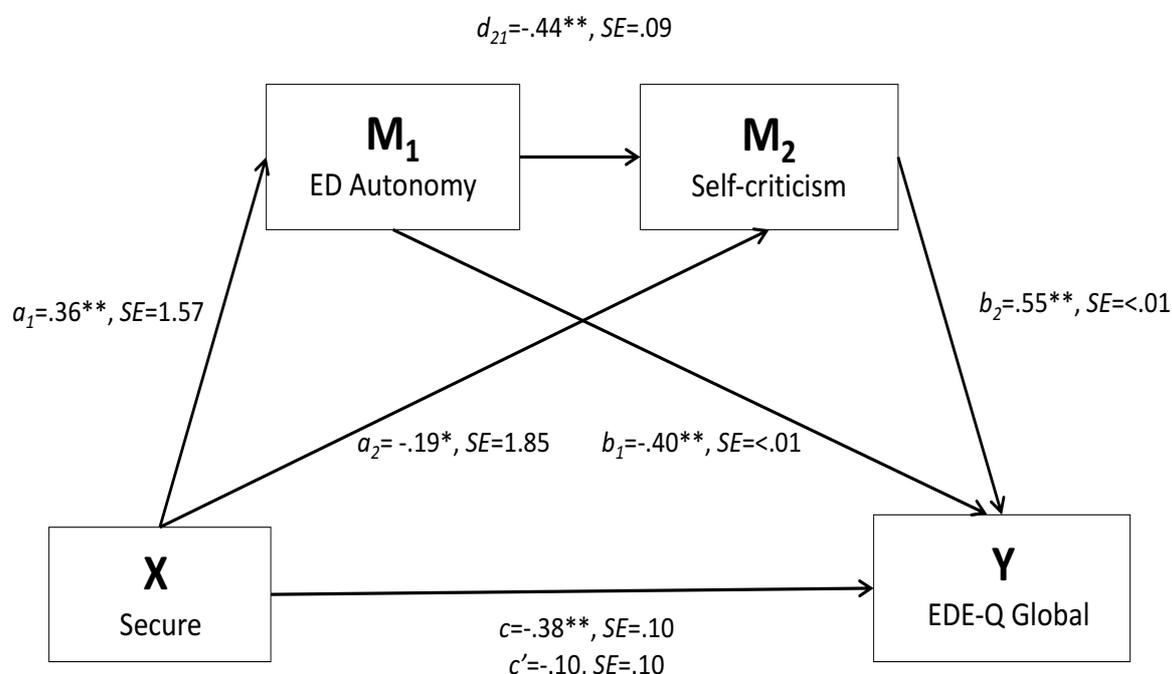


Figure 2. Double mediation model: attachment security as independent (X), ED (eating disorder) autonomy score as mediator 1 (M<sub>1</sub>), SASB (structural analysis of social behaviour) self-criticism as mediator 2 (M<sub>2</sub>) and EDE-Q (eating disorder examination questionnaire) Global score as dependent (Y). All coefficients in the model are standardized.  $N=147$ ,  $SE$ =standard Error. \* $p<.05$ , \*\*  $p<.001$ .

<sup>14</sup> Mean Pearson's correlation coefficients between surfaces were also compared using an online 1-tailed asymptotic  $t$ -test (Lee & Preacher, 2013), with a similar result ( $t=-2.1$ ,  $p<.05$ ).

The total effect ( $c$ ) of attachment security on eating disorder symptoms was significant ( $t=-4.73, p<.001$ ), but the direct effect ( $c'$ ) was not ( $t=-1.23, p=.22$ ), implying full mediation via the indirect paths. Lower attachment security was associated with feeling more controlled by one's eating disorder (Surface 1, eating disorder Autonomy), and higher eating disorder control was associated with more self-blame (Surface 3), which in turn was associated with more eating disorder symptoms (Fig. 2). Also, lower attachment security was directly associated with more self-blame, although this association was weaker than that via eating disorder autonomy/control (Fig. 4). There are four indirect effects estimated in the model, all of which were significant. The total indirect effect was  $-.27^{15}$  and significantly different from zero (CI $[-.39, -.18]$ ). The partially standardized indirect effect of attachment security on eating disorder symptoms through eating disorder autonomy/control (estimated as  $a_1b_1$ ) was  $-.06$  and significant (CI $[-.13, -.02]$ ). The partially standardized indirect effect of security on symptoms via self-blame (estimated as  $a_2b_2$ ) was  $-.16$  and significant (CI $[-.26, -.09]$ ). Finally, the partially standardized indirect effect of security on eating disorder symptoms mediated by eating disorder autonomy and self-blame in sequence (estimated as  $a_1d_2b_2$ ) was  $-.05$  and also significant (CI $[-.09, -.02]$ ). Comparing the indirect effects pairwise, the  $a_2b_2$  path via self-blame only was significantly larger than the  $a_1d_2b_2$  path of security on eating disorder symptoms via eating disorder autonomy and self-blame in sequence,  $C3 (a_1d_2b_2 - a_2b_2) = .15$  with confidence intervals entirely above zero ( $.06$  to  $.27$ ). There were no significant differences between path  $a_1b_1$  and the other two indirect paths.

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<sup>15</sup> I also tested reversing the model (with  $X \rightarrow Y, Y \rightarrow X, M_1 \rightarrow M_2$  and  $M_2 \rightarrow M_1$ ) checking the fit of the model further. The reversed model explained less variance (partially standardized total indirect effect  $= -.20$ ) than the original model.

