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Wish to be thinner

Development and Prediction of Disturbed Eating: A Longitudinal Study of Swedish Girls and Young Women

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Abstract
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The overall aim of this thesis was to examine the development and prediction of disturbed eating attitudes in girls aged 7–20 years. The four studies are part of a seven-year longitudinal project including 1279 girls in several age groups (7, 9, 11, 13, 15 years at inclusion) and their parents.

Study I showed that among girls aged 11 and 13 years, in addition to a positive relation between disturbed eating attitudes and age, eating attitudes, higher BMI than peers, a less healthy relation to family, and fathers' eating attitudes, predicted disturbed eating attitudes two years later. Study II demonstrated that girls aged 9–15 years, who wished to be thinner dieted more often, thought that they would be more popular if they were thinner, were skipping meals more often and had a higher BMI, over five years, compared with the girls without such a wish. Study III demonstrated an increasing trend in the wish to be thinner and dieting attempts between the ages of 9 and 18 years. Motives for wishing to be thinner were, e.g., "to feel better about yourself" and "to correspond to the societal ideal". A majority of the girls adopted healthy weight control practices, but unhealthy and extreme methods were also used. In Study IV, among girls aged 9 and 13 years, a wish to be thinner, fathers' eating attitudes and mothers' perfectionism contributed most to the prediction of disturbed eating attitudes seven years later. Protective factors were low BMI and more healthy eating attitudes moderated by high self-esteem, and low-to-medium degree of perfectionism.

In conclusion a wish to be thinner, higher BMI than peers, girls' and fathers' disturbed eating attitudes, mothers' perfectionism and a less healthy relation to family predict the development of disturbed eating attitudes in girls. Low BMI and more healthy eating attitudes especially influenced by high self-esteem, and a low-to-medium degree of perfectionism protect against it. The "thin-ideal" is internalized early in girls and it is important to take a critical stand against the thinness ideal in our society, especially in families, and schools.

Keywords: Disturbed eating, risk factors, protective factors, eating attitudes, family influences, perfectionism, wish to be thinner, self-esteem, longitudinal design

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To my family,
Peter, Agnes, Harald & Bea

List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

I. Westerberg, J., Edlund, B., & Ghaderi, A. (2008). A 2-year longitudinal study of eating attitudes, BMI, perfectionism, asceticism and family climate in adolescent girls and their parents. *Eating and Weight Disorders, 13,* 64-72.

II. Westerberg-Jacobson, J., Edlund, B., & Ghaderi, A. (2010). A 5-year longitudinal study of the relationship between the wish to be thinner, lifestyle behaviours and disturbed eating in 9–20-year old girls. *European Eating Disorders Review,18: in press.*

III. Westerberg-Jacobson, J., Ghaderi, A., & Edlund, B. A longitudinal study of motives for wishing to be thinner and weight control practices in 7–18-year old Swedish girls. *Submitted.*

IV. Westerberg-Jacobson, J., Edlund, B., & Ghaderi, A. (2010). Risk and protective factors for disturbed eating: A 7-year longitudinal study of eating attitudes and psychological factors in adolescent girls and their parents. *Eating and Weight Disorders*: *in press.*

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Contents

Abbreviations

AN	Anorexia Nervosa
APA	American Psychiatric Association
BED	Binge Eating Disorder
BN	Bulimia Nervosa
BMI	Body Mass Index (Weight (kg)/ Height (m)2)
ChEAT	Children's Eating Attitudes Test
DEMO	Demographic and Dieting Questionnaire
DSM-IV	*Diagnostic and Statistical Manual of Mental Disorders,* –Fourth Edition
EAT	Eating Attitudes Test
ED	Eating Disorder
EDI	Eating Disorder Inventory
EDI-C	Eating Disorder Inventory for Children
EDNOS	Eating Disorder Not Otherwise Specified
Child/ren	Person/s aged between 0 and 18 years
Pre-adolescent	A person aged between 9 and 12 years
Adolescent	A person aged between 13 and 18 years
Young women/ Womanhood	Used here as overall terms for women in their early twenties (18–23 years)

Introduction

The frequency of eating disorders (ED) and obesity has grown among adolescents and young adults, and has become a major public health concern (Fredriks, Van Buuren, Sing, Wit, & Verloove-Vanhorick, 2005; Harpaz-Rotem, Leslie, Martin, & Rosenbeck, 2005; Ogden et al., 2006). One explanation for the increased rate of ED could be that more adolescents and young adults are seeking professional help for their eating disorders. However, Agras (2001) found that full- and partial-syndrome ED affects as many as 10% of adolescent girls and poses a considerable threat to their health and happiness. The strongest predictor for ED is gender (Jacobi, Hayward, de Zwaan, Kraemer, & Agras, 2004). ED are among the most common psychiatric disorders among young women, and females are ten times more likely to develop ED than males (Edmonds & Hill, 1999). Population studies have documented the global distribution of ED and further suggested that young women in populations undergoing modernization, urbanization and other economic, social and cultural changes may be at especially high risk of developing symptoms (Becker, 2003). There is a general agreement among researchers and clinicians that ED have a multidimensional framework. Socio-environmental, biological, developmental, and psychological variables work together in different degrees (Schmidt, 2003).

Historical background

In the ancient cultures of Egypt and Greece short-term ritual fasting seems to have been common, and refraining from food, as well as other enjoyments, was a way to purify oneself or become reconciled with one's sins (Bemporad, 1996). In the Eastern world, on the contrary, fasting was sometimes prolonged even until death due to the religious view of the worldly life as evil. It is thought that the first modern descriptions of anorexia nervosa (AN), were documented by Richard Morton in 1689 (Bell, 1985). The vagueness of medical descriptions of symptoms and syndromes before the nineteenth century, has made it difficult to conclude whether the individuals really suffered from AN. In the second half of the nineteenth century, the class structure of society was changing, notably with the rise of the middle class. Lasègue (1873) made a link between a new syndrome, *l'anorexie hystérique,* and the changes that were happening in middle-class families,

with increased emphasis on eating and appearance as markers of class. Eating emerged as a new aspect of lifestyle that set the members of the middle class apart from the working class, and meal times began to symbolize the spirit and values of these new middle-class families (Brumberg, 1988). Attention was given to the subject of class and weight, and a relationship between socio-economic class and prevalence of obesity has been reported (Sobal & Stunkard, 1989). In keeping with the class symbolism of thinness, early literature on AN showed an over-representation of these disorders among patients from upper socio-economic classes (Bruch, 1973; Morgan & Russell, 1975). However, since most of the initial clinical data came from the treatment of white, middle- and upper middle-class patients, this conclusion could therefore be challenged (Saukko, 2009). Bulimia nervosa (BN) was first distinguished from AN, in 1979 by Russell. Russell described the new disorder as "an ominous variant of AN" and reported that individuals with BN were characterized as having normal weight (Russell, 1979). Although, BN has been considered a modern disease, there are references to it as early as Hippocrates who differentiated between normal and abnormal hunger - *boulimos* (Stunkard, 1993).

The glamorization of thinness in fashion spread throughout Western society in the twentieth century. Among the reasons for this was that a smaller and thinner look became more desirable through the introduction of dressmaking patterns with standard sizing for all women (Walsh, 1979; Shorter, 1984). Dieting behavior was found to be prevalent in 50 to -80% of younger women, who repeatedly described themselves as being overweight and reported concerns about their weight (Nylander, 1971; Rand & Kuldau, 1991). One of the reasons for the high susceptibility of young people to dieting is the fact that they develop a negative attitude towards obesity early in life, concomitant with increased awareness of the stigma attached to it in society (Puhl & Brownell, 2001). The negative attitude towards obesity partly stems from the recognition of the possible health risks associated with it. It has been argued, however, that the pursuit of thinness is not only about the cult of appearance; it is more indicative of the competitive spirit that pervades our time: "Of importance here is the pressure on women to be competitive and successful; these achievement pressures may force an adolescent girl into a position where weight control becomes equal to self control and success" (Garner & Garfinkel, 1979). Thinness is not only seen as a measure of success, but also sometimes as a license to succeed (Nasser, 1997). Overweight individuals are more likely to be discriminated against in educational and vocational settings than thinner ones. Fat girls have a lower chance of being accepted by elite colleges and fat women are less likely to be hired than slender women, even if their job credentials, professional appearance, and personal hygiene are identical (Levine & Smolak, 2006). In view of this, it is not surprising that women identify with the slimness ideal which would

not only render them more beautiful and attractive but could also provide them with success and professional enhancement.

Definition of concepts

In the present thesis, I use several concepts of problematic eating behaviors and attitudes. To explain the different levels of disturbed eating, I use the continuum model presented by Shisslak, Crago and Estes (1995). Many researchers have adopted this continuum model, in which modest weight and body concerns are placed at one end of the spectrum and severe full-syndrome ED are found at the opposite end (e.g., Levine & Smolak, 1992; Shisslak, et al., 1995; Gordon, 2000). The continuum model allows identification of partial-syndrome eating disturbances. ED and full-syndrome eating disorders, refer to the clinical and pathological end of the spectrum, characterized by a clear disturbance of eating habits or weight-control behavior, or another core feature of eating disorder, such as an over-concern about shape and weight, which results in a clinically significant impairment of physical health or psychosocial functioning (Shisslak et al., 1995). This particular continuum reflects the weight-and-shape-related symptoms of ED. There may also be a continuum for some personality characteristics (e.g., negative emotionality or perfectionism) and for psychopathology. Proponents of the continuum model expect some differences between non-dieters, dieters and the sub-threshold and clinical groups. However, such differences are assumed to be quantitative and gradually (linearly) incremental. The issue of whether there is a continuum, or set of continua, of eating problems and disorders is an important one for prevention efforts (Levine & Smolak, 2006). The existence of a continuum suggests that intervention at any point along the spectrum would result in a decrease in the incidence and/or prevalence of ED for the individual.

No generally accepted **definition of ED** exists, though two leading eating disorder researchers have suggested the following definition: "*A persistent disturbance of eating behavior or behavior intended to control weight, which significantly impairs physical health or psychosocial functioning. This disturbance should not be secondary to any recognized general medical disorder (e.g., a hypothalamic tumor) or any other psychiatric disorder (e.g., an anxiety disorder)*" (Fairburn & Walsh, 2002, p. 171). The most recognized eating disorders are AN and BN. AN is characterized by the refusal to maintain a minimally normal body weight and BN is characterized by recurrent episodes of binge eating followed by inappropriate behaviors aimed to avoid weight gain, such as self-induced vomiting. Binge-eating disorder (BED) is a more recently defined syndrome that features recurrent episodes of overeating, without inappropriate compensatory behaviors. It has been estimated that 5–10% of individuals who seek treatment for obesity also suffer from

BED (de Man Lapidoth, Ghaderi, & Norring, 2006). A large number of people exhibit problematic eating behavior that might warrant a diagnosis of eating disorder, yet it does not fall clearly into a particular diagnostic category. Their eating behavior is characterized by some but not all of the criteria required for full-syndrome eating disorders and/or at a lower frequency and/or severity. These persons would be diagnosed as having eating disorders not otherwise specified (EDNOS and BED belong here) or having an atypical eating disorder (DSM-IV; American Psychiatric Association, 1994; Shisslak et al., 1998).

Disturbed eating, eating problems and dieting are defined by sub-clinical levels of symptoms characteristic of ED. The concept of **disordered eating** is synonymous with **disturbed eating attitudes** in the scientific literature, and we use both concepts in the text. In the following studies the Children's Eating Attitudes Test (ChEAT; Maloney, McGuire, Daniels, & Specker, 1989) is used to assess attitudes and behavior associated with ED (i.e., **disturbed eating attitudes**). A score of 20 ChEAT or more has been suggested to be a cut-off for developing clinical ED (Smolak & Levine, 1994). Girls scoring $\geq$ 20 (original 26-item scale) or $\geq$ 16 (a new cut-off for the 23-item scale) respectively are categorized as having **disturbed eating**. Thus, a higher ChEAT score is indicative of more eating problems and weight concerns. **Eating problems** refer to behaviors and attitudes that resemble those of full- and partial-syndrome ED, but with lower frequency and severity, and represent the most "benign" end of the eating pathology spectrum (Shisslak et al., 1995). **Dieting** is measured with the question: "Are you trying to lose weight today?". For diagnostic criteria for ED according to DSM-IV see Appendix 1, and for diagnostic groups in DSM-IV in relation to other forms of eating behaviors, see *Figure 1*.

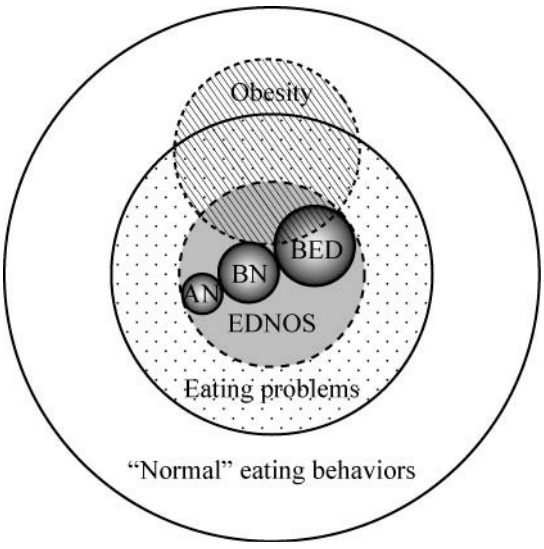

Figure 1. Diagnostic groups according to DSM- IV in relation to other forms of eating behaviors (Clinton & Norring, 2009).

Obesity is not included as an eating disorder in DSM-IV. **Obesity** is an energy imbalance in combination with genetic and environmental factors (Ravussin & Bogardus, 2000). Body Mass Index (BMI) is often used to define overweight and obesity, and has been shown to correlate strongly with body fatness (Reilly, 2005). Age-specific and sex-specific BMI cut-points have been developed by the International Obesity Task Force (Cole, Bellizzi, Flegal & Dietz, 2000).

Prevalence of eating disorders

Eating disorders have a peak of onset in adolescence but occur in both younger children and adults. Females are ten times more likely than males to develop an ED (van Hoeken, Sieidell & Hoek, 2003). The prevalence of clinical ED, as defined by DSM-IV (American Psychiatric Association, 1994), is around a few per cent of the population in the Western world (Hsu, 1996; Ghaderi & Scott, 2001; Engström & Norring, 2002) although the exact numbers vary between the different diagnoses. Fairburn and Harrison (2003) give the prevalence of AN as 0.7% among teenage girls and the prevalence of BN as 1–2% among females aged 16–35 years. Corresponding statistics for males are for AN 0.09–0.2% and BN 0.2–0.3% (Hoek, 1993; O'Dea & Abraham, 2002). A predominance of females has also been shown for EDNOS; 3% for girls and 0.3% for boys (Patton, Coffey & Sawyer, 2003). The prevalence of BED is estimated to be 2– 3% in the general population (Hudson, Hiripi, Pope & Kessler, 2007; Striegel-Moore & Franko, 2003). In a Norwegian school/community-based study of adolescents, 14–15 years of age, the prevalence for EDNOS was 6.5% for girls and 1.7% for boys (Kjelsås, Bjornstrom & Götestam, 2004). Recent studies show an increasing trend of ED in males (Weltzin et al., 2005; Dominé, Berchtold, Akré, Michaud, Suris, 2009); males with AN and BN account for 10% of individuals with this condition, and for EDNOS (especially BED) they account for as many as 25% (Weltzin et al., 2005). The spreading of media pressure about ideal male body shape could be one explanation for the increase of ED among boys (Dominé et al., 2009).

Full-blown ED and clinically significant sub-threshold variants probably affect at least 10% of girls and women between the ages of 10 and 30. In addition, a large number of elementary school children and many adolescents – the overwhelming majority of whom are girls – embrace cultural values about the glories of thinness and the horrors of fat in ways that leave them dissatisfied with their weight, shape, and self, and therefore inclined to engage in unhealthy forms of eating and weight management (Neumark-Sztainer, 1995; Berg, 2001). The psychological and physical costs of ED are extraordinarily high (Hill, & Pomeroy, 2001) with particularly serious consequences among children (Garvin, & Striegel-Moore, 2001). Preventing ED

would spare many people and their families years of suffering and the specter of death from starvation and suicide. Recent research has found a mortality rate of 4.0% for AN, 3.9% for BN, and 5.2% for EDNOS where suicide was the most common cause of death (Crow et al., 2009).

Etiology

Eating disorders have a multidimensional framework and no specific factor has been shown to explain the aetiology of ED (Schmidt, 2003). The multidimensional "model" proposes: predisposing (or risk) factors; sociocultural milieu (culture, social roles, friends), genetics, psychological characteristics, family - attributes that predispose individuals to develop ED; factors that precipitate or trigger the illness (stressors: sociocultural milieu, dieting, weight loss, overeating); and the physiologic and psychological processes that perpetuate these syndromes (maintaining factors) see *Figure 2*.

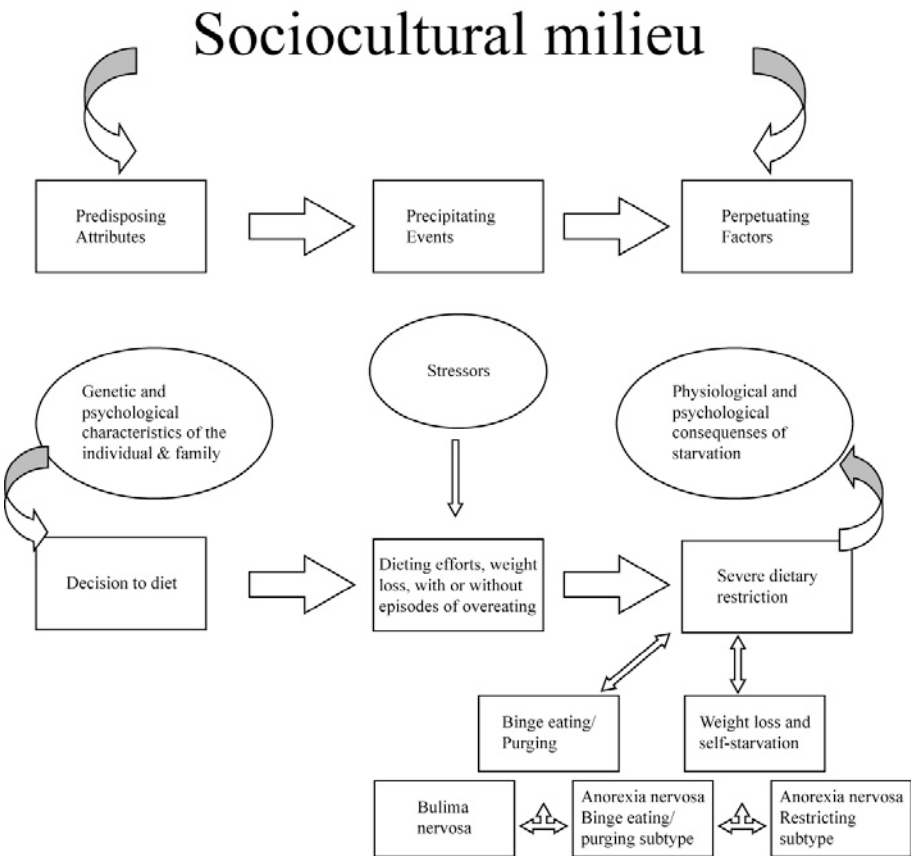

Figure 2. The multidimensional model (Garner & Garfinkel, 1980 modified by Hetherington, 2000)

Biological explanations for understanding the etiology of ED complement rather than conflict with the basic tenets of the multidimensional model (Hetherington, 2000). Social and cultural factors, biological vulnerability and genetic predisposition, and psychological factors are all thought to be potential contributory factors (Garner & Garfinkel, 1980).

For example, girls who are overweight and depressed in adolescence may engage in dieting, have poor self-esteem, and become frustrated by repeated attempts to lose weight in a culture that stigmatizes obesity and advocates slenderness as the healthiest and most desirable form. Thus, the individual's genetic predisposition, behavioral strategies, psychological processes that emerge from the struggle to lose weight, and social expectations of thinness will all act in combination to increase the risk of developing ED (Hetherington, 2000).

Are eating disorders a cultural phenomenon?

Non-Western cultures have been considered relatively immune from developing ED, by reason of different authentic cultural values that do not overvalue thinness, and even associate plumpness with positive attributes of wealth, fertility and femininity. Even obesity, in some societies, has been seen to reflect desirable sexual characteristics. Today there is a tendency to view non-Western cultures as fixed and static, but cultures are constantly changing (Nasser, 1988). Lower rates of ED have been observed in African-American women (Striegel-Moore et al., 2003), whereas higher rates of ED have been reported in young British South Asian women than in their white counterparts (Mumford, Whitehouse, & Platts, 1991). There are multiple reports on dramatic increases of ED in China, South Korea, and Japan (Bordo, 2009). Recent studies from different cultures have demonstrated that a large number of adolescent girls want to get thinner (e.g., Halvarsson, Lunner, Westerberg, Anteson & Sjödén, 2002; Reddan, Wahlstrom & Reicks, 2002; Gerner & Wilson, 2005, Austin & Smith, 2008; Latzer, Azaiza & Tzischinsky, 2009; Lee, Ha, Vann & Choi, 2009). Identification with Western cultural norms was one of the early explanations for the emergence of eating pathology in the so-called non-Western societies, which had been considered initially as immune from developing them. Cultural change is no longer unique to one particular culture or society it has indeed become global (Nasser, 1997). As Bordo (2009) pointed out "…the incredible spread of eating problems to extraordinarily diverse groups of genetic populations, over a strikingly short period of time, and coincident with the mass globalization of media imagery, strongly suggest that the culture is the 'smoking gun' that is killing people, and that the situation will not change until the culture does".

Attitudes and Behaviors

Our attitudes are shaped by the cultural context in which we live, and attitudes are an important prerequisite for development and change in eating and dieting behaviors. *Attitude* is a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor. An attitude develops on the basis of evaluative responding, that is, an individual does not have an attitude until he or she responds to an entity on an affective, cognitive, or behavioral basis (Eagly & Chaiken, 1993). Katz (1960) asserted that one of the functions attitudes serve is to organize and simplify people's experiences. Attitudes are ordinarily expressed in cognitive, affective and behavioral responses. Positive attitudes and subjective norms, and a greater perceived behavioral control, results in a stronger intention to perform in a certain behavior (Ajzen, 2002).

Risk and protective factors for disturbed eating

A risk factor is a measurable characteristic, an experience or an event that precedes an outcome associated with a higher probability of a certain outcome than would be expected in the general or unexposed population. The term risk factor is primarily used to describe factors associated with an increase of the probability of an undesirable or adverse outcome, whereas the term protective factor is used when referring to a factor that decreases the likelihood of an undesirable or adverse outcome (Kazdin, Kraemer Kessler, Kupfer & Offord, 1997). A risk factor plays a *causal* role (but should not be considered *the* cause) when it can be demonstrated that altering the risk factor changes the probability of the outcome (Kazdin et al., 1997). Described below are the proposed risk and protective factors for disturbed eating that are relevant for the present thesis.

Socio-cultural factors

Gender roles and ideals

The sociocultural context has been proposed to be of importance for the development of disordered eating and ED, by influences in body ideals, female socialization and eating behaviors (Steiner-Adair, 1986; Dorian & Garfinkel, 2002; Markey, 2004). The socio-cultural model hypothesizes that social pressures to be thin, coming from many different sources, i.e., parents, peers, teachers and the media, contribute to internalization of the thin ideal (Stice, 2002). Gender ideal – a role, a position, or a physical image of woman containing only the most desirable traits or behaviors – seems to be a prominent socio-cultural risk factor for ED (e.g., Steiner-Adair; 1986, Ravaldi et al., 2006; Thurfjell, Eliasson, Swenne, Knorring, & Engström, 2006). Children

form gender schemas (males vs. females) and the schemas may differ between individuals and be more or less stereotyped as well as more or less adaptive (Bem, 1998; Martin, Ruble, & Szkrybalo, 2002). The unrealistic standards for attractiveness set by Western society are argued by sociocultural theory to exclude the vast majority of individuals from matching these standards (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Consequently, individuals experience dissatisfaction with their appearance and this can lead to participation in behaviors intended to alter their body shape, which may include disordered eating. The socio-cultural model suggests that the pressure to be thin, from diverse sources such as the media, family, and peers, fosters internalization of the thin ideal and body dissatisfaction in girls, which in turn increases the likelihood of dieting, influences the individual's eating pattern and increases the risk of eating pathology (Steiner-Adair, 1986; Stice, 2002). Moreover, there is substantial evidence that disordered eating thrives in the soil of prejudices such as sexism and weightism that disproportionately affect females within patriarchal societies (Fallon, Katzman, & Wooley, 1994; Smolak & Murnen, 2004).

Family

A climate within the family focusing on appearance has a substantial correlation with disturbed eating patterns and weight fixations (Davis, Shuster, Blackmore & Fox, 2003). Family factors have been considered as contributors to eating disturbances (Smolak, Levine & Schermer, 1999) and studies suggest that parents directly, contribute to their children's eating problems by way of modeling and comments on shape and weight (Schwartz, Phares, Tantleff-Dunn & Thompson, 1999; Smolak et al., 1999). Five-year-old girls whose mothers dieted were twice as likely to be aware of dieting and weight-loss strategies as girls whose mothers did not diet (Abramovitz & Birch, 2000). The attitudes of fathers are also of relevance for their daughters' views about weight and shape (Agras, Bryson, Lawrence, Hammer & Kraemer, 2007). Girls who reported that their father dieted were more likely to have skipped meals and dieted in order to lose weight (Dixon, Adair & O'Connor, 1996). In one study the perceptions of family functioning between daughters with ED and their parents was compared (Dancyger, Fornari, Scionti, Wisotsky & Sunday, 2005). Mothers rated family functioning as significantly healthier and less chaotic than their daughters did. There were few significant differences between maternal and paternal perceptions of family functioning and no significant differences between fathers' and daughters' perceptions of the family (Dancyger et al., 2005). However, most studies have measured mothers' views (e.g., Smolak et al., 1999; Abramovitz, & Birch, 2000; McCabe, Riccardelli, Stanford, Keegan & Miller, 2007) and therefore relatively little is known about paternal influences rather than maternal influences. Croll and colleagues (2002) showed that family connectedness worked as a protective factor for disordered eating. Although a

great number of studies about family factors have been published, they continue to be controversial, especially since the observed patterns in some families could be a consequence rather than a cause of the eating disorder (Gowers & Shore, 2001).

Mass media

Mass media have promoted body image and eating disturbances over the last several decades. The body dimensions of females appearing, in television programs, have become thinner, and about one-fourth of the models in some fashion magazines satisfy the weight criteria for AN (Stice, 2003). That this thinning trend correlates positively with the apparent rise in eating disturbance was the initial line of evidence suggesting that the media contributes to disordered eating (Stice, 2003). Fiji is a striking example of the power of cultural imagery. Because of their remote location, the Fijian islands did not have access to television until 1995, when a single station was introduced (with programs from the United States, the UK, and Australia). Becker (2004) found, in this natural experiment, that the rates of body image and eating disturbance increased following the introduction of Western media to Fiji, a culture that was initially devoid thin-ideal images. Television programs based on such themes as "the biggest [weight] loser" and "super size vs. super skinny" and the popular music channel MTV are frequently seen by children and adolescents nearly all over the world – and naturally influences them. We live in a consumer culture that encourages us to binge on our desires at the same time as it glamorizes self-discipline and scorns fat as a symbol of laziness and lack of willpower (Bordo, 2009). Magazines express the messages that we have to get in shape, with the admonitions of the exercise and fitness industries, and deliver diet and weight advice aimed primarily for adults, but these are intercepted by children and adolescents.

Friends

Theoretical models have included the family, media and peers as important sociocultural sources of influence in eating problems (Thompson et al., 1999). Research examining the role of peers in body image and eating problems has primarily focused on individual perception of peer influence. Several studies show that peer pressure to be thin was strongly associated with disordered eating attitudes and behaviors in adolescent girls (Matsumoto, Kumano, & Sakano, 1999; Stice, 1998). In respect to the role of a social peer network, Hutchinson and Rapee (2006) found that girls who were not part of a friendship clique had significantly lower self-esteem, higher BMI, more body image concern and extreme weight loss behaviors compared with clique members. Furthermore, girls who believed thinness would improve their friendships, regardless of actual body size, were more likely to diet and to be concerned about their weight (Gerner & Wilson, 2005), a finding that clearly

shows the importance of the thinness ideal and its interaction with eating and dieting habits.

Biological factors

BMI

Several studies indicate that disturbed eating pattern is more frequent among girls who have a high BMI (e.g., Heatherton, Mahamedi, Striepe, Field & Keel, 1997; Edlund, Sjödén, & Gebre-Mehdin, 1999; Lunner, 2003; Elfhag & Linné, 2005; Berger, Schilke & Strauss, 2005). In a Swedish study, Swenne (2001) found that adolescent girls with an eating disorder were heavier and less lean than the population average before the start of weight loss. It has been shown that females who perceived themselves to be overweight prior to puberty scored significantly higher on measures of disordered eating, asceticism and perfectionism (Ackard & Peterson, 2001) and it has also been shown that psychological traits associated with disordered eating appear among obese patients, particularly among girls (Lundstedt, Edlund, Engström, Thurfjell, & Marcus, 2006).

Physical development

Sexual maturation is a developmental period with profound physical and psychological consequences (e.g., changes in stature, increased adiposity tissue and fertility) and mental processing (Striegel-Moore et al., 2001). Prepuberty, adolescence and early adulthood are important and sensitive periods, which are critical for the development of eating disturbances. The thin-ideal exerts a strong influence on body image, especially in adolescence when young people are particularly vulnerable to these messages (Cafri, Yamamiya, Brannick & Thompson, 2005). Disordered eating increases dramatically in puberty, occuring rarely in prepubertal individuals (Hayward et al., 1997; American Psychiatric Association, 2000). Puberty is associated with a greater increase in fat mass in girls than in boys, and with this increase in fat mass the leptin production also increases, leptin is the peripheral hormone that provides feedback to the hypothalamus regulating weight and appetite (Mantzoros, 1999). This leptin-driven enhanced appetite may be one of the factors associated with body dissatisfaction and dieting, particularly in those already predisposed to obesity (O'Dea & Abraham, 1999).

Psychological factors

Perfectionism and asceticism

Links between psychological variables and ED have been the subject of numerous studies over the years, focusing on several variables. A variable that has been shown to be significant is perfectionism (Bastiani, Rao, Weltzin &

Kaye, 1995; Halmi et al., 2000; Sutandar-Pinnock, Woodside, Carter, Olmsted & Kaplan, 2003) and asceticism (Thurfjell, Edlund, Arinell, Hägglöf & Engström, 2003). Research generally supports the association between perfectionism and ED, but it is uncertain whether perfectionism is associated specifically with disordered eating, or more generally with maladjustment (Steiger & Bruce, 2004). Perfectionism is one of the main factors involved in the onset and maintenance of AN (Fairburn & Harrison, 2003), and it seems that perfectionism has a strong inherited and transgenerational component (Halmi et al., 2000; Woodside et al., 2002). Perfectionism is associated with high expectations, with regard to oneself and one's life, and also with depressive feelings (Bizeul, Sadowsky & Riguard, 2003). Asceticism, on the other hand, has associations with ritualism, self-discipline, and absolute self-control (Bizeul et al., 2001). In a sample of anorectic patients, a significant correlation between asceticism and perfectionism was found (Fassino et al., 2006). Women with ED frequently report seeking perfection, not only understood as having a perfect body, but on a more fundamental level as attaining a pristine, purified or uncontroversial existence (Saukko, 2009).

Self-esteem

Self-esteem reflects a person's overall evaluation or appraisal of her or his own worth. Low self-esteem is well recognized in patients with eating disorders (Silverstone & Salsali, 2003) and some researchers suggest that lowered self-esteem is the final common pathway leading to eating disorders (Gual, Perez-Gaspar, Martinez-Gonzalez, & Lahortiga, 2002). Low self-esteem increases the susceptibility to development of psychiatric disorders, and the presence of a psychiatric disorder in turn lowers self-esteem (Silverstone & Salsali, 2003). In a study among Australian female adolescents, it was concluded that young girls with heavier actual weight and perception of being overweight were particularly vulnerable to developing low self-esteem (Tiggemann, 2005). High self-esteem may be considered as a protective factor in relation to eating problems (Pesa, 1999). High self-esteem has been found to protect against weight-related body dissatisfaction, that is, individuals with high self-esteem tend not to feel fat, while low self-esteem predicts feelings of fatness even after weight is controlled for (Tiggemann, 2005). Girls who diet have been found to have significantly lower self-esteem than their non-dieting peers, and two-thirds of the dieting girls were found to have normal body weights (Rosen, Gross, & Vara, 1987). Many girls perceive themselves as weighing more than they do. Some researchers argue that self-esteem is relatively high in childhood and drops during adolescence, and a gender gap emerges in adolescence, such that adolescent boys have higher self-esteem than adolescent girls (Kling, Hyde, Showers & Buswell, 1999; Robins & Trzesniewski, 2005). Self-esteem is relatively stable, but this stability (i.e. rank-order stability) is lower during childhood and adolescence.

Self-esteem seems to function both as a risk and a protective factor for the development of ED.

Eating attitudes and a wish to be thinner

Adolescent girls receive consistent messages from their social environment that a slender body is attractive and desirable (Steiner-Adair, 1986). However, there is individual variation in the extent to which girls internalize to this thin ideal (Polivy & Herman, 2004). Most girls cannot readily attain a thin body, which leads to body image discrepancy – dissatisfaction with body shape – and a desire to be thinner. In a World Health Organisation (WHO) collaborative study, comparing health behaviors among adolescents in 41 countries, the results in the Swedish sample indicated that 48% of the 15-year-old girls thought that they were too fat, while only 9% were actually overweight (Currie et al., 2008). The mean value in all 41 countries was 41% of girls feeling that they were too fat and 10% actually being overweight (Currie et al., 2008). A number of studies have demonstrated that a large number of adolescent girls have a wish to be thinner (e.g., Tiggemann, Gardiner, & Slater, 2000; Halvarsson et al., 2002; Reddan et al., 2002; Gerner & Wilson, 2005). An Australian study of children aged 5–10 years (Williamson & Delin, 2001) reported that girls of all ages preferred a thinner ideal than the silhouette drawings of their current size, they demonstrated a preference for a small body in girls even at the age of 5 years. Further, studies also show that young females wish to be thinner due to feeling better about themselves, or maintaining good health (Gustafsson, Edlund, Kjellin, & Norring, 2008). A wish to be thinner is of importance, because its presence is strongly associated with an increased risk of developing disturbed eating and clinical ED (Goldschmidt, Aspen, Sinton, Tanofsky-Kraff, & Wilfley, 2008).

Behavioral factors – Lifestyle factors

Dieting

Research has shown that the frequency of dieting and disordered eating has increased in Swedish young girls (Halvarsson, 2000). The number of girls who wanted a thin body and also dieted increased with increasing age in the ages 9–14 (Halvarsson, 2000). Dieting can be a precursor to an ED (Stice, 2001) and can also increase the risk of binge eating and weight gain over time (Stice, Presnell, Shaw & Rohde, 2005). It has been demonstrated that female teenagers (aged 14–15) who diet severely are 18 times more likely, and girls who diet moderately are five times more likely, to develop an ED than their non-dieting peers (Patton et al., 1999). Smolak and colleagues (1999) showed a high frequency of dieting, discontent with one's own body, and negative attitudes to body fat, among elementary school children. They found further that these behaviors could lead to concentration difficulties,

headaches, irritability, fatigue and, in the worst case, incipient eating disturbances. In WHO's study (Currie et al., 2008) comparing 41 countries, 15% of the Swedish 15-year-old girls reported actively trying to reduce weight compared with 23% in the whole sample.

Physical activity and television viewing

Decreased physical activity and increased television viewing time, in a sample of adolescents aged 11–16 years were associated with overweight and obesity (Janssen, Katzmarzyk, Boyce, King & Pickett, 2004). One study (Skidmore & Yarnell, 2004) found that physical activity at work, at school or in leisure time has declined to minimal levels, and sedentary behaviors such as television viewing and computer games have become major pastimes. A recent study reported that adolescents aged 8–18 years were consuming media for 7.38 hours daily and the average amount of television viewing was 4.29 hours in a typical day (Kaiser Family Foundation, 2010). More cars per family and the high tempo of society have led parents to transporting their children to school and to recreational activities by car instead of letting them walk or bicycle. In respect to physical activity, studies show a significant correlation between physical activity and health (Strong et al., 2005; Vizcaíno et al., 2008; Sallis, 2009). Strong et al. (2005) recommend school-aged youths should participate in 60 minutes or more of moderate to vigorous physical activity daily. Exercise is medicine and the physicians need to prescribe it (Sallis, 2009). On the other hand, extreme physical activity can be a risk. Studies indicate a higher frequency of disordered eating in elite athletes (Fulkerson, Keel, Leon, & Dorr, 1999; Rosendahl et al., 2009) and pressures from coaches to lose weight may be a risk factor for the development of disordered eating among athletes. However, it has also been found that self-reported disordered eating was more prevalent among controls than among adolescent elite athletes (Martinsen, Bratland-Sanda, Eriksson, & Sundgot-Borgen, 2010), and researchers have suggested that athletes' positive outlook of life and high self-efficacy may serve as protective factors (Fulkerson et al., 1999).