## **4 DISCUSSION**

This thesis examined a novel perspective of understanding eating disorders as intrapersonal relational partners, governed by the same underlying mechanisms as more traditional important relationships, and thus influencing self-image, illness duration, and symptom levels. In the first two studies, associations between self-image aspects and eating disorder symptoms were studied in various groups. Self-blame and inversely self-acceptance/-love were found to be consistently most important in relation to symptoms. The youngest group of patients displayed the strongest associations overall, and among the diagnostic groups, the self-image of patients with AN seemed to overlap with their symptoms to a much higher degree than in the other groups. Age seemed to weaken these associations, except for non-help-seeking individuals where the associations were equally strong regardless of age.

The theoretical assumption states that self-image is developed and maintained in close, important relationships. Since these (and other) findings suggest strong associations between self-image and eating disorder symptoms, and since qualitative research suggests that some patients spontaneously relate to their eating disorder as an external other, in the third study, it was investigated whether an eating disorder could be conceptualised and measured in terms of a relationship. Indeed, the relational patterns that emerged for all diagnostic groups resembled highly negative and enmeshed real-life relationships, the qualities of which were associated with symptom levels and self-image. High eating disorder control combined with high patient submission was associated with a more severe clinical presentation. Patients reacting with negative affiliation towards their eating disorders had lower symptom levels and a more positive self-image than patients reacting less negatively.

In the final study, attachment in the intrapersonal patient – eating disorder relationship was investigated. Attachment mechanisms were primarily related to autonomy/control aspects of the patient – eating disorder relationship, introjection seemed to be present, and a double mediation model in which attachment security predicted eating disorder symptoms via eating disorder control and self-blame was supported.

### **4.1 THE INSIDIOUS RELATIONSHIP AND ATTACHMENT**

Finding and maintaining emotional bonds with others is a central driving force for humans, with the fear of being abandoned, isolated, or lonely being likewise fundamental. People even tend to stay in relationships that cause them physical, psychological and emotional harm (Anderson & Saunders, 2003), potentially since the alternative of being alone seems even more frightening.

Interpersonal difficulties have a central role in both the development and maintenance of eating disorders. Childhood maltreatment, bullying, and insecure attachment have been highlighted as risk factors, with the latter also being a potential maintaining factor together with, for example, negative social comparison, interpersonal distrust, lack of assertiveness,

and social isolation (Arcelus, et al., 2013; Striegel-Moore, Dohm, Pike, Wilfley & Fairburn, 2002; Tasca & Balfour, 2014). For some patients the eating disorder may develop as a result of, and provide a substitute for dysfunctional or missing interpersonal relationships, and however destructive, may offer means to regulate negative emotions, a safe haven, that patients consequently come to value. Thus, the symptoms are potentially a way of trying to reach the primary goal of attachment: proximity to an important other, with treatment resistance and reluctance to change as a result. The intrapersonal patient – eating disorder relationship follows many of the principles of interpersonal relating observed in more conventional relationships: it is largely complementary (patients submit in response to eating disorder control), patients seem to copy eating disorder actions in how they treat themselves (introjection; high eating disorder control increases self-constraint), the influence of a controlling eating disorder seems to be regulated via negative affiliation (rebellious against coercion facilitates separation), and attachment processes seem involved. In general, the patients had negative relationships with their eating disorders, with high levels of control, blame, and hate present (**Studies III and IV**). Yet they all had full eating disorder diagnoses and clinical symptom levels. This is paradoxical but hardly surprising. According to attachment theory, humans are pre-wired to stay in proximity to important others to ensure survival, but the attachment system does not differentiate between those important others who ensure survival, and those who essentially threaten it. Interactions with unreliable, inconsistent, or insensitive attachment figures impede the formation of stable and secure patterns of relating to self and others, reduces resilience in coping with stressful events, and poses a general vulnerability for psychopathology (Mikulincer & Shaver, 2012). Yet, according to Bowlby (1973), being separated from an attachment figure signals danger and often results in immense fear or grief, regardless of the quality of the attachment bond. As the patient – eating disorder relationship seems important enough to trigger attachment mechanisms (**Study IV**), the ambivalence about change and hesitancy about treatment patients often experience might represent the fundamental fear of being separated from someone experienced as essential for survival. However much a patient hates his/her disorder, being highly involved in, influenced by, and dependent on this relationship, makes it difficult to end. Additionally, patients' self-acceptance is largely contingent on meeting the demands of their eating disorder (**Studies I-IV**). Challenging the illness indirectly means challenging beliefs, values, and goals held by the patient as important for self-worth, further contributing to patients misjudging the illness as indispensable.

As the eating disorder in itself seems to trigger attachment mechanisms and to some extent influence self-image via introjection, it is not essential to have had problematic interpersonal relationships in the past to develop an eating disorder. Many patients with eating disorders suffer several serious side-effects, besides the illness in itself: social relationships deteriorate, quality of life drops, depression and anxiety increases, and there is an elevated risk for suicide (Berkman, et al., 2007; de la Rie, Noordenbos & van Furth, 2005; Jones, Lindekilde, Lubeck & Clausen, 2015), and the more long-term the illness, the more severe these additional symptoms become (Arkell & Robinson, 2008; Treasure, Stein & Maguire, 2015). Moreover,