Eating patterns and the family context

Children's eating patterns have been a special concern since it was found that eating patterns formed early in life are likely to persist into adulthood (Chitra & Reddy, 2007). The overall eating pattern, rather than intake of particular nutrients or foods, affects long-term weight gain or maintenance because dietary patterns reflect cumulative effects of the diet (Newby et al., 2003). Research shows that the family meal has a significant impact upon the nutritional quality of children's diets (Neumark-Sztainer, Hannan, Story, Croll & Perry, 2003; Berkey et al., 2000). A prospective study spanning 17 years (Kotler, Cohen, Davies, Pine, & Walsh, 2001) demonstrated that eating problems such as eating conflicts, struggles over food, and unpleasant meals

in early childhood conferred a high risk of developing an ED in young adulthood. A higher frequency of partaking of family meals, is associated with individuals' higher intake of fruits, vegetables, milk, and lower intake of fried foods and soft drinks (Videon & Manning, 2003). Unfortunately, processed foods rich in sugar and fat are far cheaper than fresh fruits and vegetables (Bordo, 2009). Cultural values regarding eating emerge and change primarily in a family context and at an early age (Markey, 2004). One study identified solitary eating as a major risk factor for ED (Martinez-Gonzalez et al., 2003). Frequent family meals, a positive atmosphere at family meals, and regular meals have been found to be protective factors for disordered eating among adolescents (Neumark-Sztainer et al., 2007).

Prevention of Eating Disorders

To prevent and reduce disordered eating, ED and obesity in children and adolescents, which is a public health priority, the identification of risk and protective factors are important to build up adequate prevention strategies. The first prevention efforts were frequently directed at universal audiences (inclusion of participants regardless of their level of risk for developing an ED) and were largely ineffective in reducing prospectively identified risk factors (Austin, 2000). Rosenvinge and Børresen (1999) argued that we have to take a *health promotion perspective* and Neumark-Sztainer (2005) argued that there are practical and conceptual reasons for utilizing an *integrated approach for ED and obesity prevention*. It is very important that any prevention program evaluates and follows up over time, because some authors suggest that universal prevention programs may actually do more harm than good (Rosenvinge, & Børresen, 1999). However, during the last few decades several prevention programs, both universal programs and programs targeting at-risk individuals, have been designed to prevent eating problems. One example is a school-based intervention, including healthy school lunches and after-school care snacks, as well as strict rules against unhealthy eating, which reduced the prevalence of overweight and obesity in children aged 6–10 years (Marcus et al., 2009).

Since previous research has found that self-esteem was protective against binge eating and extreme weight control behaviors in adolescent girls, over a five year period (Neumark-Sztainer et al., 2007) it might be useful to enhance self-esteem for the prevention of eating disturbances. However, in order to *take a broader spectrum* of eating and weight-related problems into account when designing prevention interventions, health care providers need to help adolescents and their families to focus more on behavioral changes and less on weight (Neumark-Sztainer, 2009).

The need for more research

Despite the relatively high level of knowledge in the ED field, there is a lack of prospective studies in the area of research on ED (Jacobi et al., 2004) and most prospective studies have assessed risk factors that occur either at birth (Favaro, Tenconi, & Santonastaso, 2006) or in adolescence. Hence relatively little is known about early pathways for the development of ED. Longitudinal studies make it possible to study multifactorial conditions that evolve over time. It facilitates mapping of high risk groups, risk factors- and protective factors, as well as contributing factors, which taken together can be very valuable for the prevention of ED and its precursor, disordered eating. Eating attitudes, family and peer influences, lifestyle behaviors, BMI and disturbed eating among children and adolescents need to be studied prospectively within a significantly longer time frame than has been done in previous research. Thus, a seven-year longitudinal study including girls aged 7–20 years and their parents, makes it possible to study changes in such variables from childhood to womanhood. In order to enhance preventive efforts we need to understand more about risk factors and protective factors to make prevention more effective.

Aims

The general aim of the present thesis was to investigate the development and prediction of disturbed eating attitudes in Swedish girls aged 7–20 years and to identify risk and protective factors. Eating attitudes are examined both as a predictive variable and as an outcome variable. A further aim was to investigate lifestyle behaviors in relation to a wish to be thinner, and to describe motives for a wish to be thinner and weight control practices.

Study specific aims and research questions

Study I

The aims of study I were, among girls 11 and 13 years and their parents, 1) to investigate changes in the girls' eating attitudes over a three year period and 2) to examine if the girls and their parents, eating attitudes, perfectionism, asceticism, relation to family/family climate and BMI (for the girls) could predict the degree of disturbed eating attitudes for the girls two years later.

Study II

The aims of study II were, among girls 9, 11 and 13 years, 1) to examine whether a wish to be thinner as a representation of the internalized thin-ideal might be related to lifestyle factors and increase the risk of disturbed eating attitudes over a five year period and, 2) to investigate the impact of BMI and age, on the girls' eating attitudes.

Study III

The aims of study III were, among girls 7, 9 and 11 years, 1) to examine a wish to be thinner, dieting attempts, described motives for wishing to be thinner and weight-control practices, at four assessments over a seven year period and further, to account for the role of BMI 2) to examine if the motives for wishing to be thinner, and weight control practices, differed between girls with different BMI. Weight control practices for girls who successfully lost weight are described.

Study IV

The aims of study IV were, among girls 9 and 13 years and their parents, 1) to examine to what extent girls' eating attitudes, a wish to be thinner, dieting, BMI, perfectionism and self-esteem, as well as 2) their parents' eating attitudes and perfectionism, predict the degree of disturbed eating attitudes for the girls seven years later. The third aim 3) was to examine if the girls' normal body weight, healthy eating attitudes and low perfectionism, together with high self-esteem, might operate as protective factors against them later developing disturbed eating attitudes.

Method

Design

Studies I–IV are part of a seven-year prospective longitudinal project, the IDA-Project (Identification of Dieting in Adolescent girls), studying risk and protective factors related to the development of eating disturbances in girls aged 7–22 years. The study employs an accelerated multicohort design (Kazdin, 1998) including simultaneous assessment of several age groups. The main cohort was recruited in 1995 and consisted of girls aged 7, 9, 11, 13 and 15 years. They were assessed for three consecutive years (1995–1997) and then again after three years (2000) and again two years later (2002). An additional study group (societal cohort) was recruited in 1999 and the purpose was to investigate the extent to which the data from the main cohort was specific to the time period investigated (*data presented elsewhere). Please see *Table 1*.

Table 1. Ages of the participating girls at each year of assessment for the main cohort, and the societal cohort

Main Cohort 1995 Year 1	1996 Year 2	1997 Year 3	Societal-Cohort* 1999 Year 5	Main Cohort 2000 Year 6	2002 Year 8
Age					
7	8	9	7	12	14
9	10	11	9	14	16
11	12	13	11	16	18
13	14	15	13	18	20
15	16	17	15	20	22

Subjects

Participants in the main cohort were girls in five age groups: 7, 9, 11, 13 and 15 years of age in Year 1 (1995), living in Uppsala County (central Sweden, population 289,062 in 1995). The county was first divided into six areas in order to represent the city, urban communities and the countryside – to reflect the national pattern of living conditions. A stratified random sampling

procedure was performed among all school classes in the county. The purpose was to achieve a random sample of girls who would represent the distribution of living conditions in the county as closely as possible, in order to enhance external validity. A total of 38 schools were sampled randomly from 97 schools (*N*=7330) in the county. Three of the invited schools declined (two schools were participating in other research projects and no reason was given from the third). Two additional schools were excluded from the study due to their requirement of economic compensation and Swedish language problems among the girls. Six new schools were then sampled randomly from the 59 remaining schools and replaced the non-participating schools, leaving 39 schools in the total sample. Recruitment was terminated when the number of girls who had accepted the invitation had reached at least 250 girls/age group. In the two oldest age groups it was expected that there would be a higher percentage of dropouts at the follow-up in year 2000 and 2002, since these girls would not still be in school. Therefore a larger number of girls were invited and included in these two age groups.

Study I

At Year 1 (1995) 849 girls aged 11 and 13 years and their parents were invited to participate. The total number of girls that participated was 567 (67%) and 754 parents. In Year 3 (1997), all the girls and parents who had participated in Year 1 were invited again and 507 girls participated (in total 89%). Within this study, only girls aged 13 and 15 years at Year 3 were of interest, and only girls with at least one participating parent were enrolled in the study, resulting in a sample of 383 girls (see *Figure 3*).

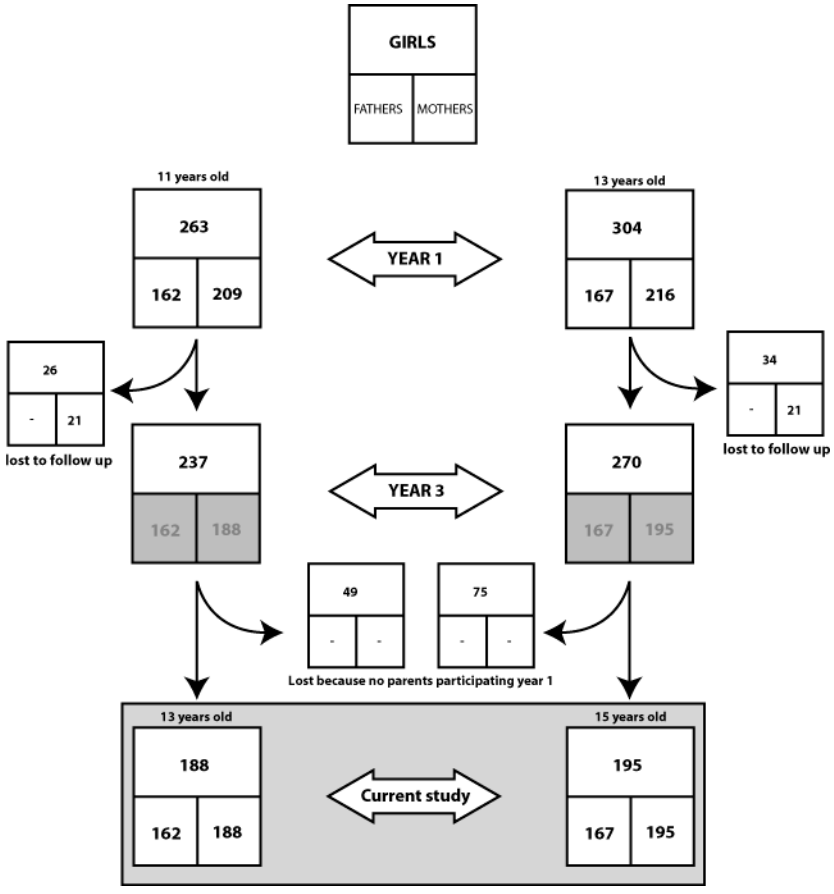

Figure 3. Participating girls and parents in study I.

Study II

At Year 1 (1995), 1619 girls aged 9–15 years were invited. The total number of girls that participated was 1061 (66%), and three additional 13-year-old girls were identified and included. At Year 3 (1997) and Year 6 (2000), all the girls who had participated at Year 1 were invited to participate again, resulting in a total of 890 participants at Year 3 and 593 participants at Year 6 (in total 56% of the girls who actually participated at Year 1) (see *Figure 4*).

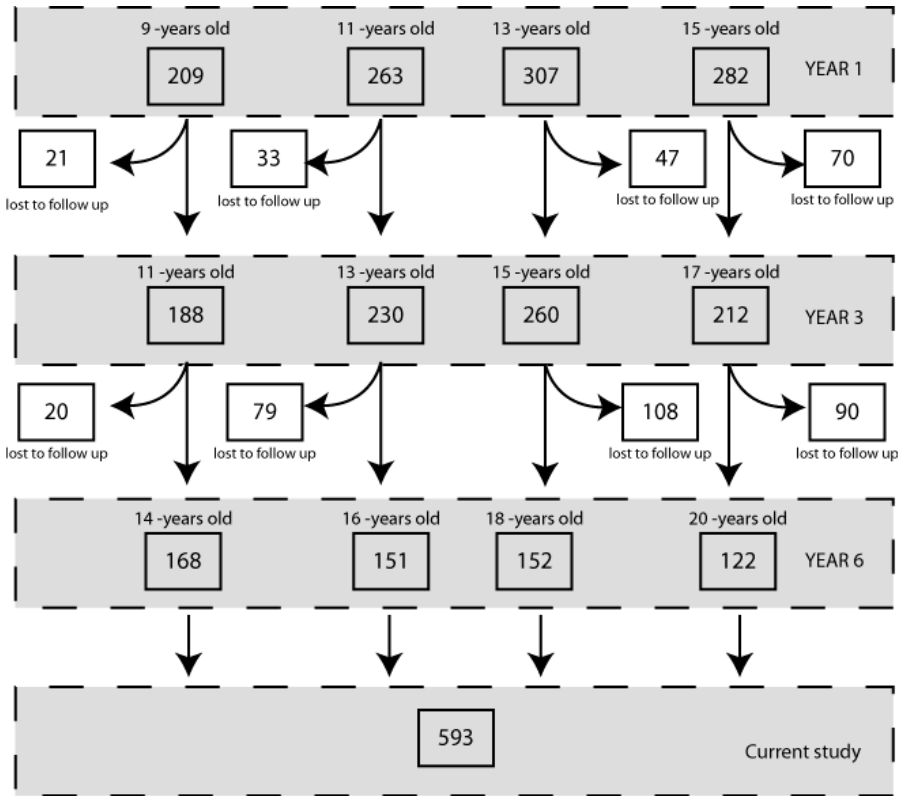

Figure 4. Participating girls in study II.

In study II the 593 participants were divided into two groups: girls who at Year 1 "wished to be thinner" (n=218) and girls who "didn't wish to be thinner" (n=375). It should be noted that the groups "wish to be thinner" and "didn't wish to be thinner" represent girls who had responded "yes" or "no" to the question: "Do you want to be thinner today?", at the first assessment. Those reporting a wish to be thinner were then compared with those not reporting such a wish.

Study III

Subjects in study III were girls aged 7, 9 and 11 years in Year 1 of the study. In Year 1 (1995), 1183 girls were invited and a total number of 703 girls participated. In study III 411 participants were included (58% of the girls who actually participated, at Year 1), and these girls participated at least in the first and the last year of the four assessments. A majority of the included girls participated in all assessments (see *Figure 5*).

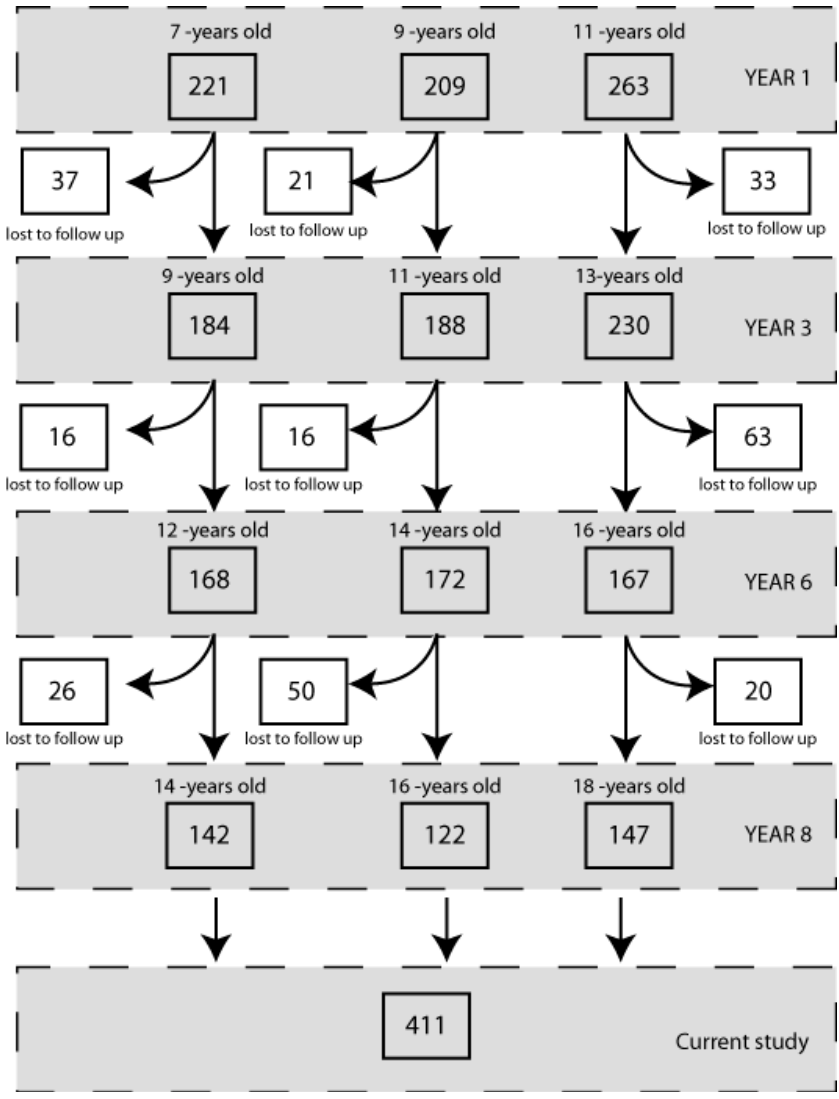

Figure 5. Participating girls in study III.

Study IV

At Year 1 (1995), 855 girls (aged 9 and 13 years) and their parents were invited to participate. The total number of girls that participated was 516 with 699 parents. At Year 8 (2002), all the girls and parents who had participated at Year 1 were invited to participate again, resulting in a total sample of 264 girls (in total 51% of the girls that participated Year 1), and 410 parents. Within this study only girls that participated Year 1 and Year 8 were of interest and only girls with at least one participating parent were enrolled, resulting in a sample of 228 girls (see *Figure 6*).

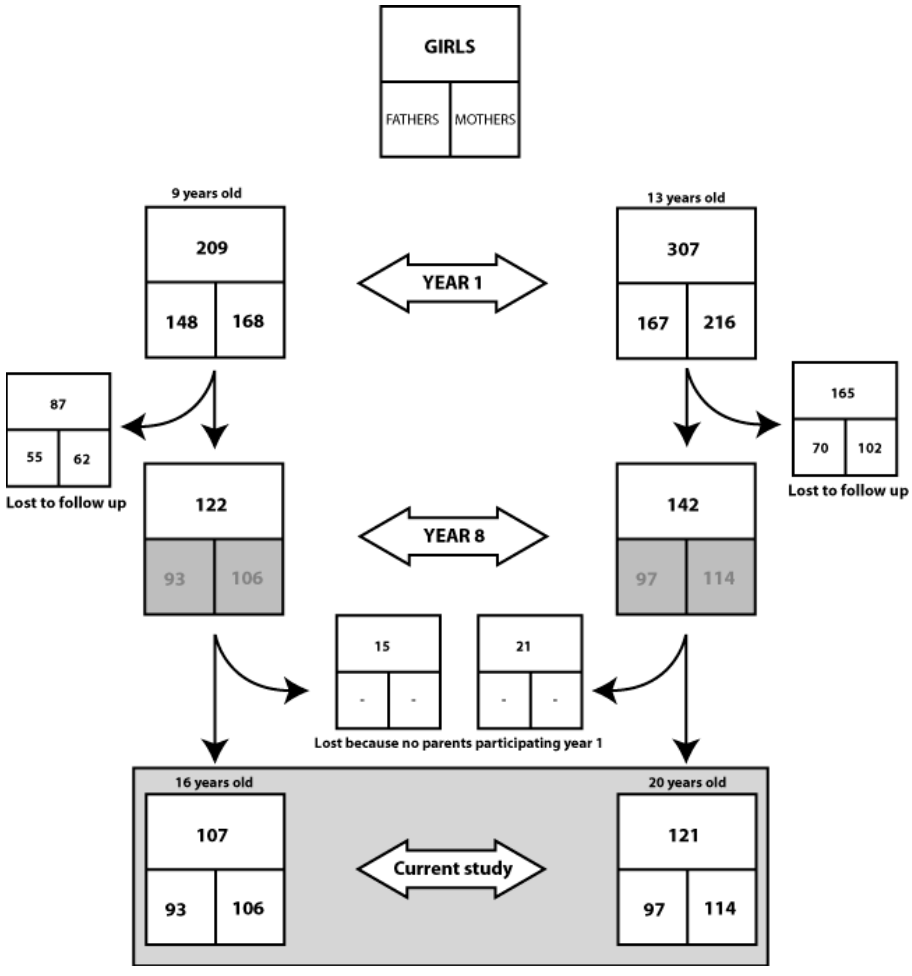

Figure 6. Participating girls and parents in study IV.