early reduction of eating disorder symptoms significantly predicts later reduction in global eating disorder pathology (Turner, Bryant-Waugh & Marshall, 2015). For patients who fully recover, most of the additional negative symptoms subside to levels similar to controls (Bardone-Cone, Harney, et al., 2010; Cogley & Keel, 2003). Symptoms thus seem to become elevated by long-term illness and seem to be reduced in parallel with recovering from an eating disorder. The present results show that the eating disorder in itself can be considered a relational influence with impact on self-image. Taken together, this raises the possibility that the eating disorder in itself instigates, or at least intensifies, additional symptoms, self-criticism, and attachment insecurities, rather than vice versa. Of course, according to theory, the basis of attachment is formed in early important relationships and ought to remain rather consistent throughout life (if not changed in e.g. therapy). A recent longitudinal study (Stice, Gau, Rohde & Shaw, 2017), found negative affect and impaired interpersonal functioning to be transdiagnostic risk factors for eating disorder onset. Although not measuring attachment per se, this implies that historical disruptions in interpersonal relationships might influence attachment in the dysfunctional patient – eating disorder relationship. Individuals with insecure attachment patterns before developing an eating disorder perhaps more easily form attachments to their eating disorders, since the illness matches previous patterns of relating. Potentially with longer illness durations and more treatment resistance as a result.

Another complementary way of understanding attachment in the patient – eating disorder relationship is that the intense focus on for example controlling food and weight becomes a replacement for inadequate or interrupted regulatory functions of early attachments (Pearlman, 2005). Based on literature showing the importance of emotion regulation in relation to eating disorders (Burns et al, 2012; Monell, et al., 2015; Tasca, et al, 2013) on the one hand, and to attachment insecurity on the other (Tasca, Szadkowski, Illing & Bissada, 2009), it is possible that inadequate emotion regulation in early attachment relationships confers risk of developing an important relationship with one's eating disorder, as previously unhandled distress might be alleviated through for instance strict control of food and weight. Such patients, who lack adequate emotion regulation strategies and therefore need their eating disorder for regulating negative affect, might perhaps develop a stronger attachment to their illness, making them more susceptible to relapse. Nevertheless, since the illness in itself potentially represents an internal working model, disruptions in early attachment relationships might not be necessary pre-requisites, and maintaining mechanisms (e.g. down-regulation of negative affect) might indeed be initiated and reinforced by the illness itself. To answer the question whether the eating disorder represents a continuation of a pattern or the introduction of a new one, longitudinal data is needed.

## **4.2 THE ILLUSION OF CONTROL**

One particularly insidious quality in the patient – eating disorder relationship is the illusory sense of control the eating disorder offers. Patients frequently mention how the eating disorder helps them feel in power, how it helps controlling emotions, and provides a structure

in life (e.g. Espindola & Blay, 2009; Serpell, et al, 2002). However, when submitting to the control of the eating disorder, patients are in fact disempowered as their own feelings and needs are denied. Control as a central feature of eating disorders has long been discussed and researched (Bardone-Cone, Sturm, Lawson, Robinson & Smith, 2010; Birgegård, et al, 2009; Claes, Nederkoorn, Vandereycken, Guerrieri & Vertommen, 2006; Slof-Op't Landt, Claes & van Furth, 2016; Williams, et al., 1993). High external locus of control (i.e. seeing outside forces as controlling one's life), poor self-regulation strategies, high perfectionism (high standards, rigid rules for oneself), and low assertiveness are all associated with more severe eating disorder pathology (Horesh, Zalsman & Apter, 2000; Scoffier, Paquet & Arripe-Longueville, 2010; Slof-Op't Landt, et al., 2016; Williams, et al., 1993), and a more powerful anorexic voice is associated with lower BMI, more severe symptoms and longer illness duration (Pugh & Waller, 2016a). The present results further highlight the central function of control/autonomy in eating disorder pathology, suggesting that the control is in fact a fundamental part of the eating disorder, a mechanism patients submit to, which is key in maintaining the illness (**Studies III and IV**).

Feeling highly controlled by one's eating disorder, and adhering to that control through submission, was significantly associated with more eating disorder symptoms (**Study III**). The present data are cross-sectional, hence progression over time is unknown and causality cannot be inferred, but a speculation is that the eating disorder control escalates gradually in line with symptoms increasing. To illustrate, initially a person might decide to avoid certain foods, certain days a week. Due to positive reinforcement via weight loss, feelings of success for sticking to one's diet, or positive comments from others, the rules become more and more appreciated. To ensure that this success towards the goal of thinness continues, the constrictions may grow in number and become harsher. The more desired results a person receives as a consequence, the higher these rules will be valued, the closer they will be adhered to, and the harder they will be to challenge. The demands of the illness also reduce the person's quality of life in general, with for instance increasing social isolation, avoidance of situations where food may be present, and withdrawal from activities formerly appreciated, in favour of eating disorder-related behaviours. As such, the control and influence of the eating disorder becomes even more exclusive and pervasive, with increasing symptom levels as the result. At this point, symptoms may be primarily maintained via negative reinforcement; i.e. to cope with or avoid negative emotions such as anxiety, depression, feelings of fatness, and self-criticism (Williamson, White, Crowe & Stewart, 2004). When the symptoms are experienced as effective in reducing such negative emotions, this negatively reinforces and strengthens the behaviour. Also, the influence of other more positive social relationships will probably be considered less and less. The eating disorder insidiously fools the patient to believe he/she is in control as long as the rules are followed: questioning the eating disorder rules is no longer an option. When faced with this type of undeniable authority, people tend to obey (Milgram, 1963); this is evident in the high degree of submission in patients' responses to their eating disorders and the higher levels of symptoms associated with eating disorder control found in **Study III**. Additionally, in

research on the anorexic voice, more powerful inner voices experienced as omnipotent, are associated with more eating disorder pathology and longer illness duration (Pugh & Waller, 2016b). Also, the more severe the eating disorder, the more patients seem to value the safety and structure it provides (Gale, Holliday, Troop, Serpell & Treasure, 2006).

A parallel can be drawn to the process of normalization (Lundgren, 2004) often referred to in models explaining why victims of partner violence accept the violent behaviour and stay in the relationships. According to this theory, violent behaviour becomes normalized via a process of control and coercion: the abuser gradually introduces rules or recommendations about who to see and what to do, checks the victim's phone and email, takes charge of the victim's money etc. (Lundgren, Heimer, Westerstrand & Kalliokoski, 2001). By shrinking the life space and social sphere of the victim, the abuser can introduce violent behaviours and values attached to these without being challenged; rather than questioning the abuser, the victim will question and blame him/herself for misbehaving and thus experience the punishment as warranted. As a consequence, the victim tries changing his/her behaviour in accordance with the rules of the abuser to attempt avoiding further violence. Just as might be the case with an eating disorder, this creates an illusion of being in control of one's situation, subsequent events, and the relationship. This dysfunctional behaviour also in turn creates a need for the dysfunctional relationship, as it provides a sense of felt security and ensures psychological proximity to the attachment figure.

### **4.3 THE ENEMY WITHIN: SELF-BLAME IN EATING DISORDERS**

Self-blame/criticism seems to have a key role in the development and maintenance of eating disorders. These findings are by no means unique; others too have demonstrated the involvement of self-blame in both the development- and the perpetual cycle of eating psychopathology (Duarte, Ferreira & Pinto-Gouveia, 2016; Dunkley, Masheb & Grilo, 2010; Fennig, Hadas, Itzhaky, Roe, Apter & Shahar, 2008). The present findings add to the existing literature primarily by showing that self-blame is associated with the controlling and critical nature of the eating disorder, that is, it is potentially introjected via the patient – eating disorder relationship, and that the strength of associations between self-blame and symptoms varies between groups (**Studies I-IV**).

Self-blame and the lack of acceptance and love for oneself were associated with eating disorder symptoms in various groups (**Studies I and II**), highlighting how this type of self-treatment goes hand in hand with being unsatisfied with one's body shape and weight, regardless of having an eating disorder or not. However, the strength of these associations was significantly higher in non-help-seeking and clinical groups compared to healthy controls (**Study II**), possibly implying that the gradual upward spiralling of eating disorder control as the illness develops results in gradually increasing self-blame too. Age seemed to weaken these associations in **Studies I and II**, and longer illness duration was associated with a lower degree of introjecting one's eating disorder in **Study IV**. This suggests that older individuals

or individuals who have been ill for longer periods of time, keep their illness more at a distance, being less enmeshed and more separated, but still unable to break free from its symptoms. These individuals might have a greater insight about the negative consequences of their illness and a greater wish to fight against it, although still being trapped by it. Indeed, Pugh and Waller (2016b) found lower BMI to be connected to a greater desire to fight and resist the anorexic voice, but also with a greater sense of being unable to get away from it. Continuing the reasoning above (again keeping in mind that data are cross-sectional), a speculation is that the strength of the relationship between eating disorder actions and patients' self-blame follows a bell-shaped curve. When the eating disorder develops and symptoms intensify introjection may increase in parallel, to potentially reach a peak where introjection is at its highest. Later on, perhaps in line with increasing insight and awareness about negative consequences, gained in relationships with others, introjection of eating disorder actions decreases. The decrease is analogous perhaps to a young adult beginning to see flaws in attachment figures and possibly questioning them, yet still being influenced by their internal representations and still being directed by them via the effects they have had on his/her self-image.

Besides eating disorder control predicting more severe symptoms, higher eating disorder control was also associated with more self-blame, which in turn predicted higher symptom levels (**Study IV**). In line with the reasoning in the previous section, this could be understood in terms of the eating disorder rules showing the best way forward, and whenever the patient is unable to stick to that, the rules are not to blame, the patient is. Returning to the parallel of being in an abusive relationship, rather than becoming critical toward the abuser, blame and guilt about failures in the relationship are turned inwards (Tierney & Fox, 2011). In a process of being continuously devalued and undermined, patients begin doubting themselves and their own abilities, and as submissiveness in response to being devalued by others is directly linked to self-blame (Castilho, Pinto-Gouveia, Amaral & Duarte, 2012), self-blame is inevitable. The self-blame then reinforces the need for guidance from the eating disorder further. Fears about being unacceptable seem to drive over-compensatory self-depriving behaviours (Munro, Randell & Lawrie, 2016), potentially in a quest to silence the demands of the eating disorder. However, the patient will never be good enough. In line with this, Noordenbos and co-workers (2014) found that eating disorder patients experience malevolent inner voices significantly more often than healthy controls, and the more intrusive this critical inner voice was, the more self-critical was the individual. Attachment insecurity increased the likelihood of patients experiencing their eating disorders as intrusive and controlling, and thus the likelihood of patients blaming themselves and adapting to the demands of the illness (**Study IV**). This indicates that fundamental aspects of relational behaviours may underlie the process by which eating disorder control and patient self-blame perpetuate and intensify symptoms.

The patients in the present studies were all assessed in connection to their first visit to a specialist eating disorder treatment unit, suggesting these patients begin to experience a rupture in the relationship, perhaps the eating disorder rules have become too demanding.