Attrition

The attrition is a result of the longitudinal character of the study. The relatively high rate of non-participants is a result of the inclusion criteria (in study I and IV) according to which only girls with at least one participating parent would be enrolled in the studies. However, comparisons between girls who participated in each study and girls who participated only in the first assessment did not differ in the dependent variables. However, in study I and IV, comparisons between girls with and without a participating parent showed significant differences in eating attitudes for certain age groups. More about attrition will be found in the methodology discussion.

Procedure

All principals were sent a written invitation for their school to participate. When the principal of each school had been informed about the purpose and procedure of the study, and had approved the school's engagement, separate written invitations were sent to all the girls of the relevant age-groups in the school, their parents, teachers and school nurses. These letters included information about the procedure and purpose of the study and the assurance that all data would be treated confidentially. Informed consent was required from both the girls and their parents in order for the girls to participate. Girls who had not replied to the invitation were allowed to participate on the day of the data collection, if they were 11 years or older and had their parents' written or oral consent (by telephone). Girls who were 9 years (grades 3) and below participated in an individual structured interview (based on questionnaires). Interviews were also used with a few older girls with reading and writing difficulties. The interviews were conducted by one of the research staff during regular class time. Girls who were 10 years (grades 4) and above, completed questionnaires during regular class time, supervised by the research staff. In the first four assessments (Years 1–5) the girls had a break and received a soft drink when they had filled in about half the questionnaire before continuing. The girls also received awards in the form of bags, t-shirts, simple cookbooks and movie tickets over the years. The participants were informed about the longitudinal design of the study and that they would receive new invitations each year. After the girls had completed the assessment, they were asked to take an envelope with questionnaires home to their parents, who were asked to return the completed forms by mail. The teachers also received and completed forms by mail. The school nurses recorded the girls' height and weight on a separate occasion at all assessments when the girls went in primary school, besides by self-report in Year 3. Self-reported height and weight was also used for girls aged 18 years or above. On the first data collection, the project staff met with all the teachers involved to make sure that they had proper information about the study. All the research staff involved in the project received interview training.

Measures

Questionnaires for the girls

Children's Eating Attitudes Test (ChEAT)

A Swedish version (Edlund, Hallqvist, & Sjödén, 1994) of the Children's Eating Attitudes test (ChEAT: Maloney, McGuire et al., 1989) was used. The ChEAT is a 26-item questionnaire assessing attitudes towards eating and dieting behavior: "Dieting" (13 items), "Bulimia and food preoccupa-

tion" (6 items) and "Oral control" (7 items). Each item is rated on a 6-point Likert scale ("never" to "always"). The response reflecting the most disturbed eating attitude is scored 3, the adjacent response 2 and the next response 1. The remaining three responses are not scored. Data is presented in terms of these values, referred to as ChEAT-scores (Garner & Garfinkel, 1979). The 26-item instrument had adequate internal reliability (Cronbach's alpha of .83) in our Swedish sample (7–15 years, N=1340) and is used in study I. However, items 13, 19 and 25 showed low correlation of item to total and when these items were excluded, as also been suggested by Smolak and Levine (1994), the 23-item instrument showed even better internal reliability (Cronbach's alpha of .85). A ChEAT score of 20 has been suggested to be a cut-off for developing clinical eating disorders (Garner, Olmsted, Bohr, & Garfinkel, 1982; Maloney et al., 1989), but since we excluded three items, a new cut-off score of $\geq$ 16 (95th percentile in Year 1) was used in study II and IV (a cut-off $\geq$ 20 was used in study I). A cut-off at the 95th percentile for extreme groups has been used in several other studies (e.g. Basaran, 2009; Woo, Zeller, Wilson, & Inge, 2009). Higher scores are indicative of more disturbed eating attitudes and girls with a ChEAT score of $\geq$ 20 (study I) or $\geq$ 16 (study II & IV) respectively are categorized as having "disturbed eating".

Demographic and Dieting Questionnaire (DEMO)

The extended version of the Demographic and Dieting Questionnaire (DEMO, Maloney et al., 1989; Swedish version: Edlund et al., 1994) was employed. DEMO is based on the Demographic and Dieting Questionnaire that Maloney et al. (1989) constructed to solicit children's ideas about family and self-dieting patterns, as well as peer pressure to be thin. The Swedish extended version of DEMO, is also based on other validated risk factor questionnaires in the ED field and is similar in its approach, especially to the McKnight Risk Factor Interview (McKnight Investigators, 2003). DEMO includes 43 questions concerning eating habits (2 items), meal patterns (6 items), physical activity (8 items), television viewing (2 items), wish to be thinner (6 items), dieting behaviors (12 items) and demographic questions, e.g., living conditions (7 items). Answers to questions, having more alternatives than yes/no, were dichotomized because the distribution was skewed. DEMO has been used in several Swedish studies (e.g. Lunner et al., 2000; Halvarsson et al., 2002; Gustafsson et al., 2008).

The Eating Disorder Inventory for Children (EDI-C)

EDI-C is a version of the EDI-2 (Garner, Olmsted & Polivy, 1983; Swedish version: Edlund, Halvarsson, Gebre-Medhin, & Sjödén, 1999) adapted for children aged 7 years and above, consisting of 91 items divided into 11 subscales. The subscales Perfectionism (6 items) and Asceticism (8 items) were used in study I, and Perfectionism alone was used in study IV. Res-

ponses are given on a 6-point scale ranging from "never" to "always". In contrast to the instructions in the scale's manual (Garner et al., 1983), according to which each response is weighted from 0 to 3, untransformed scores (1–6) were used as they have been found to be more appropriate for nonclinical populations (Schoemaker, van Strien & van der Staak, 1994) and the most dysfunctional attitude is ranked 6, followed by 5, 4, 3, 2, and 1. In a group of girls aged 11 to 18 years, the alpha coefficients for the original EDI scales ranged from .69 to .93. Thurfjell and colleagues (2003) presented Cronbach alpha values for Swedish girls aged 13 to 18 years. The Perfectionism (.69) subscale proved to be adequate while the Asceticism scale (.52) was not. Girls younger than 11 years of age did not answer the EDI-C questionnaire.

I Think I Am

"I Think I Am" is a Swedish instrument for the assessment of self-esteem (Ouvinen-Birgerstam, 1985). Its content is derived from a number of well-established self-esteem scales. There are two versions, a shorter one for elementary school children and a longer version for middle and high school students. It consists of 72 items with a 4-point scale ("Does not apply" to "Does apply very well") and comprises five subscales: Body esteem (14 items), Skills and abilities (14 items), Psychological well-being (16 items), Relation to family (14 items), and Relation to others (14 items). Correlations between each subscale and the total score have been reported to be adequate (.71–.82), and good split-half reliability (.91–.93) has been demonstrated (Ouvinen-Birgerstam, 1985). The Relation to family subscale was used in study I and the whole instrument, was used in study IV.

Body Mass Index (BMI)

Body Mass Index (BMI; Keys, Fidanza, Karvonen, Kimura & Taylor, 1972) was calculated on the basis of weight and height, adjusted for age (BMI = kg/m2) and were used in study I and IV. Since normal weight-ranges differs according to age and sex, age and sex adjusted BMI percentiles for children and adolescent were used (He, Albertsson-Wikland & Karlberg, 2000) in study II and III, and the participants were divided respectively into BMI groups: <10=1, <25=2, <50=3, <75=4, <90=5, >90=6.

Questionnaires for the parents

Eating Attitudes Test (EAT)

EAT (Garner & Garfinkel, 1979; Swedish version: Sohlberg, Berg & Holmgren, 1984) is a 26-item questionnaire assessing attitudes towards eating and dieting behavior; "Dieting" (13 items), "Bulimia and food preoccupation" (6 items), "Oral control" (7 items). Each item is rated on a 6-point

Likert scale ("never" to "always"). The response reflecting the most disturbed eating attitude is scored as 3, the adjacent response 2 and the next response 1. The remaining three responses are not scored. Data is presented in terms of these values referred to as EAT scores (Garner & Garfinkel, 1979). Higher scores are indicative of more disturbed eating attitudes. EAT scores above 20 have been suggested to be a cut-off for developing clinical eating disorders (Garner et al., 1982).

Eating Disorder Inventory 2 (EDI-2)

EDI-2 (Garner, 1991) consists of 91 items divided in 11 subscales. The subscales Perfectionism (6 items) and Asceticism (8 items) were used in study I and only Perfectionism was used in study IV. Responses are given on a 6-point scale ranging from "never" to "always". In contrast to the instructions in the original manual (Garner et al., 1983), according to which each response is weighted from 0 to 3, untransformed scores (1–6) were used (Schoemaker et al., 1994).

The Family Climate

The Family Climate (Hansson, 1989) is a self-rating scale, used in several Swedish studies (Ryden et al.,1994; Wallin & Kronvall, 2002). It comprises a list of 85 adjectives, selected to reflect different aspects of the emotional atmosphere in the family. The family member marks 15 or more of the words she/he finds descriptive of her/his family. Through factor analysis, four independent aspects of family climate have been identified: Closeness (harmony, warmth and security; 18 words), Distance (coolness, rejection, negative feelings; 11 words) Expressiveness (open and direct expression of feelings; 6 words) and Chaos (confusion, nervousness, instability; 6 words). An index is calculated for each of the factors. The Family Climate has a high test-retest reliability (3 weeks, r=0.95; 5 months, r=0.89). It has been shown to differentiate significantly between non-clinical families, families with alcohol-abuse, and families referred for psychological or psychiatric treatment. A high score on a particular dimension reflects that the individual has selected many adjectives within a specific cluster.

Table 2. Instruments and measures used in Studies I-IV.

	Studies			
Instruments	I	II	III	IV
BMI	•	•	•	•
ChEAT	•	•		•
DEMO		•	•	•
EAT	•			•
EDI-2	•			•
EDI-C	•			•
"I Think I Am"	•			•
The Family Climate Scale	•			

Statistical methods and data analyses

Study I

Dependent t-test and Chi-square tests were used to explore differences of mean scores in ChEAT and the number of high scorers between Year 1 and Year 3. Correlations (Pearsons) were computed between the predictor variables at first assessments and ChEAT scores at Year 3. Pairwise differences were examined using the Bonferroni adjustment for multiple comparisons. Predictors showing statistically significant correlations were entered simultaneously in a standard multiple regression analysis. The dependent variable was ChEAT scores at Year 3 and the predictor variables were ChEAT scores, EAT scores, BMI, EDI-C and EDI-2 (subscales Perfectionism and Asceticism), Family Climate, I Think I Am (subscale Relation to Family) at Year 1. Missing values were replaced with the mean for the individual in the subscale (if not more than 20% was missing on individual items).

A significant level of 0.05 was used for all statistical analyses.

Study II

Chi-square analyses and Mann-Whitney *U*-test were employed to analyze differences in eating attitudes, dieting, eating behavior, physical activity, television viewing and living conditions at Year 1, Year 3 and Year 6, between the group of girls who at Year 1 "wished to be thinner" and the girls who "didn't wish to be thinner". Descriptive statistics were used to show mean and median values. Analyses of variance (repeated measures) were used to compare ChEAT data and BMI percentiles between the girls who "wished to be thinner" and the girls who "didn't wish to be thinner" at the

three assessments. To study if the possible differences in ChEAT scores between the two groups could be explained by BMI or the girls' age, an ANCOVA was run with BMI and age as a covariate. Correlations (Pearsons) were calculated to validate measured and self-reported BMI at Year 1 and 6. Descriptive statistics were used to show mean and median values. The Bonferroni test was used for adjustment for multiple comparisons. Missing values in ChEAT were replaced with the median for the individual in the subscale (if not more than 20% was missing on individual items).

Study III

The Cochran Q-test for overall differences was employed to explore within-group changes over time in the different age groups in respect to a current wish to be thinner and current dieting. Descriptive statistics were used to present the number of participants who were currently dieting as well as data from the four assessments considering motives for wishing to be thinner and weight control practices. The Wilcoxon test was used to investigate if BMI percentiles changed for the girls over time. Since we were interested in comparing girls who had a higher BMI than average in preadolescence, BMI were dichotomized with a breakpoint at the 75^{th} percentile of age-adjusted BMI at Year 1. Chi-square tests were used to explore differences in reported motives for wishing to be thinner and weight control practices between girls in the two BMI groups ($< 75^{th}$ BMI-percentile vs. $\geq 75^{th}$ BMI-percentile at Year 1) at Year 1, 3, 6 and 8. Pairwise differences in motives were examined using the Bonferroni adjustment for multiple comparisons. The Mann-Whitney *U*-test was used to compare reported number of motives for wishing to be thinner between the two BMI groups ($< 75^{th}$ vs. $\geq 75^{th}$ Year 1) in the four assessments. The noted answers to the semi-structured open-ended question: "If you have ever wished to be thinner was it in order to:" was analyzed using quantitative content analysis. The data was coded in four steps; first reviewing a sizable portion of the data to get a feel for the content, then developing a category scheme (Polit, & Beck, 2004), assigning codes (a number) to each category and reading all the answers and entering the code for each record in the survey responses. This technique is suitable for organizing answers to semi-structured open-ended questions. The classification system was discussed between the first and the last author, until an agreement on the relevance of the categories was reached. The answers to the semi-structured open-ended question: "If you are trying to lose weight, what methods are you using?" were analyzed using manifest content analysis (Weber, 1990; Kondracki, Wellman, & Amundson, 2002). All answers were grouped into mutually exclusive categories reflecting central messages in the answers. Answers classified in the same category were presumed to have similar meanings. The content analysis was carried out by hand by the first and last author. Credibility concerning classification categories was attained

among the authors through re-categorization and in cases of discrepancy, consensus was reached. Associations between measured and self-reported BMI at Year 1 and Year 6 respectively were investigated by means of correlation analysis (Pearson). Chi-square tests were employed to investigate differences in the number of girls who admitted a wish to be thinner and dieting attempts between girls who dropped out and those who remaining in the study.

Study IV

Analysis of variance and Mann-Whitney *U*-test were used to compare ChEAT data and demographics for girls who participated only in Year 1, girls who participated in Year 1 and Year 8 with no participating parent, and girls who participated in Year 1 and Year 8 with at least one participating parent. To examine the statistical magnitude of observed differences, effect sizes for dependent groups were calculated using Cohen's *d*. The following guidelines are suggested by Cohen (1988); Cohen's $d \leq 0.20$ indicates small differences, Cohen's $d = 0.50$ moderate differences and Cohen's $d \geq 0.80$ large differences. Correlations (Pearson's and Spearman's rho) were used between the predictor variables at Year 1 and ChEAT scores at Year 8. Pairwise differences were examined using the Bonferroni adjustment for multiple comparisons. Predictors showing statistically significant correlations were entered simultaneously in a standard multiple regression analysis. The dependent variable was ChEAT scores Year 8 and the predictor variables were ChEAT scores, EAT scores, Dieting, Wish to be thinner and BMI for the girls, EDI-C and EDI-2 (subscale Perfectionism), I Think I Am (self-esteem, for the girls) - Year 1. Missing data were less than 20% on individual items (ten girls and six parents had 1-5 missing items). When data were missing on 1 item, within a subscale in ChEAT, EAT and I Think I Am, the participant's median value on the subscale was used. Descriptive statistics were used to show mean and median values. To examine the various factors relevant to the development of eating attitudes moderation analysis were used. Moderation analyses (Jose, 2008) were used to examine if our hypothesis that normal body weight, healthy eating attitudes and low perfectionism for the girls together with high self-esteem might operate as protective factors for the development of disturbed eating for the girls. A moderator variable is the independent variable that affects the relationship of the dependent and independent variables (Kraemer et al., 2001). In a correlation analysis, a moderator is a third variable that affects the correlation of two variables. Thus a moderator specifies *on whom* and *under what conditions* the other variable produces the effect on the criterion variable (Baron & Kenny, 1986). For example if self-esteem is presumed to affect the relationship between perfectionism and disturbed eating, but it, itself must not correlate with disturbed eating necessarily. In other words, perfectionism may be

more strongly associated with disturbed eating under conditions of low self-esteem compared to conditions of high self-esteem. Then, self-esteem is said to moderate the effect of perfectionism on disturbed eating.

Results

Summaries of Studies I–IV

Study I

There was a significant increase in disturbed eating attitudes from Year 1 to Year 3, for both age groups. The ChEAT-scores of the 13-year-old girls in Year 1 demonstrated the highest correlations with the girls' ChEAT scores in Year 3. Furthermore, the mothers' and the fathers' eating attitudes (EAT) showed a significant correlation with ChEAT scores in Year 3 for both groups. The fathers' eating attitudes showed a higher correlation coefficient than did the mothers' eating attitudes when related to the ChEAT scores of the 13-year-old girls (*Table 3*).

Regarding the psychological variables, the 13-year-old girls' own rating of perfectionism correlated significantly with ChEAT scores at Year 3 and there was also a significant correlation between the fathers' rating on asceticism and the girls' ChEAT scores at Year 3. Concerning the Family Climate scale, the subscale "Relation to family" showed a significant correlation with ChEAT scores at Year 3 only for the 11-year-old girls. BMI at Year 1 correlated significantly for both age groups with ChEAT scores at Year 3, with the highest correlation for the 11 year olds.

Multiple regression analyses were conducted separately for the 11 and 13-year-old girls. The variables showing significant bivariate correlations with ChEAT scores at Year 3 scores were entered in a standard multiple regression analysis in order to investigate their relative contributions to the prediction of the ChEAT scores at Year 3.

Among the 11 year olds, disturbed eating attitudes at Year 3 (based on ChEAT scores), was predicted by BMI at Year 1, and also the subscale "Relation to family" at Year 1. The entered set of variables explained 18% of the total variance in the ChEAT scores at Year 3. Among the 13 year olds, disturbed eating attitudes, at Year 3 was predicted by ChEAT scores at Year 1 and EAT scores for the fathers at Year 1. The entered set of variables explained 44% of the total variance in the ChEAT scores at Year 3.