According to SASB theory, imbalances in the control/autonomy dimension are regulated by negative affiliation. In this case, patients become self-critical, when really the blame should be directed toward their illness. If the negative affect and thus primarily the criticism could be redirected, toward the actual abuser, this could potentially initiate a positive change. In **Study III** patients reacting with negative affiliation toward their illnesses were significantly better off than patients who did not react as negatively, supporting this theoretical assumption. Realizing that the illness exerts control rather than provides it, seems important in order to shift from blaming oneself to blaming the disorder (Marzola, et al, 2016). For victims in abusive relationships, the mounting of an inner, silent criticism toward the abuser seems to be a crucial first step in the process of leaving the relationship (Hydén, 1999; 2001). Similarly, patients with AN describe how acknowledging the eating disorder's many more negative aspects compared to positive, is important to start a process towards recovery (Tierney & Fox, 2011). Re-establishing a sense of self and regaining control through defending against eating disorder coercion, are mentioned as other important steps in the recovery process for AN patients (Duncan, et al., 2015). Breaking the bonds with the illness that the individual may have come to rely on for guidance and comfort, is likely to be a long process in which patients need to reappraise the meaning they attach to their eating disorders, and find alternative, more adaptive sources to provide the safe haven and secure base they need.

#### **4.4 DIAGNOSTIC COMPARISONS**

Transdiagnostic approaches to eating psychopathology suggest that the distinct clinical manifestations, derive from a common psychopathological core centred around overvaluation of eating, body shape, and weight, and of self-worth being largely contingent on such aspects (Fairburn, 2008). There is indeed growing evidence for underlying psychological mechanisms like attachment insecurity, emotion dysregulation, interpersonal difficulties and high self-blame being largely similar across diagnoses (e.g. Arcelus, et al., 2013; Duarte, et al., 2016; Haynos & Fruzzetti, 2011; Tasca & Balfour, 2014). With regard to conceptualizing an eating disorder as an entity or voice that the patient relates to, previous research has almost exclusively focused patients with AN. The results in the present studies imply conceptualizing eating disorders as important relational partners seems equally applicable to patients with BN and EDNOS and the patterns of these relationships looked very similar for all three diagnostic groups (**Study III**). In the second study some diagnostic variations were observed with self-image variables and symptoms being less strongly associated in BN patients, compared to AN patients. A speculation was that symptoms more typical of BN, might be less strongly associated with self-image aspects as they often compete with the pursuit of the overvalued thin-ideal. For AN patients, the symptoms work to a greater extent, i.e. they fill the desired function of getting them thinner, and as such may be deemed more important for self-worth. A speculation was that the discrepancy in strength of association would potentially influence how the patient – eating disorder relationship was experienced and how much influence the eating disorder was allowed to have (if symptoms are less

important for self-worth, it might possibly be easier to react negatively towards the illness). Yet, when comparing characteristics of eating disorder actions and patient reactions, type of diagnosis had little relevance (**Study III**). However, diagnostic differences in for instance degree of impact the relationship had on symptoms and illness duration could not be investigated due to small sample sizes. Hence, there is still much to learn about the processes and functions of the patient – eating disorder relationship in relation to the different diagnostic groups. Though rather than questioning a common psychopathological core of eating disorders, future research may want to investigate slight variations in that core; for example whether underlying mechanisms influence individuals with different symptom presentations to different degrees or in different ways.

#### 4.5 CLINICAL IMPLICATIONS

Helping patients become aware of and ultimately challenge the harsh control eating disorders exert upon them may at a first glance seem like a good starting point in therapy. However, as an eating disorder seems to resemble an attachment figure, questioning the disorder will create anxiety, insecurity, and even fear, i.e. emotions usually regulated by the disorder, making attempts at regaining self-control by challenging the eating disorder difficult. In **Study IV** of the present thesis, attachment insecurity was associated with higher degrees of eating disorder control, suggesting that the patients most in need of challenging this control are also the most vulnerable and probably least capable to do so, based on their attachment. It therefore seems essential that an alternative safe haven and secure base is established if the patient is to begin the journey towards recovery. When someone or something other than the eating disorder provides safety, protection and guidance, the patient may be more able to begin the separation process. As a therapist, the aim will be to foster a collaborative, safe, and transparent climate where both the part of the patient that is separate from and relates to the eating disorder and the eating disordered part are invited to participate. As the eating disorder seems to be a potentially meaningful, internalised part of the patient, the short-term goal may not be to eliminate it. Instead aiming to understand what purpose it has served, whether it reflects earlier patterns of relating to self and others, and what this part needs in order to subside, could be of interest. In the therapeutic setting, the therapist may want to be attentive to and aim to work with transference and countertransference processes<sup>16</sup>, as these can inform about problematic interpersonal patterns and the internal working models of such, assumptions the patient makes about self and others, and the patient's feelings in the here-and-now. Exploring misunderstandings in the therapeutic room is another way of potentially detecting what sort of internal working model may be at work, as well as getting information

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<sup>16</sup> According to psychodynamic theory (Hughes, 1999), *transference* is the phenomenon whereby one person (e.g. patient) unconsciously attributes feelings, behaviours or attitudes from a person or situation in the past to a person (e.g. therapist) or situation in the present. *Countertransference* is the elicited response in the person (e.g. therapist) who receives the other person's (e.g. patient's) unconscious transferred communication.

about which part of the patient is present and listening, the part of the self that is separate from the eating disorder or the eating disordered self, or maybe both. In parallel with exploring problematic introjected patterns, it might be helpful to explain the basic concept of interpersonal copying to the patient; the potential origin of the problematic patterns, why they interfere with current patterns of relating, and the adaptive purpose that they serve. This may help the patient understand his/her potential ambivalence about, or resistance towards, treatment and recovery and could potentially promote a less blaming and more compassionate attitude towards the self.

As interpersonal theory states that the way a person relates to important others is repeated in other relationships (Benjamin, 1974; 2003), patients reacting submissively in response to their eating disorders, might present the same pattern in therapy. For instance, pseudo-compliance, when patients are polite and seemingly compliant but no real working alliance is formed, is a problem in the treatment of eating disorders (Skårderud, 2007). This may well be explained by the patient's problematic interpersonal pattern and could perhaps be avoided if the therapist helps the patient become aware of it and investigate the bases for that interpersonal behaviour.

With patients whose interpersonal style is rigidly organized, assuming a stance too far removed from what the patient is used to and recognizes, may evoke high levels of anxiety (Hewitt, Flett & Mikail, 2017). According to Shaurette's principle, the therapist may instead want to match the patient's interpersonal behaviour initially (note: only neutral or positive behaviours should be matched) and then gradually shift stance in order to move closer to the desired therapeutic goal (Benjamin, 1996). Thus, in the beginning of treatment, an active stance on the part of the therapist might be a necessary prerequisite to foster a therapeutic alliance; active engagement from another is something the patient can relate to and recognizes and may thus offer a sense of safety. As treatment progresses, and the therapeutic relationship begins to feel safe, this subtle control on behalf of the therapist may be gradually decreased (moving counter-clockwise from Cluster 5) allowing the patient to practice taking the lead instead.

Exploring attachment-related issues regarding for example the experience of trust vs. distrust, safety vs. danger, and protection and comfort vs. feeling alone and exposed, will be important, and could be explored both in relation to the part of the patient that is separate from the eating disorder and to the eating disordered part. As felt security within the therapeutic environment hopefully grows for the patient, the focus could potentially shift to focus more exclusively on the part of the patient that is separate from the eating disorder. What does that part need, want, and dream about, but also how would it feel losing its companion, the eating disorder? Encouraging attachment behaviours (such as seeking proximity to a safe haven in times of distress) to someone or something that is not the eating disorder (e.g. therapist, friend, some activity) may help patients realize there are other ways of reducing distress, than complying with the eating disorder. The more long-term therapeutic

task thus becomes the exploration of new and more adaptive ways of relating, with the therapeutic relationship, possibly, providing a template for this.

In a recent qualitative study of factors important for improvement or recovery from eating disorders (Mitchinson, Dawson, Hand, Mond & Hay, 2016), almost all were related to having important and well-functioning social relationships. The good success rates for family therapy and interpersonal therapy with some eating disorder populations (Wilson & Shafran, 2005) may possibly be due to the emphasis on restoring/establishing relationships and safe haven figures for the patients. The Maudsley model of family therapy for instance, focuses on helping parents to reassert their role as parental figures in control of the eating situation. This may be efficacious as it shifts the controlling influence to an alternative safe haven, other than the eating disorder, which then may help patients feel more secure about questioning the rules of their eating disorder.

Also, when the patient begins feeling secure enough to allow the part of the self that is separate from the eating disorder regain some control, rather than directly challenging eating disorder control, a starting point may be helping patients regain control in other areas of their lives, increasing self-efficacy in domains other than those related to eating, weight and shape. Limitations imposed on a patient's life by the illness may be attenuated if the patient believes he/she can choose to do certain things regardless of her illness (Averill, 1973). Conceptualizing the illness as a relationship infers a dyadic dynamic, and thus rather than removing responsibility from the patient, this may help empower patients to react differently in response to their eating disorder's demands and may also be experienced as less blaming to patients. Simply becoming more aware of the adaptive functions this relationship potentially has served may help patients become less critical of themselves and more compassionate with regards to their own ambivalence.

Nevertheless, it is important to remember that this perspective may not be applicable and helpful for all patients. Sensitivity about the meaning a certain patient assigns to his/her illness is crucial. Some patients may not identify with the conceptualization of their illness as a relationship with attachment qualities, and respecting that is important for the therapeutic relationship, the therapist's credibility and the patient's response to treatment.

## **4.6 LIMITATIONS**

### **4.6.1 Methodological limitations**

All studies involved self-report measures only. When completing self-report measures some introspective abilities are needed in order to complete the questionnaires and this may vary between groups. For instance, the younger individuals in **Study I** may be less able to reflect upon how they treat themselves, than the older individuals in the other three studies. Secondly, the measures give an indication of how participants perceive their self-image, interactions in relationships and symptoms; i.e. all data are on a cognitive level. It is not

known how the participants truly behave in relationships or towards themselves or how others perceive them behaving interpersonally and in relation to their eating disorder. Neither is it known if biological processes related to attachment are somehow involved in the patient-eating disorder relationship, or if an eating disorder has implications for self-image because of it activating attachment mechanisms or for a biological or neurological reason (e.g. hunger triggering certain hormones or chemical substances in the brain with subsequent effects on self-image). In relation to the results, behavioural, social, and biological data is thus lacking. This means all data in this project is based on the subjective experiences of the participating individuals and it is possible that results from other forms of more objective data sources would diverge from these. This needs to be kept in mind when interpreting the findings.

Further, the instruments used might not be the most optimal self-report instruments for measuring the constructs of interest. Perhaps ASQ is not the best possible option for measuring adult attachment behaviours; individuals are asked to rate how they act, feel and experience themselves in close relationships, but if you have few close relationships for instance, you might include relational patterns in a much wider sense than the instrument intends. Having said that, ASQ has meaningful links with family functioning in line with attachment-based assumptions about for example quality of parenting and self-treatment (Noller, Seth-Smith, Bouma & Schweitzer, 1992). It is also the only adult attachment self-report questionnaire that allows for measuring relationship patterns without specifying a certain relationship partner, an almost necessary prerequisite for the purpose of this project.