Of the 11-year-old girls four girls (2.1%) had a ChEAT score $\geq$ 20 (indicating disturbed eating) in Year 1, and two years later eleven girls (5.9%) scored $\geq$ 20. One of these girls reported disturbed eating in Year 1 and Year 3. Corresponding results for the 13 year olds were that five girls had ChEAT

scores ≥ 20 in Year 1 (2.7%) and two years later nineteen girls (9.7%) had ChEAT scores ≥20. Four of these girls reported disturbed eating in Year 1 and Year 3.

Table 3. Bivariate correlations between each of the variables at Year 1, for the girls aged 11 and 13 years, their parents, and ChEAT scores at Year 3.

Predictor variable, Year 1	**Outcome variable,**	
	11 year-old girls	13 year-old girls
Girls		
ChEAT total score	.23**	.60***
BMI	.31***	.17*
EDI-C Perfectionism		.26***
EDI-C Asceticism		.23**
I Think I Am, Relation to family	-.24**	-.07
Mothers		
EAT total score	.19*	.15
EDI-2 Perfectionism	.07	-.00
EDI-2 Asceticism	.07	.01
Family Climate scale, Closeness	-.08	.05
Family Climate scale, Distance	.15	-.10
Family Climate scale, Expressiveness	.02	-.05
Family Climate scale, Chaos	.02	.14
Fathers		
EAT total score	.19*	.26**
EDI-2 Perfectionism	.08	.10
EDI-2 Asceticism	.02	.24**
Family Climate scale, Closeness	-.11	.02
Family Climate scale, Distance	.08	-.01
Family Climate scale, Expressiveness	-.02	.08
Family Climate scale, Chaos	.06	-.01

Pearson product moment correlation*p <.05, **p <.01, ***p <.001
Pairwise differences were examined with family wise Bonferroni as adjustment for multiple comparisons.

Study II

Girls aged 9, 11, 13 and 15 years (N=593) at the first assessment who "wished to be thinner" in Year 1 (n=218) showed more disturbed eating attitudes (higher ChEAT scores) at each assessment than the group not reporting such a wish (n=375) and these differences remained over the five years (*Table 4*). To see if the differences in ChEAT scores between the two groups could be explained by BMI, an ANCOVA was run with BMI as a covariate. The analysis showed that the differences were still significant. The results remained significant in a new ANCOVA controlling for the age of the girls.

A significantly larger number of girls in the "wish to be thinner" group reported that they had tried to lose weight at all assessment points compared with the group with no such a wish. Significantly more girls in the "wish to be thinner" group also reported that they would be more popular if they were thinner (Year 1 and 3) and that they had a friend who had gone on a diet, than the other girls (*Table 4*).

The girls who wished to be thinner ate breakfast, an afternoon snack, dinner and evening meal significantly less often than the girls who didn't wish to be thinner at the three assessments, showing that these differences remained over five years. Furthermore, the wish to be thinner group ate school lunch less often in Year 1. Thereafter both groups skipped school lunch fairly often. Significantly more girls who wished to be thinner ate breakfast alone at all three assessments and less often with family in the second assessment than the other girls.

There were no significant differences at any of the three assessments between the groups with regard to overall physical activity or physical activity with family. In respect to overall activity, both groups had a median value that represents "Out rather often (do sports, bikes or walk)" and in respect to physical activity with family, both groups had a median value that represents "Once every other month" apart from the last assessment when the "wish to be thinner" group had a median value that represents "Never". There were no overall differences between the groups regarding television viewing. Anyhow, there was a weak but significant difference between the groups in television viewing on weekdays in Year 1. More girls who "wished to be thinner" spent 4–5 hours on television viewing a day on weekdays.

Significant differences were shown between the groups with respect to living conditions at Year 1. More girls who "didn't wish to be thinner" lived with two parents, than girls who wished to be thinner.

There were overall significant differences between the two groups over the five years with respect to BMI percentiles. The girls within the "wished to be thinner" group were at the higher BMI percentiles at all the three assessments. Girls who wished to be thinner were four times more likely to develop disturbed eating over the five-year period.

Table 4. Frequencies or median values of responses of dieting behaviors, eating behaviors, living conditions and BMI (Year 1; Year 3; Year 6) for the groups: "wish to be thinner" vs. "don't wish to be thinner" (in Year 1)

	Year 1				Year 3				Year 6			
	"Wish to be thinner" n=218 N (%)	"Don't wish to be thinner" n=375 N (%)	χ^2	*p*-value	"Wish to be thinner" n=218 N (%)	"Don't wish to be thin-ner" n=375 N (%)	χ^2	*p*-value	"Wish to be thinner" n=218 N (%)	"Don't wish to be thinner" n=375 N (%)	χ^2	*p*-value
Trying to lose weight today	118 (54.0)	9 (2.4)	215.84	.0001	119 (54.6)	43 (11.5)	128.14	.0001	129 (59.2)	99 (26.4)	63.48	.0001
More popular if thinner	43 (19.7)	10 (2.7)	48.76	.0001	26 (11.9)	6 (1.6)	29.13	.0001	8 (3.7)	7 (1.9)	1.79	NS
Having a dieting friend	110 (50.5)	135 (36.0)	12.54	.0001	144 (66.0)	178 (47.4)	22.74	.0001	183 (83.9)	289 (77.1)	4.25	NS
Eating breakfast every day	166 (76.1)	341 (90.9	21.29	.0001	154 (70.6)	318 84.8)	17.76	.0001	135 (61.9)	280 (74.7)	10.87	.001
Eating breakfast alone	64 (29.3)	57 (15.2)	17.11	.0001	84 (38.5)	76 (20.2)	27.78	.0001	104 (47.7)	144 (38.4)	6.79	.001
Eating school lunch/lunch every day	153 (70.2)	332 (88.5)	32.07	.0001	162 (74.3)	298 (79.5)	2.69	NS	123 (56.4)	245 (65.3)	2.67	NS
Eating dinner every day	166 (76.1)	331 (88.3)	13.99	.0001	167 (76.6)	330 (88.0)	12.44	.0001	156 (71.5)	306 (81.6)	8.07	.002
Eating dinner with family	157 (72)	303 (80.8)	5.09	NS	128 (58.7)	281 (74.9)	7.89	.002	122 (55.9)	258 (68.8)	10.29	.001
Living with two parents	160 (73.4)	310 (82.6)	6.21	NS	151 (69.2)	299 (79.7)	5.33	NS	110 (50.4)	234 (62.4)	12.75	.002
	Median	Median	Z	*p*-value	Median	Median	z	*p*-value	Median	Median	z	*p*-value
Afternoon snack	2.0	3.0	-2.99	.002	2.0	3.0	-4.89	.0001	2.0	3.0	-3.07	.002
Evening meal	1.0	3.0	-4.84	.0001	1.0	2.0	-4.89	.0001	1.0	2.0	-3.21	.001
BMI	5.0 ♣	4.0 ♣	-11.07	.0001	4.0 ♣	3.0 ♣	-8.16	.0001	4.0 ♣	3.0 ♣	-7.37	.0001

Study III

The results showed an increasing trend regarding a wish to be thinner between the ages of 9 and 18, especially in the 9–16 year age range (*Figure 7*).

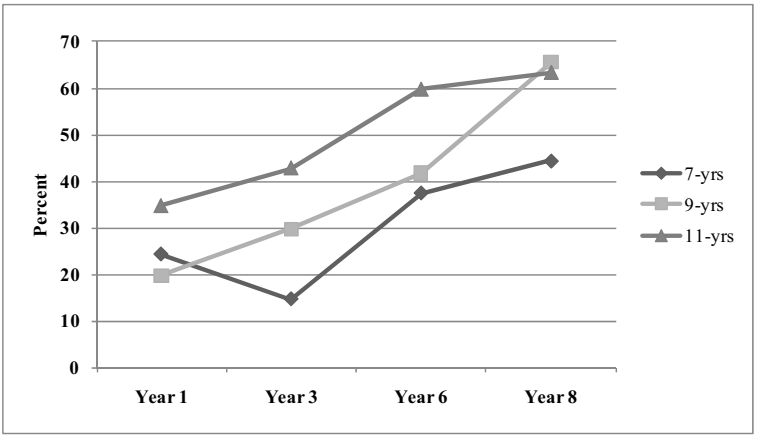

Figure 7. Percent of girls stating a current wish to be thinner at each of the four assessments

**Ages Year 1=7, 9, 11 yrs; Year 3=9, 11, 13 yrs; Year 6=12, 14, 16 yrs and Year 8=14, 16, 18 yrs*

A similar pattern was shown for reported current dieting attempts, which increased between the ages of 9 and 18, especially in the 11–18 year age range (*Figure 8*).

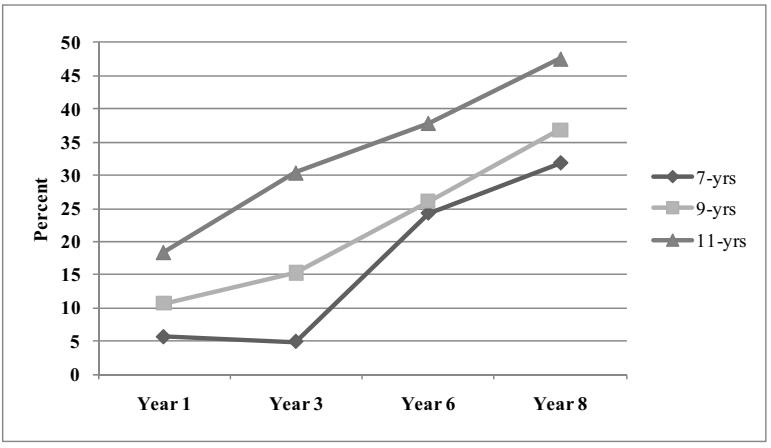

Figure 8. Percent of girls reporting current dieting at each of the four assessments.

**Ages Year 1=7, 9, 11 yrs; Year 3=9, 11, 13 yrs; Year 6=12, 14, 16 yrs and Year 8=14, 16, 18 yrs*

Of seven motives for wishing to be thinner offered to participants, the most frequently reported were to "feel better about yourself", "feel less clumsy doing sports", and "maintain good health". This latter motive increased over seven years and was reported by 42.9% in Year 8, while "feel less clumsy doing sports" decreased. Also "become more popular with boys" was frequently reported, by one-third of the girls at each assessment, except for the first year when only one quarter of the girls reported that as a motive for the wish to be thinner.

When participants were asked to describe for themselves their motives for wishing to be thinner, the responses were mainly distributed in four categories, where "correspond to the societal ideal" was the most obvious. Some of the answers in this category were:

'I want to look a bit more feminine.' (Girl, 9 years)
'Want to be skinny because it is much better, I think.' (Girl, 7 years)
'Am a bit heavy on the stomach, want to be perfectly thin and not feel fat.' (Girl 7 years)
'To give the impression of being perfect.' (Girl, 16 years)

"Being able to wear particular clothes" was another frequently reported category:

'Be able to have clothes that are modern this year.' (Girl, 11 years)
'Dare to dress in such as linens and a bit tighter clothes.' (Girl, 14 years)

"Being noticed and fitting-in" was the third category with reported reasons as:

'Get noticed and be counted among the good-looking.' (Girl, 14 years)
'Do not want to feel like an outsider.' (Girl, 12 years)

"Avoiding remarks" was the fourth category where teasing from family members was mentioned:

'Dad says I'm fat.' (Girl, 7 years)
'Do not want to be called "pork-mountain" at home.' (Girl, 14 years)

The majority of the girls adopted weight control practices that would be considered as healthy eating and exercise behaviors. In Year 1 and 3, the most frequently reported method to lose weight was to "eat fewer sweets" and in Year 6 and 8 it was to "eating more healthily and exercising". Also: only "exercising" or "eating more healthily" were frequently reported methods. More unhealthy weight management strategies were also reported, such as "eating less, skipping meals", and eating less and skipping meals in combination with exercise. Few girls avoided fat in their food and/or combined fat reduction with more exercising. Extreme weight control practices as "eat nothing/eat nearly nothing" fasting, using diet pills or laxatives and vomiting were unusual as reported methods, but increased with increasing age and

altogether these methods were reported by 13.2% in Year 8 when the girls were 14–18 years old.

The girls who, at any of the four measures, reported that they wished to be thinner and were in a BMI group at or above the 75th percentile reported a greater number of motives for wishing to become thinner than did the corresponding girls under the 75th percentile, at each assessment. Further, there were significant differences between the groups with respect to weight control practices at Year 1. Of those who had ever wanted to lose weight the subjects with a BMI at or above the 75th percentile significantly more often reported: "eating fewer sweets" (39.4% vs. 5.9%), "eating less, skipping meals" (29.4% vs. 12.6%) and "eating less, skipping meals and exercising" (8.4% vs. 2.9%) as weight control practices than did the girls in the other group. Significantly more girls with a BMI $\geq$ 75th percentile used extreme weight control practices such as "eat nothing/eat nearly nothing" fasting, using diet pills or laxatives and vomiting at Year 6 and Year 8 than did the girls with a BMI under the 75th percentile.

Interestingly, among the girls who at Year 8 had lost weight and changed from BMI $\geq$ 75th percentile to BMI < 75th percentile (n=81, 45.5%), 34.1% reported that they had not used any weight control practices at all. Among those girls who had used weight control practices and successfully lost weight, the most common methods were "eating more healthily and exercising" and "eating fewer sweets".

Study IV

Eating attitudes (ChEAT scores) in Year 1 demonstrated a significant correlation with ChEAT scores in Year 8 only for the 13-year-old girls (*Table 5*). Neither their mothers' nor fathers' eating attitudes (EAT) correlated, but for the 9 year olds, the fathers' eating attitudes showed a significant correlation with ChEAT scores at Year 8. Among both age groups, a wish to be thinner at Year 1 correlated significantly with ChEAT scores at Year 8. Reported dieting at Year 1 showed a significant correlation with ChEAT scores at Year 8 only for the 13-year-old girls.

Regarding psychological variables, there were no significant correlations between ChEAT scores at Year 8 for the 9 year olds and their parents' rating in the Perfectionism subscale of the EDI-2 at Year 1. The corresponding results for the 13 year olds were different. Their mothers' perfectionism at Year 1 showed a significant correlation with the girls' ChEAT scores at Year 8, but no correlation was found for the fathers. In addition, 13-year-old girls' own ratings of perfectionism (Year 1) correlated significantly with their ChEAT scores at Year 8. For BMI, a significant correlation between BMI at Year 1 and ChEAT scores at Year 8 was shown only for the 9 year olds.

Table 5. Bivariate correlations between each of the variables at Year 1, for the girls and their parents, and ChEAT scores at Year 8.

Predictor variable, Year 1	**Outcome variable , ChEAT Year 8**	
	9 year-old girls	13 year-old girls
Girls		
ChEAT total score	.08	.29**
BMI	.30**	.04
EDI-C Perfectionism	-	.19*
I Think I Am Self-esteem	-.16	-.08
DEMO Wish to be thinner	-.25+	-.33++
DEMO Dieting	-.11	-.25+
Mothers		
EAT total score	.04	.06
EDI-2 Perfectionism	.03	.19*
Fathers	.	
EAT total score	.37**	.03
EDI-2 Perfectionism	.02	.13

Pearson product moment correlation*p <.05, **p <.01, ***p <.001
Spearman's rho + p <.05, ++ p <.01, +++ p <.001
Pairwise differences were examined with family wise Bonferroni as adjustment for multiple comparisons.

Multiple regression analyses were conducted separately for the 9 and 13 year olds. The variables showing significant bivariate correlations with ChEAT scores at Year 8 were entered in a standard multiple regression analysis in order to investigate their relative contributions to the prediction of the Year-8 ChEAT scores. Among the 9 year olds, disturbed eating attitudes at Year 8 was predicted by the girls wish to be thinner at Year 1 and the fathers' rating on EAT at Year 1. The entered set of variables explained a considerable portion of the total variance (24%). For the 13 year olds, disturbed eating attitudes at Year 8 was predicted by the girls' wish to be thinner at Year 1 and the mothers' rating on Perfectionism at Year 1. The entered set of variables explained 21% of the total variance in the ChEAT scores at Year 8.

Three separate moderation analyses for each of the age cohorts were performed using hierarchical multiple regression with ChEAT score at Year 8 as the outcome variable, and taking into account the main effect of BMI, ChEAT at Year 1 or Perfectionism respectively, the main effect of self-esteem (the moderator), and the interaction of each independent variable and the moderator variable.

For the 9 year olds there was an overall positive relationship between the girls' BMI (at Year 1) and their eating attitudes. Self-esteem had only a marginal moderating effect. Individuals with different levels of self-esteem did not differ on their ChEAT score at Year 8 under the condition of high BMI. However, those with low self-esteem reported higher ChEAT score at Year 8 under the condition of low BMI compared with those with medium or high self-esteem. Among the 13 year olds, the results surprisingly showed that the higher the self-esteem, the more obvious was the positive relationship between ChEAT at Year 1 and ChEAT at Year 8. However, the moderation was marginal. Finally, the relationship between Perfectionism at Year 1 and ChEAT at Year 8 was strongly moderated by self-esteem. There was a positive relation between Perfectionism and ChEAT score for those with low self-esteem, the relationship turned into a weaker positive relationship for those with moderate self-esteem, and eventually into a weak negative correlation for those with high self-esteem.

None of the 9 year olds reported a ChEAT score $\geq$ 16 (indicating disturbed eating) at Year 1 but seven years later (Year 8), nine girls (8.4%) scored $\geq$16 on ChEAT. Corresponding results for the 13 year olds were that nine girls scored $\geq$16 on ChEAT at Year 1 (7.4%) and eight girls (6.6%) at Year 8. Six of these girls reported disturbed eating in Year 1 and Year 8.

Summary of main findings

- Higher BMI and a less healthy relation to family predicted disturbed eating attitudes two years later for 11-year-old girls (I).

- The girls' eating attitudes and the fathers' eating attitudes predicted disturbed eating attitudes two years later for 13-year-old girls (I).

- Wish to be thinner and fathers' eating attitudes contributed most to the prediction of disturbed eating attitudes seven years later for 9-year-old girls (IV).

- Wish to be thinner and mothers' perfectionism contributed most to the prediction of disturbed eating attitudes seven years later for 13-year-old girls (IV).

- Low BMI and more healthy eating attitudes, especially influenced by high self-esteem, and low to medium degree of perfectionism seemed to be protective factors for the development of disturbed eating attitudes seven years later for girls aged 9 and 13 years in Year 1 (IV).

- Among several important risk factors, a wish to be thinner was the best predictor of disturbed eating seven years later for both pre-adolescent and adolescent girls (IV).

- Girls aged 9–15 years (in Year 1) who wished to be thinner (Year 1) dieted more often, thought that they would be more popular if they were thinner, more often skipped meals, ate breakfast alone more often and had a higher BMI compared with the girls without such a wish (II).

- Girls who wished to be thinner, in the first assessment (Year 1), were four times more likely to develop disturbed eating over a five year period (II).