Neither is it certain that the observed correlations between aspects of the patient – eating disorder relationship and ASQ variables, actually mean attachment processes are being activated. The associations perhaps arose due to similarities in the instruments, or from us encouraging them to think about their eating disorder as a relationship, before completing these forms. Other paradigms, for example experimental studies, like the one by Patton (1992), in which subliminal exposure to abandonment stimulus resulted in individuals with eating disorders eating significantly more crackers than controls, might be better suited for answering such questions.

Regarding the SASB questionnaires, there are several problems. Some SASB clusters of the different surfaces did not have acceptable internal consistency. This could imply, for example, in relation to eating disorder actions, that patients found it difficult to assign such behaviours to their eating disorders. It could also mean there are problems with the Swedish translation of the forms, or in the case of Surface 1 and 2, that the way the forms were modified to focus eating disorders actions and patients reactions to eating disorders, was somehow problematic. On the one hand, despite problems with alpha, the results come across as rather robust: all analyses were also conducted including the excluded clusters with the pattern of results remaining largely the same. But on the other hand, low alpha means lower probability of finding associations with other variables. Thus the low alphas in some of the clusters could have resulted in Type II errors.

It is suggested that introjection of eating disorder actions might be present since the match between eating disorder actions and patient's self-image was greater than that between patient reactions and self-image. However, this could perhaps partially be explained by shared method variance due to the wording of Surface 1 and Surface 3 being more similar than the wording of Surface 2 and 3. Surface 1 and Surface 3 have clearly different foci as one focuses on the eating disorder and the other on the patient. Surfaces 2 and 3 both focuses on the patient and as such, if the actions of the eating disorder were unrelated to self-image, their match should be greater than that of Surfaces 1 and 3. Yet the possibility that the observed differences are partly the result of method variance cannot be excluded.

Furthermore, in order to make analyses and results more comprehensible, data was reduced through combining four dimensions of the ASQ into two and using vector scores rather than cluster scores on the SASB in some analyses. This could mean that important information was missed and that a potential bias was introduced when variables were selected.

Also, all data were cross-sectional. Although differences between the age cohorts suggest there may be changes in associations between self-image and symptoms over time, these have not been observed directly. Nor is it known how self-image and attachment patterns looked before the patients became ill, or how patients' mental representations of self and others were/are formed. This means that all speculations about causality and/or progression over time are based on theory. As such, these speculations must be treated with caution and longitudinal data are needed to address them directly.

Assessing self-image, symptoms, relationship patterns and attachment using questionnaires at one point in time undoubtedly has its drawbacks and challenges. However, this work shows that it is possible to quantitatively measure how patients relate to internalised representations of their disorders. This may primarily contribute to the eating disorder field of research, but may also bring about ideas for other fields of psychiatric research. It is also providing insight to how the participants subjectively perceive and think about themselves and others at this moment in time, and whether this reflects some objective reality or not, is perhaps less important when the aim is to explore the subjective meaning patients attach to their eating disorders in the midst of suffering from it. Also in a clinical or therapeutic setting, this would be less problematic as the patient's current subjective viewpoint is what the clinician is primarily interested in and works with. Of course, one could argue that patients (in **Studies III and IV**) were encouraged to think about their eating disorder as a relational partner and that they might not have done so spontaneously, i.e. it was maybe not entirely the patients' subjective experience that was measured. But again, the idea was based on results from qualitative studies and autobiographical accounts where individuals suffering from, or who have suffered from, eating disorders spontaneously talk about their eating disorders in terms of a relationship.

#### **4.6.2 General limitations**

Response rates were rather low in the healthy samples in **Studies I** and **II**. It is not known why certain students did not attend school when data were collected. Maybe the individuals who did not turn up had more problematic eating behaviours than the final sample, or maybe the individuals who participated did, there is no way of knowing. This limits generalizability. The response rate was also low for the clinical sample in **Studies III** and **IV**. Although some attrition is to be expected, this is a problem; for example, it is possible that some patients were unable to view their eating disorder in terms of a relationship and therefore refrained from completing the forms, which could limit the generalizability of the present perspective. Nevertheless, as was mentioned, attrition analyses did not reveal any differences on baseline data.

Although including boys in the first study, these studies primarily focus on young healthy, subclinical, or clinical females about to start treatment. As such, these results are not necessarily applicable to other groups, such as older populations, patients with severe and enduring eating disorders, and older males.

#### **4.7 ETHICAL CONSIDERATIONS**

In **Study I**, participants were as young as 12 years old. At this age adolescents have a limited ability to independently assess risks and potential consequences of their actions, making informed consent problematic. Both caregivers and adolescents were hence informed about the study and were able to decline. It was also carefully pointed out that participation was voluntary, not related to schoolwork, and could be interrupted at any time. Moreover, in **Studies I** and **II** large groups of individuals recruited from the general population were screened concerning eating disorder symptoms and self-image, which could be experienced as worrying. Individuals with problematic eating behaviours might come to realize that they have a problem, or even worse; vulnerable individuals might be triggered into such behaviours when answering the questions. Therefore, close cooperation with the student health teams at the schools was established. Lectures were also given to school staff, in which they were informed about eating disorders, early signs, and treatment options. With regard to individuals not recruited via schools, it was specifically stated that they should not hesitate to contact the psychiatrist or psychologist responsible for the project with any concerns. Since there was also a risk of finding individuals with serious eating disorder symptoms, key questions were monitored and if an individual scored alarmingly high he/she was contacted and to come and see either the responsible psychiatrist or psychologist.