- Motives for wishing to be thinner were; "to feel better about yourself", "to feel less clumsy doing sports", "to correspond to the societal ideal", "being able to wear particular clothes", "being noticed and fitting-in" and "avoiding remarks", where teasing from family members was mentioned (III).

- The majority of the girls adopted weight control practices that would be considered as healthy eating and exercise behaviors. Extreme weight control practices increased with age and these methods were reported by 13.2% in Year 8 when the girls were 14–18 years of age (III).

- More girls with a BMI at or above the 75th percentile (in Year 1) used extreme weight control practices such as "eat nothing/eat nearly nothing" fasting, using diet pills or laxatives and vomiting, five and seven years later, than did the girls with a BMI under the 75th percentile at Year 1 (III).

- Among the girls who had lost weight and changed from at or above the 75th BMI-percentile to under the 75th BMI-percentile at Year 8, 34.1% reported that they had not used any weight control practices at all (III).

- The number of girls who had a disturbed eating was: none of the 9 year olds (IV), 2.1% of the 11 year olds (I), 5.9–7.4% of the 13 year olds (II and IV), 9.7% of the 15 year olds (II), 8.4% of the 16 year olds, and 6.6% of the 20 year olds (IV).

Discussion

General discussion

Development and prediction of disturbed eating attitudes

Study I and IV showed that family influences, BMI, psychological factors and eating attitudes contributed to disturbed eating attitudes in the girls both two and seven years later. Also, a wish to be thinner contributed to disturbed eating attitudes seven years later. It appears that the potency of certain risk factors varies with the age of the girls. A plausible reason for this is that risk factors may differ in their importance depending on the level of child development (Wertheim, Koerner, & Paxton, 2001).

Family influences

It was found that for the 9-year-old girls, their fathers' eating attitudes contributed to the prediction of disturbed eating attitudes seven years later (study IV), and for the 13 year olds the fathers eating attitudes predicted disturbed eating attitudes two years later (study II).

Mothers' eating attitudes correlated positively with the 13-year-old girls' disturbed eating attitudes two years later, even if this factor failed to predict disturbed eating attitudes (study II). For the 11-year-old girls, both fathers' and mothers' eating attitudes correlated positively with the girls' disturbed eating attitudes two years later but did not predict disturbed eating attitudes. BMI is a more important predictive factor for the 11 year olds (study II). To conclude, it seems that both mothers' and fathers' eating attitudes influence the girls' eating attitudes and that the fathers' eating attitudes are of importance. These findings are consistent with the multidimensional model suggesting that family influences are risk factors for the development of disordered eating and ED.

Most research has investigated the transfer of eating attitudes and behaviors by mothers to their daughters, but few studies have measured the transfer of eating attitudes of both parents. Therefore relatively little is known about the paternal rather than maternal influences. However, our results are in line with previous research (Agras et al., 2007) that demonstrated an association between fathers' body dissatisfaction and drive for thinness, and their daughters' views about weight and shape. Agras et al. (2007) argued that it may be that these fathers, because of their own problematic eating attitudes

and concerns about weight and shape, are oversensitive to their daughter's, and perhaps their spouse's, weight and shape and express that indirectly or directly. Another previous study found an association between parental and adolescent dieting behaviors; girls who reported that their father dieted were more likely to skip meals and diet in order to lose weight (Dixon et al., 1996). It is generally accepted that the fathers play a significant role in the socialization of their daughters, especially in the area of sex role socialization. It is therefore possible, that during preadolescence and adolescence it becomes increasingly important how the girl perceives her father and how she is perceived by her father.

However, the findings regarding family influences are mixed. In a two-year longitudinal study, Snoek and colleagues (2009) found that parents' behavior did not predict adolescents' restrained eating. Nevertheless, most recent studies show that family members' attitudes and behaviors are of great importance to adolescents' eating attitudes and behaviours (Canals, Sancho, & Arija, 2009 ; Krug et al., 2009; Rodgers, Paxton, & Chabrol, 2009).

For the 11-year-old girls, a perceived less healthy relation to family predicted disturbed eating attitudes two years, later while no prediction was found for the 13-year-old girls (study I). A previous study (Neumark-Sztainer, Story, Hannan, Beuhring & Resnick, 2000) showed that experiences of insufficient communication and care in the family were associated with disturbed eating. Swarr and Richards (1996) found in a two-year longitudinal study that girls who reported closeness with their mother and father were less likely to develop eating problems in adolescence. It could be that the 11-year-old girls are even more dependent on their parents than the 13 year olds and have a greater need for closeness and communication in the family, while the 13-year-old girls have started to fend for themselves in a different way. The relation to family was only investigated in study I.

BMI

For the 11-year-old girls, BMI contributed most to the prediction of disturbed eating attitudes two years later (study I), and among the 9-year-old girls (study IV) we found a significant positive association between BMI and disturbed eating attitudes seven years later. Our results indicate that having a higher BMI than peers, or being overweight in pre-adolescence, increases the risk of developing disturbed eating attitudes several years later. An association between overweight/obesity in early ages and disordered eating has been shown previously (Zachrisson, Vedul-Kjelsås, Götestam, & Mykletun, 2008). A large-scale cross-sectional study of 31,000 adolescents showed that overweight youth were more likely to express weight concerns and to engage in dieting and binge eating than their non-overweight counterparts (Neumark-Sztainer et al., 1997). Our results convey a pattern similar to that presented in a study conducted by Swenne (2001), who found that adolescent

girls who develop an eating disorder do not follow the normal tracking patterns in growth curves prior to the onset of their disease. These girls were significantly above average weight before they became ill. Thus, it seems that overweight in adolescence could be a significant risk factor for future disturbed eating attitudes among girls.

Psychological factors

It was found that for the 13-year-old girls their own rating of perfectionism correlated positively with disturbed eating attitudes two years (study I) and seven years later (study IV) respectively, and also their own rating of asceticism correlated positively with disturbed eating attitudes two years later (study I). (The 9-year-old and 11-year-old girls did not answer the EDI-C questionnaire). Parental influences were also found: Mothers' rating of perfectionism showed a positive correlation with the 13-year-old girls' disturbed eating attitudes two years (study I) and seven years later (study IV) respectively, and predicted disturbed eating attitudes seven years later (study IV). Previous research (Wade & Lowes, 2002) found that both parents' rating of perfectionism contributed to the development of disturbed eating habits for their daughters in an adolescent population.

Also, the fathers' rating of asceticism correlated positively with the 13-year-old girls' disturbed eating attitudes two years later (study I). In a previous study, Fassino et al. (2006) found that among 154 anorectic patients, asceticism was related to angry temperament, high control over anger, perfectionism, maturity fears and number of vomiting episodes per week. Our results show that perfectionism and asceticism among girls and their parents may contribute to disturbed eating in an adolescent population. However, only the mothers' perfectionism predicted disturbed eating attitudes for the adolescent girls seven years later.

Eating attitudes

For the 13-year-old girls their own eating attitudes contributed most to the prediction of disturbed eating attitudes, and for the 11-year-old girls their own eating attitudes correlated with disturbed eating attitudes two years later (study I). In study IV, the 13-year-old girls' eating attitudes correlated positively with disturbed eating attitudes seven years later, while no such correlation was found for the 9 -year olds. It should be noted that the same measures of eating attitudes (ChEAT) was used to assess both predictor and outcome variables. The predictive power of eating attitudes in the first assessment for eating attitudes two years (study I) and seven years later (study IV) respectively may have been overestimated due to the fact that the same instrument was used to assess both dependent (outcome) and independent (predictor) variables. However, for the 13 year olds in study IV, dieting also correlated positively with disturbed eating attitudes seven years later, assum-

ing that eating attitudes and behaviors are of importance for future eating disturbances.

Marchi and Cohen (1990) found in a 10-year longitudinal study that eating problems in early childhood are predictive of more serious eating disturbances in adolescence. The presence of such problems appears to be an important predictor for new eating disorders (Patton et al., 1999). A previous 17-year longitudinal study (Kotler et al., 2001) found that the presence of eating problems such as eating conflicts, struggles over food and unpleasant meals in early childhood conferred a strong risk of developing an ED in young adulthood. Many studies have found that dieting or weight loss precedes disordered eating and ED, in particular BN (e.g., Brewerton, Dansky, Kilpatrick, & O'Neil, 2000; Yeh et al., 2009). The role of dieting in the onset of AN is less clear (Fairburn, Cooper, Doll, & Welch, 1999).

Wish to be thinner

Our findings for the 9 year olds and the 13 year olds showed that a wish to be thinner predicted disturbed eating attitudes seven years later (study IV). A high number of the pre-adolescent and adolescent girls reported a wish to be thinner (study III), which indicates their awareness of the thinness ideal in our society at an early age. Among several important risk factors a wish to be thinner was the best predictor of disturbed eating attitudes seven years later (study IV). We argue that the wish to be thinner might be one of the most concrete representations of the thin-ideal internalization.

Wish to be thinner, dieting and weight control practices

The number of girls expressing a wish to be thinner increased significantly with increasing age, except for the 7-year-old girls. The results showed an increasing trend in the wish to be thinner between 9 and 18 years, especially in the 9–16 year age range. A similar pattern was shown for dieting attempts and the number of girls expressing current dieting increased over time, except for the 7 year olds. The results showed an increasing trend in dieting attempts between the ages of 9 and 18 years, especially in the 11–18 year age range. These results (study III) show that a wish to be thinner and dieting attempts increase with increasing age, and also that a wish to be thinner is present a few years before dieting attempts start for the majority of the girls. Dieting attempts started around the age when puberty begins for most of the girls and during the transition period from girl to woman which are especially distressing.

Motives for wishing to be thinner among girls aged 7–18 were primarily to "feel better about yourself", "feel less clumsy doing sports", and "maintain good health". Categories that emerged regarding *self-described* motives for wishing to be thinner were "correspond to the societal ideal", "being able to wear particular clothes", "being noticed and fitting in" and "avoiding re-

marks", where teasing from family members was mentioned. These findings indicate that socio-cultural influences play an important role. It seems to be extremely important for girls in these age groups, who are in the middle of a process of change, to feel that they fit in. If they experience critical comments about body and size, this may trigger intensive dieting behaviors, especially if these comments come from family members. Tiggemann and colleagues (2000) identified a variety of sociocultural influences as determinants of what the girls thought contributed to why girls/women wish they were thinner, including the media, the fashion industry and pressures from peers. We obtained similar results and can also show that these factors are relevant in girls from the age of 7.

Why is it so important for girls to be thin? Girls themselves have reported that it is important to "correspond to the societal ideal" and in the Western world being thin, beautiful, strong and independent are highly valued traits. Girls are socialized to be sensitive to the feelings and needs of others and this becomes more conflicting for girls than for boys, because boys are allowed to be more individualistic (Saukko, 2009). As the anthropologist Anita Jacobson-Widding (1990) suggest, there is often a fundamental contradiction between the aspects "what I am supposed to be" and "what I feel that I am". Girls learn early in their lives that they should live up to others' expectations and this may apply to societal expectations and ideals too. Gender expectation has gone so far as the so-called "superwoman ideal" (Steiner-Adair, 1986). Steiner-Adair interviewed adolescent girls with three questions focused on their perception of cultural values and cultural and individual images of the ideal woman and she found that the "super women" were described as independent, successful and attractive, and striving at successful performances in many different roles. Internalization of the so-called "superwomen ideal" has been associated with ED (Steiner-Adair, 1986; Thurfjell et al., 2006).

Why have these ideals not changed when we know that they do more harm than good? As Bordo (2009) points out: "If we are so sure that images of rail-thin fashion models, actress and video chicks have contributed to white girls' poor body image, why aren't we addressing the half-naked black female bodies that have replaced the half-naked white female bodies on MTV?". It could really be questionable whether we have learned anything from history or if we will continue to spread this thin-ideal to girls in generation after generation and from society to society.

Most of the girls in our study (study III) used weight control practices that would be considered as healthy (e.g., "eat fewer sweets", "eating more healthily and exercising") but also more unhealthy methods were common (e.g., eating less, skipping meals). More unhealthy weight management strategies increased with age and girls with a BMI at or above the 75th percentile sig-

nificantly more often reported extreme weight control practices (in Years 6 and 8). A recent study found that 19.7% of girls and young women in the 16–23 year age range used unhealthy weight control practices (Linde, Wall, Haines, & Neumark-Sztainer, 2009). Previous research has also found that overweight girls used more unhealthy weight management strategies (Boutelle et al., 2002; Paxton et al., 2004) and pointed out that there is a need to provide consistent messages about healthy weight loss methods to adolescents. Interestingly, in our study, among the girls who had lost weight and changed from at or above the 75th BMI-percentile to under the 75th BMI-percentile (n=81, 45.5%) 34.1% reported that they had not used any weight control practices at all. It should be noted that the girls in the present study were not overweight, rather they had a higher than average BMI. The girls who successfully lost weight more often used healthy weight control practices, in line with recent research (Boutelle, Libbey, Neumark-Sztainer, & Story, 2009). Adolescents seem to have a good idea of what healthy and unhealthy eating behavior is, but unfortunately many adolescents have a negative attitude to healthy eating behaviors (Croll et al., 2001). There has been a debate concerning the danger and the possible benefits of dieting in children and adolescents. In one aspect, dieting at an early age is central to ED and has a strong association with extreme weight control behaviors. On the other hand, dieting in childhood could be a healthy method of weight control for children who are overweight or obese. Our results, however, show after all, that thoughts of becoming thinner and efforts to lose weight can be sustained and a ground for development of disturbed eating attitudes.

Among girls in the age range of 9–20 years (study II), we found that a large number of girls who wished they were thinner thought that they would be more popular among their friends if they were thinner and that they more often had a dieting friend (Year 1 and 3). Gerner and Wilson (2005) showed that girls who believed that thinness would improve their friendships, regardless of actual body size, were more likely to go on a diet and be concerned about their weight. Other studies have shown that perceived peer pressure for thinness might foster a desire to be thin (Rukavina & Pokrajac-Bulian, 2006; Tiggeman et al., 2000). In addition to the perceived pressure for thinness, the fact that these girls more often had a dieting friend might influence their own behavior, by way of modeling dieting behavior, and contribute to eating problems.

A recent study that investigated the body weights of a cohort of 12,067 Americans over 32 years found that a person's body weight was most likely to change as the body weight of their friends changed (Christakis & Fowler, 2007). Close friends seem to share similar values, like similar things, behave in similar ways and follow similar social trends (Christakis et al., 2007). Gard (2009) suggest that if a person's behavior and in particular *changes* in their behavior are similar to their closest friends, this is simply to say that we

live in a social world in which peer groups are dominant and are an important conduit for social change.

Wish to be thinner influences lifestyle behaviors

In study II, girls in the age range of 9–20 years, who at the Year 1 assessment reported a wish to be thinner, were compared prospectively over five years with girls who reported that they did not wish to be thinner. The groups differed significantly regarding eating attitudes, dieting behavior, eating habits, meal pattern and BMI. A higher ChEAT score for the "wish to be thinner" group, maintained over time, suggests that thoughts about and wishes to be thin at an early age remain and may influence the girls' eating attitudes several years later. In addition, more girls in the wish to be thinner group were trying to lose weight at all three assessment points, a difference that remained even after controlling for BMI and age.

It was also found that the girls who wish to be thinner more often skipped breakfast, afternoon snack, dinner, and evening meals than the girls with no such wish and this behavior remained over time. It is plausible to assume that attitudes and cognitions regarding what constitutes an ideal body might predispose the girls to engage in restraint and dieting in various forms (e.g., by skipping meals). Neumark-Sztainer et al. (2007) found, in a five-year longitudinal study among adolescent girls, that regular family meals with a positive atmosphere were protective against binge eating and extreme weight control behaviors. In the present study, we found that more girls in the "don't wish to be thinner" group had more regular meals and they ate breakfast more often with someone in their family. The girls in the wish to be thinner group ate breakfast alone significantly more often at the three assessments. Martinez-Gonzales and colleagues (2003) identified solitary eating as a major risk factor for ED. More girls in the "wish to be thinner" group lived with one parent at Year 6. This finding, that there is an association between single-parent families and eating problems, has been shown earlier (Martinez-Gonzalez et al., 2003). One possible explanation could be that single parents lack the time to establish meal routines at home (e.g., eating together) and that it therefore might be harder for them to find out if their daughters are skipping meals, for example. In a study of healthy lifestyle practices and attitudes of 6-year-old children, 70% of their parents reported that they experienced obstacles in achieving a healthy lifestyle for their children, with lack of time as the main obstacle (Stenhammar, Sarkadi & Edlund, 2007). This may be a problem for parents in general, but it might even be a bigger problem for single parents. Thus, taken together, a body of research is emerging pointing to the buffering role of regular eating habits and eating socially.

Both girls who wish to be thinner and girls who didn't wish to be thinner reported spending a lot of time watching television and in respect to physical

activity both groups reported that they were "outdoors rather often" (doing sports, cycling or walking). Our findings that the girls were spending lot of time watching television are in line with previous research (Skidmore & Yarnell, 2004; Vereecken, Todd, Roberts, Mulvihill, & Maes., 2006). In respect to physical activity, both groups of girls participated in some daily physical activity in their leisure time and there was no one who reported that they didn't participate in physical activity at all. A recent study found that adolescents aged between 8 and 18 years were consuming media for 7.38 hours daily and the average amount of television viewing was 4.29 hours in a typical day (Kaiser Family Foundation, 2010). However, one study found that the amount of television viewing seemed not to affect children's total physical activity levels (Wilkin, Mallam, Metcalf, Jeffrey, & Voss, 2006) Previous studies show a significant correlation between physical activity and health (Strong et al., 2005; Vizcaíno et al., 2008; Sallis, 2009). Therefore, many health promotion campaigns are aimed to increase physical activity in adolescence (Parker, Martin, Martinez, Marsh & Jackson, 2009) because physical activity tends to decline with age, with the largest change between late adolescence and early adulthood (Dubbert, 2002). Our findings did not show any alarming results concerning physical activity, however.

The girls who reported a wish to be thinner had a significantly higher BMI than the girls who reported "don't wish to be thinner" at the three assessments. More girls who wish to be thinner also reported dieting efforts. A plausible explanation for this might be that dieting sets the scene for poorer eating patterns and habits over time (e.g., skipping meals). Neumark-Sztainer and colleagues (2007) discussed how adolescents may be thinking about dieting and trying to restrict their dietary intake, which may lead to increased feelings of hunger and overeating. There is a risk that this becomes a vicious circle.

Prevalence of disturbed eating

The results showed that disturbed eating was most common when the girls were 15 years of age. In study I *four* (2.1%) of the 11-year-old girls were found to have disturbed eating, and two years later it were *eleven girls* (5.9%). Of the adolescent girls (13 year olds) *five girls* (2.7%) were found to have disturbed eating and two years later, when they were 15 years old, *nineteen girls* (9.7%) showed disturbed eating.

In study IV, *none* of the pre-adolescent girls (9 year olds) were found to have disturbed eating, but seven years later when they were 16 years old, *nine girls* (8.4%) were found to have disturbed eating. Corresponding figures for the adolescent girls (13 year olds) were that in Year 1 *nine girls* (7.4%) and seven years later, when they were 20 years old, *eight girls* (6.6%) were found to have disturbed eating, six of whom already had disturbed eating in Year 1. Our results indicate that screening for disturbed eating at a younger

ages is not as informative for identifying girls at risk as screening teenagers would be.

The results are in line with a Canadian study (Gusella, Goodwin, & Roosmalen, 2008) where 8.5% of 11–15-year-old students fell in the high-risk group for developing eating disorder, and are lower than in a study of Israeli-Arab schoolgirls, aged between 12 and 18 years (Latzer, Azaiza, & Tzischinsky, 2009), where 25% were in the high-risk group. Previous research has shown that there is a peak of disordered eating attitudes around age 15 that seems to persist until age 18 (Prouty, Protinsky, & Canady, 2002). In one study, with girls aged 10–18, it was found that the subscale "drive for thinness" (EDI-C) had a peak in mean around age 15, which stayed at the same level up to age 18 (Thurfjell et al., 2004). One explanation for high ChEAT-scores for the 13–15 year old girls could be recent significant bodily changes due to puberty and the resulting feelings of discontentment with their bodies, attempts to control their shape and weight, and the corresponding focus on dieting, food and eating. How this sensitive period is handled could be of crucial importance to future developments of disordered eating.

Interestingly, only one girl (study IV) of those who showed disturbed eating in the last assessment (Year 8) was overweight, all the other girls with disturbed eating were of normal weight. The fact that female adolescents are dissatisfied with their weight and shape, even though they are at normal weight is in line with previous research (Strauss, 1999). It has also earlier been shown that girls who develop disturbed eating are often heavier and less lean than the population average before the start of weight loss (Swenne, 2001). Study IV points out that being overweight in pre-adolescence might be particularly risky, in terms of the risk of developing disturbed eating.

Development of healthy eating attitudes

Kraemer and colleagues (2001) pointed out, that if we are to understand the complex, heterogeneous etiology of disordered eating and ED we need to look not only at the unique contributions of different variables, but even more importantly to look at how different variables interact together.

For the 9-year-old girls, low BMI, especially influenced by high self-esteem seemed to be a protective factor for later development of disturbed eating attitudes. Corresponding analysis for the 13-year-old girls showed that low ChEAT scores, especially influenced by high self-esteem and low-to-medium degree of perfectionism seemed to be protective factors. Interestingly, high self-esteem seemed to constitute a buffering factor when the girls had a high level of perfectionism. In other words, low BMI and more healthy eating attitudes influenced by high self-esteem and low-to-medium degree of perfectionism contribute to more healthy eating attitudes. Previous research (Neumark-Sztainer et al., 2007) has also shown that self-esteem was protec-

tive against binge eating and extreme weight control behaviors in adolescent girls, over a five-year period.

Moderation analysis for the 13-year-old girls showed surprisingly that the higher the self-esteem, the more obvious were the positive relationships between ChEAT in Year 1 and ChEAT in Year 8. However, the moderation was marginal. A plausible explanation for this unexpected finding could be that girls who have adopted a disordered eating (high ChEAT scores) in Year 1 might have achieved weight loss and therefore experience a high degree of self-esteem. They are living up to the cultural ideal in our society and are therefore feeling content with themselves.

Methodological discussion

Longitudinal research is a viable methodology for the understanding of predictors, risk and protective factors and the natural development of eating disturbances in children and adolescents (Wertheim et al., 2001). The present study includes a cohort of girls and their families where both parents and girls answered the same type of questions i.e. child/adolescent questions and adult questions measuring the same construct (e.g. ChEAT versus EAT) in several assessments. It was important to find measuring devices that were adequate and ethically appropriate to use for children, adolescents, young adults and adult parents. For example the Swedish instrument "I Think I Am", was not designed for use with young adults and the participating 18–22 year olds may have felt that the questions were not appropriate to their age. Furthermore, this instrument is a Swedish instrument and there are no reference values from other countries. However, the questionnaire is well-used in Swedish studies.

ChEAT was used to assess both predictor and outcome variables (study I and IV). The predictive power of eating attitudes in the first assessment for eating attitudes two years (study I) and seven years later (study IV) respectively may have been overestimated due to the fact that the same instrument was used to assess both dependent (outcome) and independent (predictor) variables.

DEMO consists of well-drafted, easily understood and directly asked questions that should be easy to understand, but it is obviously a deficiency that the questionnaire is not validated. On the other hand, the questionnaire is a well-used tool in Swedish studies. However, future research should use more sophisticated questions to measure physical activity, television viewing and meal patterns. The questions used in study II provide answers to these inquiries at a general level but not detailed or specific answers. For the young women (aged 18–23 years), we modified a few questions on purpose to suit their lifestyles better. Original questions and answers were retained, but more options were added (e.g., school lunches/lunch).

EDI-C was not considered appropriate for children below age 13, because the issues are more complex and include specific questions about the various eating disorder behaviors, which at worst may "put ideas in their heads" for smaller children. Hewitt and Flett (1991) presented the perfectionism scale as multidimensional; one half represents self-oriented perfectionism (SOP) with the individual's own demands relating to his/her perfection, and the other half represents socially prescribed perfectionism (SPP) where others demand perfection of the individual. In study I and IV we have used the total perfectionism subscale. SOP is related to AN symptoms and SPP is related to ED symptoms in general (Hewitt, Flett, & Edger, 1995). The subscale asceticism, used in study I, had a low Cronbach alpha (0.52) among 13–18-year-old Swedish girls (Thurfjell et al., 2003). In the new EDI-3 questionnaire the asceticism subscale is included in the perfectionism subscale (Garner, 2004).

The Family Climate scale is an empirically developed instrument (Hansson, 1989) and was used in study I. Closeness is the variable that includes all the good in family life (Hansson, 1989), which other theories describe as close and intimate relationships as well as cohesion in the family (Minuchin, 1996). The contrast to closeness is Distance. Distance is described by Hansson (1989) as a distanced and negligent attitude among members of the family and as decoupling by Minuchin (1996). Chaos is described as unstable and fragmented by both Hansson (1989) and Minuchin (1996). Expressiveness is described by Hansson (1989) as both spontaneous and explosive while other theories do not seem to have any equivalent term. This is a Swedish instrument and there are no reference values from other countries. The expressiveness subscale has been questioned in its validity (Söderlind & Johnsson, 2006).

One may wonder how reliable self-reported attitudes and behaviors are among children and adolescents. Firstly, it is obviously important that the questions in the questionnaire are worded clearly and unambiguously to minimize the risk of response bias, especially for children and adolescents, therefore a structured self-report instrument is preferable. Secondly, questionnaires offer the possibility of anonymity and that could be an advantage when sensitive questions are asked (Polit & Beck, 2006). In the IDA-Project confidentiality was assured. For example, questions were asked about weight and height and both self-reported and measured (by the school-nurses) weight and height were found to have a high correlation. Obviously, it is hard to tell if the girls also filled in the rest of the questionnaires truthfully, but the perception among us who collected data was that the girls were positive in answering the questions and many girls wrote on the back of the questionnaire, or reported orally, that it was nice to reply to the questions.

A potential problem in interviewing young children, even if in structured individual interviews, is the risk that they may have problems with fully

understanding the questions. Halvarsson et al. (2000) found that 7 year olds are unreliable in terms of answering questions like "Have you ever tried to lose weight?". Their results showed that 50% of the girls who reported that they had tried to lose weight sometimes stated the next year that they had never tried to lose weight. Hence, in study III we used the question: "Are you trying to lose weight today?" because it concerns short-term recall, it is more easy to understand and fairly reliable. Our experience tells us that children are willing to share their thoughts and attitudes and also report on their behavior regarding dieting and wishing to be thinner when asked, provided that confidentiality is assured.

A limitation of the present study is the relatively high number of non-participants, which is a result of the longitudinal character of the study. Conducting longitudinal studies is difficult with regard to dropout over time, in this study, just 54% of the original participants took part in the follow-up after seven years. However, attrition analysis revealed no significant differences in the dependent variables; disturbed eating attitudes, wish to be thinner or dieting. The relatively large dropout rates suggest that the results must be interpreted with caution.

In study I and IV, comparing girls with and without a participating parent showed in some age groups that girls without a participating parent had a significantly higher ChEAT score. One explanation for the lower ChEAT score for girls with at least one participating parent could be that these girls deliberately underreport disturbed eating attitudes. Another explanation could be that engaged parents work as a "buffer" for disturbed eating attitudes. Consequently, the reported ChEAT mean scores for these age groups may be underestimated. However, the effect sizes (a measure of the strength of the relationship between two variables) indicate small differences.

BMI is the method that best reflects the amounts of body fat and is the most common method to define overweight, normal and underweight. However, it does not take the differential growth spurts or pubertal status into account. Height and weight were based on self-report in Year 3 and for all the participants over 18 years, though, measured and self-reported BMI were found to have a high correlation.

Only Swedish-speaking girls participated in our research. However, 21.3–26.9% of the girls in study I-IV were immigrants or had parents who had immigrated to Sweden.

In study III we used two semi-structured open-ended questions: 1) "If you have ever wished to be thinner was it in order to: [open ended alternative]?" and 2) "If you are trying to lose weight, what methods are you using?" In regard to the first question, all girls answered the question, while the second question was an open response alternative, in addition to the existing closed-ended option, and approximately 25% of the girls had chosen to answer the open response option. Open-ended and close-ended questions differ in several characteristics, especially as regards the role of respondents when an-

swering such questions. Close-ended questions limit the respondent to the set of alternatives being offered, while open-ended questions allow the respondent to express an opinion without being influenced by the researcher in the same way as in close-ended questions. Open-ended questions are more flexible but they have lower reliability. In the process of coding open-ended questions the evaluation of inter-rater reliability is a critical issue. In the present study the categories in the classification system, were discussed between the first and the last author in open discussions, until an agreement on the relevance of the categories was reached to increase reliability. In addition, adequate data collection methods were used and analysis of data was done in a systematic and reliable manner.

The strength of the present study lies in its sample size and the multiple observations. Multiple observations make it possible to compare the same individual at different points in time. The sample in the present studies was recruited from between 800 and 1600 girls by stratified random selection. This relatively large sample size and the recruitment procedure suggest a limited threat to external validity (the ability to make generalizations) in the study.

Ethical considerations

In the present project the main ethical questions concern children's participation in a longitudinal study, and if the survey influences their thoughts and behaviors. Girls and parents received written information about the study aims, voluntary participation and confidentiality. For the girls, (aged 7–15 years at the first assessment), both the girls and their parents gave their written consent. In each assessment the girls were informed that they could contact the project staff if they had questions about the study or their school nurse or a child and adolescent psychiatric clinic if they felt that they needed support and help.

Considering the possible effect of participating in a longitudinal study, Kazdin (2003) suggest that many of the ethical problems that arise in research seem to be inherent in the research process itself, e.g., answering questions about methods to lose weight. Celio and colleagues (2003) showed that there is only a minimal risk and perhaps even some benefit of asking questions about risky weight control behaviors and attitudes. In the present project, the project staff have followed the guidelines for research practices (APA,1992) but no guarantee can be made that the participation in this longitudinal study has not influenced the girls in some ways. The project was approved by the Research Ethics Committee at the Faculty of Medicine, Uppsala University (Dnr 258/94).

Conclusions

The eating attitudes of 13-year-old girls predicted disturbed eating attitudes two years later. Also the fathers' and daughters' eating attitudes correlated to a higher degree than did the mothers' and daughters' eating attitudes. It seems that fathers play a specifically important role in the adolescence period for the girls' eating attitudes. Higher BMI and a rating of a less healthy relation to family predicted disturbed eating attitudes two years later for 11-year-old girls. Based on the findings from the present study, early signs of disturbed eating attitudes, and higher BMI than peers, may be important predictors for the development of eating disturbances among adolescent girls (study 1).

Differences between the girls who reported "wish to be thinner" versus "don't wish to be thinner", remained over five years in respect to eating attitudes and lifestyle behaviors such as dieting behaviors, eating habits, meal pattern and solitary eating with more unhealthy eating patterns and a higher BMI among the "wish to be thinner" group. Thus, thoughts about and wishes to be thin at an early age might influence eating attitudes and behaviors several years later. The results also showed that girls who wished to be thinner were four times more likely to develop disturbed eating attitudes over a five-year period (17.9% vs. 4.3% at Year 6). These findings point to the importance of helping adolescents to establish regular eating habits, to avoid unhealthy dieting practices and prevent overweight in early childhood. Further, the results acknowledge the importance of taking a critical stand toward the thin ideal and its consequences (study II).

Girls are aware of the 'thin' ideal in our society at a very early age, and wish to be thinner and try to lose weight. These results point to the importance of detecting girls who wish to be thinner as early as possible. If we can employ preventive actions, it is possible that self imposed dieting behavior among young girls might never develop. The chances of losing weight, if necessary, seem to increase if healthy weight control practices are used, or no weight control practices at all. The results acknowledge the importance of taking a critical stand toward the thinness ideal in our society, given the relevant motives such as "to feel better about myself", "to correspond to the societal ideal", "being able to wear particular clothes", which the girls expressed for

wishing to be thinner. Preventive efforts need to be relevant for the individual therefore reported motives for wishing to be thinner should be taken into account when developing preventive strategies (study III).

For the 9-year-old girls, "wish to be thinner" and fathers' EAT scores contributed most to the prediction of disturbed eating attitudes seven years later. Corresponding analysis for 13-year-old girls showed that a wish to be thinner and mothers' rating on perfectionism contributed most to the prediction of disturbed eating attitudes seven years later. Protective factors were low BMI and more healthy eating attitudes especially when moderated by high self-esteem, and low-to-medium degree of perfectionism. High self-esteem appeared to be a protective factor when the girls had a high degree of perfectionism. These results suggest that it is important to focus on healthy eating attitudes in the family environment to prevent overweight in early childhood, enhance self-esteem and to take a critical stand toward the thinness ideal in our society (study IV).

- A higher BMI than peers and early signs of disturbed eating attitudes may be important predictors for the development of more serious eating disturbances among pre-adolescent/adolescent girls.

- Contextual influences such as fathers' eating attitudes and mothers' perfectionism appeared to be important predictors for later development of disturbed eating among pre-adolescent/adolescent girls.

- A wish to be thinner, reported by girls as early as 9 years of age, may be an important predictor for the development of eating disturbances.

- Thoughts about and wishes to be thin at an early age might influence eating attitudes and lifestyle behaviors several years later. Girls who wished to be thinner were four times more likely to develop disturbed eating attitudes over a five-year period.

- The most frequently reported motive for wishing to be thinner was to "feel better about yourself" and the self-described motives for wishing to be thinner fell primarily in the category "correspond to the societal ideal". Preventive efforts need to be meaningful for the individual therefore reported motives for wishing to be thinner should be taken into account when developing preventive strategies.

- The "thin-ideal" is internalized early in girls and I argue that the wish to be thinner is one of the most concrete representations of the thin-ideal internalization.

- Among the girls who had lost weight and changed from being at or above the 75th BMI-percentile to under the 75th BMI-percentile, 34.1% reported that they had not used any weight control practices at all.

- The chances of losing weight, if necessary, increase if healthy weight control practices are used or no weight control practices at all.

- I argue that it is important to take a critical stand toward the thinness ideal in our society and advocate for more positive media messages regarding different body sizes and healthy weight management.

- Protective factors for disturbed eating were low BMI and more healthy eating attitudes, especially influenced by high self-esteem, and low-to-medium degree of perfectionism. It may therefore be important to focus on healthy eating attitudes in the family environment, to prevent overweight in early childhood, and to enhance self-esteem in girls.

Implications and future directions

Prevention and implication

Both fathers and mothers seem to influence their daughters' eating attitudes in pre-adolescence and adolescence, it is therefore important that health care providers have a focus on the whole family, instead of only focusing on helping the adolescents engage in healthy eating and physical activity behaviors. That kind of prevention takes a broad spectrum of weight-related problems into account. Our results along with a body of research that is emerging, point to the buffering role of regular eating habits and eating socially.

On the basis of the results in these studies I would argue that it is important to take a critical stand and implementing relevant efforts to mitigate the thinness ideal in our society given the motives such as "feel better about yourself", "correspond to the societal ideal", "being able to wear particular clothes", which the girls expressed for wishing to be thinner. A relevant example of preventive strategies is shown in a recent study (Wilksch & Wade, 2009) where media literacy was found to reduce weight and shape concerns in adolescent boys and girls. These results remained at six month follow-up for both boys and girls and even at 30-month follow-up for the girls. The intervention was called "Media Smart" and consisted of lessons in small groups around the key concept of literacy, activism and advocacy. All the students received a workbook including learning activities, student worksheets, discussion topics and a "take home message" (Wilksch et al., 2009). It is also important to address negative aspects of peer relationships and beliefs about the importance of thinness in the peer environment (Schutz & Paxton, 2007). Socio-cultural factors are the foundation for the spectrum of eating problems, therefore socio-cultural changes must be the proximal and ultimately goal of prevention (Levine & Smolak, 2006) and are also in line with the multidimensional model.

Previous research (Neumark-Sztainer et al., 2007) has also shown that self-esteem was protective against binge eating and extreme weight control behaviors in adolescent girls. Taken together, these results suggest that it might be useful to enhance self-esteem for the prevention of eating disturbances. Programs that focus on building self-esteem without focusing on eating or weight issues have been shown to decrease body dissatisfaction and

dieting in both boys and girls (O'Dea, 2000) and could for that reason be preferable.

Having a higher BMI than peers or being overweight, especially in pre-adolescence contributes to the development of disturbed eating attitudes several years later. One way to prevent overweight is to eat more healthily, and it has been shown that young people have a good idea of what healthy and unhealthy eating is, but they have a negative attitude towards healthy eating (Croll et al., 2001). It is therefore important to serve good food for children and adolescents that tastes good and looks appealing, food that appeal to them in taste and will be favorably received. Schools offering a salad bar and fresh bread at every lunch, fruit in the afternoons, and maybe once a week a delicious smoothie is in line with this thinking. At best, schools can offer a good breakfast too, for all ages. In one study a school-based intervention, including healthy school lunches and after-school care snacks, as well as strict rules against unhealthy eating at school reduced the prevalence of overweight and obesity in children aged 6–10 years (Marcus et al., 2009). Healthy school lunches and after school care snacks as well as strict rules against unhealthy eating at school, can reduce the prevalence of overweight and positively influence eating habits at home.

Suggestions for future research

When it comes to risk factors and prevention of disturbed eating, our efforts should target both cognitions and behaviors. It is important to take developmental level into account, and more age-specific factors would be found if the data were to be analyzed by developmental levels. Also, when prevention programs targeting disordered eating and obesity are used in schools, it is important to undertake evaluations of these efforts to demonstrate the utility of these interventions.