Patients in all the studies come from Stepwise, where consent for research use is recorded. It is voluntary, but it is difficult to know if patients really understand that it is. It is possible that patients fear their treatment could be affected by their choice. However, 4% of patients do decline research participation, tentatively implying that the voluntary nature of research participation is understood.

In **Studies III** and **IV**, patients were asked to rate their intrapersonal relationship with their eating disorder, which might influence them to think in those terms during treatment. If the treatment approach is not amenable to this way of viewing the illness, there could be a disagreement between participating in these studies and what is expected of the patient in treatment. Therefore, participating treatment units were explicitly asked to reflect upon whether the focus of these studies could influence the goals of their specific treatment approach and to decline participation if they thought it could. Also, participating in the studies might upset patients who disagree with viewing their eating disorder as a relational partner. This could potentially affect treatment too or at least require some debriefing in therapy. Finally, in speculating that the patient – eating disorder relationship works similar to an interpersonal attachment-based relationship, it could be perceived as indirectly blaming earlier important relationships with caregivers for their children’s illness. In response to this, it is important to remember that on the bases of these cross-sectional studies, there is no way of knowing whether the intrapersonal patient – eating disorder relationship is an effect of earlier relationships. Furthermore, negative self-image or problematic interpersonal patterns alone are not enough to develop an eating disorder, rather a combination of that and several other factors (e.g. dieting, socio-cultural values, biological predispositions) may lead to the development of an eating disorder.

#### **4.8 FUTURE RESEARCH**

As interpersonal behaviours and attachment behaviours specifically exist in relation to others, collecting data on patients’ current and historical interpersonal relationships may be valuable in future research. To further investigate how an eating disorder may come to function as an attachment figure, future research may also want to examine the patient – eating disorder relationship over time, compare it to other important relationships and investigate the development of the potential regulatory function of the patient – eating disorder relationship. Qualitative research such as interviews or sentence completion tasks focusing for instance how the patient – eating disorder relationship compares to other important relationships, what it means to patients, where it might come from and why it is so hard to let go of, would be of great value and could provide important insights. Moreover, there might be individual variations in the quality of the attachment to the eating disorder; some may have a more ambivalent pattern than others for instance. There might also be a subgroup of individuals who never attaches to their eating disorder. Such questions would be interesting to explore in both quantitative and qualitative future research. Also, it would be interesting to test the activation of fundamental attachment behaviours (i.e. seeking proximity to the eating disorder when in distress or fear of being separated from ones eating disorder) in the patient - eating disorder relationship, in experimental studies (cf. Birgegård & Granqvist, 2004; Patton, 1992).

Future research is needed to further evaluate the usefulness and applicability of the SASB in relation to measuring both self-image and the patient – eating disorder relationship, and of ASQ as a way of measuring attachment qualities in adult relationships.

Finally, it is important to remember that the eating disorder-as-relationship perspective may be important and make sense for some, but not all patients. Future research may want to focus such potential variations as well as possible explanations for them.

This work is merely a first step in exploring a theoretical perspective that contributes to our understanding of eating disorders. As patients seem able to place their eating disorder within a relational framework, both when encouraged to do so in the present studies, and spontaneously when interviewed in qualitative studies, this perspective seems important to investigate further. Although much of its validity needs to be further explored, it potentially offers a language that may be understandable and helpful for patients when attempting to make sense of their experiences.

#### **4.9 CONCLUSIONS**

Understanding the psychological bases of symptoms and their functions as well as emphasizing the subjective meaning and value patients attach to their disorder, is important in order to understand patients' motivation for or resistance to change. It could facilitate engagement in treatment and the formation of a constructive therapeutic alliance. The results in this project suggest the strong associations between self-image and eating disorder symptoms can be re-conceptualized as indicating an insidious yet important relationship between patients and their disorders. A higher degree of eating disorder dominance and negative affiliation was associated with more symptoms and a more negative self-image, possibly maintaining the disorder. As attachment mechanisms seemed to be involved, this could help explain why many patients submit to their eating disorder's control, and why many patients experience distress when coming into treatment. Attachment-based concepts could help in communication with patients about why symptoms may be difficult to relinquish. Applying ideas from both interpersonal- and attachment theory in order to first explore and understand, then replace and finally help separate from the dysfunctional relationship between a patient and his/her eating disorder could be of clinical value. As noted earlier, other positive relationships may have difficulties competing with the patient – eating disorder relationship, and as such the patient – eating disorder relationship may also have implications for the therapeutic relationship.

Acknowledging the struggle patients may experience in relation to obeying their eating disorder on the one side, and attempting to separate from it on the other, may aid in forming a therapeutic alliance and also increase acceptance on part of the therapist. In therapy, paying close attention to and collaboratively exploring intrapersonal processes in the patient – eating disorder relationship, as well as transference processes within the therapeutic relationship, will be important. Such processes can inform about problematic interpersonal patterns and

about which interpersonal stance the therapist may take to facilitate the development of a therapeutic relationship that the patient can come to value and experience as secure and safe. In combination with exploring attachment-related issues and encouraging attachment behaviours to others than the eating disorder, this may possibly help in the quest towards restoring/establishing relationships and safe haven figures for the patient that can ultimately replace the illness.

From the outside, it is difficult to imagine how something as destructive and frightening as an eating disorder can be meaningful. Nonetheless, it seems that in the midst of the suffering, there is meaning; the eating disorder represents an attempt at gaining a sense of felt security and control, even if the result most often is quite the opposite. If we find and respect that meaning, perhaps true security and recovery become more attainable.

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