It would be valuable if a future study included specific questions about what adolescents who admit dieting eat, and the frequency of food intake. Specific questions about what kind of food these adolescents eat and the frequency of food intake could provide valuable information about the relation between eating patterns and a high BMI. Qualitative research is needed to understand more about why it is so important to be thin, especially for girls. Also, it is important to explore what "healthy" and "unhealthy" eating mean to children and adolescents.

Longitudinal studies examining risk and protective factors for both girls and boys in the development of disturbed eating behavior are needed. Given the different socio-cultural messages for girls and boys, it is conceivable that the development of disordered eating does not occur in the same way. It is therefore important to distinguish whish precursors are the strongest predictors for development of disordered eating and ED and how these variables interact.

Svensk sammanfattning (Swedish summary)

Under de senaste decennierna har prevalensen av ätstörningar och viktproblem bland ungdomar, speciellt unga kvinnor, ökat och därmed blivit en viktig hälsofråga. Kunskap om risk och skyddsfaktorer för utveckling av ätstörningar är av stor betydelse för att kunna genomföra relevanta förebyggande åtgärder. Huvudsyftet med denna avhandling var att studera utveckling och prediktion av störda ätbeteenden bland 7–20 åriga flickor och att identifiera risk och skyddsfaktorer Ett ytterligare syfte var att studera livsstilsfaktorer och motiv för önskan att bli smalare samt viktkontrollerande metoder.

Delstudierna baseras på data från ett flerårigt projekt: IDA-projektet (Investigation of Dieting behaviors in Adolescent girls) som har en prospektiv, longitudinell design med datainsamling över åren 1995-2002 där totalt 1279 flickor i åldrarna 7, 9, 11, 13 och 15 år deltog, samt deras föräldrar (944 mammor och 852 pappor). Rekryteringen av deltagarna skedde genom ett slumpmässigt, stratifierat urval av skolklasser i Uppsala län. Designen är en accelererande multikohort design vilken ger möjlighet att följa flera åldersgrupper över tid.

Delstudie 1 visade att för 11 och 13 åriga flickor bidrog attityder till mat/ätande, högre BMI än skolkamraterna, mindre trivsamma relationer i familjen samt pappans attityder till mat/ätande mest till störda ätbeteenden vid 2-års uppföljningen. Resultaten visar att tidiga tecken på störda attityder till mat/ätande, ett något högre BMI än skolkamraterna samt pappans attityder till mat/ätande är viktiga bidragande faktorer för utveckling av störda ätbeteenden.

Delstudie 2 visade att 9–15 åriga flickor, som följdes över 5 år, som önskade sig smalare oftare bantade, trodde att de skulle bli mer omtyckta om de var smalare, hoppade över måltider, oftare åt frukost ensamma, och hade ett högre BMI jämfört med de flickor som inte önskade sig smalare. Flickor som önskade sig smalare hade fyra gånger högre risk att utveckla ett stört ätbeteende 5 år senare än de flickor som inte hade denna önskan. Resultaten visar att det är viktigt att hjälpa unga flickor att etablera regelbundna matvanor, att undvika bantningsbeteenden och förebygga ohälsosamma levnadsvanor som kan leda till övervikt/fetma i tidig barndom.

Delstudie 3, visade att för 7–11 åriga flickor som följdes över 7 år, sker en ökning av önskan att bli smalare framför allt mellan 9–16 års ålder samt en ökning av viktminskningsförsök mellan 11–18 års ålder. Motiv för öns-

kan att bli smalare var bland annat ”bli nöjd med mig själv”, ”vill inte känna mig klumpig på gymnastiken”, ”leva upp till de samhälleliga idealen” och ”kunna ha vissa kläder”, vilket visar att det är viktigt för flickorna att leva upp till smalhetsidealet i vårt samhälle. Hälsosamma viktminskningsmetoder var vanligast men ohälsosamma viktminskningsmetoder som att hoppa över måltider förekom. Extrema viktminskningsmetoder ökade med ökande ålder. Av de flickor som gått ner i vikt från att ha legat över den 75:e BMI percentilen vid första datainsamlingen, var det 34.1% som rapporterade att de inte använt sig av någon viktminskningsmetod. Våra resultat pekar på vikten av att upptäcka flickor som önskar sig smalare så tidigt som möjligt, för att kunna sätta in stödjande åtgärder så att bantningsbeteenden aldrig utvecklas. Preventiva insatser måste vara meningsfulla för individen, därför ska rapporterade motiv till önskan att bli smalare beaktas.

Delstudie 4 visade att för 9 och 13 åriga flickor var önskan att bli smalare, pappans attityder till mat/ätande och mammans skattning av perfektionism de starkaste prediktorerna för utveckling av störda ätbeteenden 7 år senare för flickorna. Skyddande faktorer var lågt BMI, mer hälsosamma attityder till mat/ätande – speciellt modererat av hög självkänsla, och låg till medelhög grad av perfektionism. Hög självkänsla förefaller vara en skyddande faktor även när flickorna har hög grad av perfektionism. Resultaten visar att det är viktigt att fokusera på hälsosamma attityder till mat/ätande i familjen, förebygga övervikt i tidig barndom och att arbeta för att förstärka självkänslan hos unga flickor. Tidigare forskning har också visat att självkänsla var skyddande mot hetsätning och extrema viktkontrollerande beteenden hos unga flickor. Program som fokuserar på att stärka självkänslan utan att fokusera på mat och vikt har visats minska kroppsmissnöje och bantning för både pojkar och flickor.

Sammanfattningsvis visar detta avhandlingsarbete att en önskan att vara smalare, högre BMI än kamraterna, flickornas egna och pappas tidiga tecken på störda ätbeteenden, mammas perfektionism och mindre trivsamma relationer i familjen, är viktiga faktorer för utvecklingen av störda ätbeteenden för flickorna. Skyddande faktorer ser ut att vara lågt BMI och mer hälsosamma attityder till mat/ätande, speciellt influerat av hög självkänsla samt låg till medelhög grad av perfektionism. En önskan att vara smalare influerar livsstilsfaktorer och flickor som önskar sig smalare har fyra gånger högre risk att utveckla ett stört ätbeteende över fem år. Smalhetsidealet internaliseras tidigt hos flickor. Kunskap om risk- och skyddsfaktorer är grundläggande för att kunna utveckla teoretiska modeller och nya väger för att arbeta preventivt och våra resultat bekräftar vikten av att ta en kritisk ställning till smalhetsidealet i vårt samhälle. Sociokulturella faktorer är grunden för det spektrum av vikt och ätproblem som finns och därför är sociokulturella förändringar det slutliga målet för det förebyggande arbetet, vilket framhålls av flera forskare.

Att ha ett högre BMI än jämnåriga eller att vara överviktig särskilt i förpuberteten kan bidra till att utveckla störda ätbeteenden flera år senare. Ett sätt att förebygga övervikt är att äta hälsosammare, och det har visat sig att unga människor har en god uppfattning om vad hälsosamt och ohälsosamt ätande är, men de har en negativ inställning till hälsosamt ätande. Det är därför viktigt att servera god och nyttig mat till barn och ungdomar som smakar gott och ser tilltalande ut, mat som faller dem i smaken, så att maten får ett positivt mottagande. Att skolorna har en salladsbuffé, färskt bröd till varje lunch, erbjuder frukt på eftermiddagarna och serverar exempelvis en smoothie i slutet av veckan är i linje med detta tänkande. I bästa fall kan skolan erbjuda en god frukost, för alla åldrar. En hälsosam skollunch och nyttiga mellanmål samt strikta regler mot ohälsosamt ätande kan minska förekomsten av övervikt och positivt påverka matvanorna även hemma.

Våra resultat och andra studier pekar mot att regelbundna matvanor och att äta tillsammans med andra har en ”buffrande” roll mot utvecklingen av ätproblem. Familjer, eller delar av familj/vänner, nätverk bör därför uppmuntras att äta tillsammans så ofta som möjligt och på regelbundna tider. Hälsopedagoger och skolsköterskor bör hjälpa ungdomar och deras familjer att fokusera mindre på vikt och istället fokusera mer på att hjälpa ungdomar att få sunda kostvanor och fysisk aktivitet som kan underhållas kontinuerligt. Denna typ av förebyggande insatser, tar ett brett spektrum av ät- och vikt problem i beaktande.

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References

Abramovitz, B. & Birch, L. (2000). Five-year-old girls' ideas about dieting are predicted by their mothers' dieting. *Journal of the American Dietetic Association, 100*, 1157-1163.

Ackard, D.M., & Peterson, C.B. (2001). Association between puberty and disordered eating, body image, and other psychological variables. *International Journal of Eating Disorders*, 29, 187-194.

Agras, W.S. (2001). The consequences and costs of the eating disorders. *The Psychiatric Clinics of North America, 24*, 371-379.

Agras, W.S., Bryson S., Lawrence D., Hammer L.D., & Kraemer H.C. (2007). Childhood risk factors for thin body preoccupation and social pressure to be thin. *Journal of the American Academy of Child and Adolescent Psychiatry, 46,* 171-178.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and theory of planned behavior. *Journal of Applied Social Psychology, 32*, 665-683.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders*, 4th edn (DSM-IV) American Psychiatric Association, Washington, DC.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*, 4th edn. Text Revision (DSM-IV-TR). American Psychiatric Association, Washington, DC.

American Psychological Association. (1992). *Ethical principles of psychologists and code of conduct*. American Psychological Association, Washington, DC.

Austin, J.L., & Smith, J.E. (2008). Thin ideal internalization in Mexican girls: a test of the sociocultural model of eating disorders. *International Journal of Eating Disorders, 41,* 448-457.

Austin, S.B. (2000). Prevention research in eating disorders: Theory and new directions. *Psychological Medicine, 30*, 1249-1262.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Basaran, A. (2009). Pregnancy-induced hyperlipoproteinemia: a review of the literature. *Reproductive Sciences, 16*, 431-437.

Bastiani, A.M., Rao, R., Weltzin, T., & Kaye, W.H. (1995). Perfectionism in anorexia nervosa. *International Journal of Eating Disorders*, *17,* 147-152.

Becker, A.E. (2003). Eating disorders and social transition. *Primary Psychiatry*, *10,* 75-79.

Becker, A.E. (2004). Television, disordered eating, and young women in Fiji: negotiating body image and identity during rapid social change, *Culture, Medicine and Psychiatry, 28*, 533-559.

Bell, R.M. (1985). *Holy anorexia*. Chicago: The University of Chicago Press.

Bem, S.L. (1998). Gender schema theory and its implications for child development: raising gender-aschematic children in a gender-schematic society. In: D.L. An-

selmi, & A.L. Law (Eds.), *Questions of gender: perspectives and paradoxes*. (pp. 262-274). Boston, MA: McGraw-Hill.
Bemporad, J.R. (1996). Self-starvation through the ages: Reflections on the prehistory of Anorexia Nervosa. *International Journal of Eating Disorders*, 19, 217-237.
Berg, F.M. (2001). *Children and teens afraid to eat: Helping youth in today's weight-obsessed world* (3rd edn). Hettinger, ND: Healthy Weight Network.
Berger, U., Schilke, C., & Strauss, B. (2005). Weight concerns and dieting among 8 to 12-year-old children. *Psychotherapie, Psychosomatik medizinische, Psychologie, 55*, 331-338.
Berkey, C.S., Rockett, H.R., Field, A.E., Gillman, M.W., Frazier, A.L., Camargo, C.A., & Colditz, G.A. (2000). Activity, dietary intake, and weight changes in a longitudinal study of preadolescent and adolescent boys and girls. *Pediatrics, 105*, E56.
Bizeul, C., Sadowsky, N., & Rigaud, D. (2001). The prognostic value of initial EDI scores in anorexia nervosa patients: A prospective follow-up study of 5–10 years. *European Psychiatry, 16*, 232-238.
Bordo, S. (2009). Not just 'a white girl's thing' : the changing face of food and body image problems. In H. Malson, & M. Burns (Eds.), *Critical feminist approaches to eating dis/orders* (pp. 46-59). New York: Routledge.
Boutelle, K., Neumark-Sztainer, D., Story, M., & Resnick, M. (2002). Weight control behaviors among obese, overweight, and nonoverweight adolescents. *Journal of Pediatric Psychology, 27*, 531-540.
Boutelle, K.N., Libbey, H., Neumark-Sztainer, D., & Story, M. (2009). Weight control strategies of overweight adolescents who successfully lost weight. *Journal of the American Dietetic Association, 109*, 2029-2035.
Brewerton, T.D., Dansky, B.S., Kilpatrick, D.G., & O'Neil, P.M. (2000). Which comes first in the pathogenesis of bulimia nervosa: dieting or binging? *International Journal of Eating Disorders, 28,* 259-264.
Bruch, H. (1973). *Eating Disorders. Obesity, anorexia nervosa and the person within*. New York: Basic Books.
Brumberg, J.J. (1988). *Fasting girls. The emergence of Anorexia Nervosa as a modern disease*. Cambridge, MA: Harvard University Press.
Cafri, G.,Yamamiya, Y., Brannick, M., & Thompson, J.K. (2005). The influence of sociocultural factors on body image. *Clinical Psychology: Science and Practice, 12*, 421-433.
Canals J., Sancho C., & Arija M.V. (2009). Influence of parent's eating attitudes on eating disorders in school adolescents. *European Child & Adolescent Psychiatry*, 18, 353-359.
Celio, A.A., Bryson, S., Killen, J.D., & Taylor, C.B. (2003). Are adolescents harmed when asked risky weight control behavior and attitude questions? Implications for consent procedures. *International Journal of Eating Disorders, 34*, 251-254.
Chitra, U., & Reddy, C.R. (2007). The role of breakfast in nutrient intake of urban schoolchildren. *Public Health Nutrition, 10*, 55-58.
Christakis, N.A., & Fowler, J.H. (2007). The spread of obesity in a large social network over 32 years. *Journal of Health Economics, 27*, 1382-1387.
Clinton, D., & Norring, C. (2009). *Eating Disorders: Background and current treatments*. Stockholm: Natur & Kultur.
Cohen J. (1988). *Statistical power analysis for the behavioral sciences* (2nd edn). New Jersey: Lawrence Erlbaum Associates.

Cole, T.J., Bellizzi, M.C., Flegal, K.M., & Dietz, W.H. (2000). Establishing a standard definition for child overweight and obesity worldwide: international survey. *BMJ, 320*, 1240-1246.

Croll, J.K., Neumark-Sztainer, D., & Story, M. (2001). Healthy eating: What does it mean to adolescents? *Journal of Nutrition Education, 33*, 193-198.

Croll, J., Neumark-Sztainer, D., Story, M., & Ireland, M. (2002). Prevalence and risk and protective factors related to disordered eating behaviors among adolescents: relationship to gender and ethnicity. *Journal of Adolescent Health, 31*, 166-175.

Crow, S.J., Peterson, C.B., Swanson, S.A., Raymond, N.C., Specker, S., Eckert, E.D., & Mitchell, J.E. (2009). Increased mortality in bulimia nervosa and other eating disorders. *The American Journal of Psychiatry, 166*, 1342-1346.

Currie, C., Gabhainn, S.N., Godeau, C.R., Roberts, C., Smith, R., Currie, D., Picket, W., Richter, M., Morgan, A., & Barnekow, V. (2008). *Inequalities in young people's health: HBSC international report from the 2005/2006 survey.* Copenhagen: World Health Organisation.

Dancyger I., Fornari V., Scionti L., Wisotsky W., & Sunday S. (2005). Do daughters with eating disorders agree with their parents' perception of family functioning? *Comprehensive Psychiatry, 46*, 135-139.

Davis, C., Shuster, B., Blackmore, E., & Fox, J. (2003). Looking good – Family focus on appearance and the risk for eating disorders. *International Journal of Eating Disorders*, 35, 136-144.

De Man Lapidoth, J., Ghaderi, A., & Norring, C. (2006). Eating disorders and disordered eating among patients seeking non-surgical weight-loss treatment in Sweden. *Eating Behaviors, 7*, 15-26.

Dixon R., Adair V., & O'Connor S. (1996). Parental influences on the dieting beliefs and behaviors of adolescent females in New Zealand. *Journal of Adolescent Health*, *19*, 303-307.

Dominé, F., Berchtold, A., Akré, C., Michaud, P.A., & Suris, J.C. (2009). Disordered eating behaviors: What about boys? *Journal of Adolescent Health, 44*, 111-117.

Dorian, L., & Garfinkel, P.E. (2002). Culture and body image in Western society. *Eating and Weight Disorders, 7*, 1-19.

Dubbert, P.M. (2002). Physical activity and exercise: Recent advances and current challenges. *Journal of Consulting and Clinical Psychology, 70*, 526-536.

Eagly, A.H., & Chaiken, S. (1993). *The psychology of attitudes*. Orlando, FL: Harcourt Brace.

Edlund B., Hallqvist G., & Sjödén P-O. (1994) Attitudes to food, eating, and dieting in 11- and 14-year old Swedish children. *Acta Paediatrica, 83*, 572-577.

Edlund, B., Halvarsson, K., Gebre-Mehdin, M., & Sjödén, P-O. (1999). Psychological correlates of dieting in Swedish adolescents: A cross-sectional study. *European Eating Disorders Review, 7*, 47-61.

Edlund, B., Sjödén, P-O., & Gebre-Medhin, M. (1999). Anthropometry, body composition and body image in dieting and non-dieting 8–16-year-old Swedish girls. *Acta Paediatrica, 88*, 537-544.

Edmonds, H., & Hill, A.J. (1999). Dieting and the family context of eating in young adolescent children. *International Journal of Eating Disorders,* 25, 435-440.

Elfhag, K., & Linné, Y. (2005). Gender differences in associations of eating pathology between mothers and their adolescent offspring. *Obesity Research, 13*, 1070-1076.

Engström, I., & Norring, C. (2002). Estimation of the population "at risk" for eating disorders in a non clinical Swedish sample: a repeated measure study. *Eating and Weight Disorders*, 7, 45-52.

Fairburn, C.G., Cooper, Z., Doll, H.A., & Welch, S.L. (1999). Risk factors for anorexia nervosa: Three integrated case-control comparisons. *Archives of General Psychiatry, 56,* 468-476.

Fairburn, C.G., & Walsh, B.T. (2002). Atypical eating disorders (eating disorder not otherwise specified). In C.G. Fairburn, & K.D. Brownell (Eds.), *Eating disorders and obesity: A comprehensive handbook* (2nd edn) (p.171). New York: Guilford Press.

Fairburn, C.G., & Harrison, P.J. (2003). Eating disorders. *Lancet, 361*, 407-416.

Fallon, A.E., Katzman, M.A., & Wooley, S.C. (Eds.), (1994). *Feminist perspectives on eating disorders.* New York: Guilford Press.

Fassino, S., Pierò, A., Gramaglia, C., Daga, G.A., Gandione, M., & Rovera, G.G. (2006). Clinical, psychological, and personality correlates of asceticism in anorexia nervosa: from saint anorexia to pathologic perfectionism. *Transcultural Psychiatry, 43*, 600-614.

Favaro, A., Tenconi, E., & Santonastaso, P. (2006). Perinatal factors and the risk of developing anorexia nervosa and bulimia nervosa. *Archives of General Psychiatry, 63*, 82-88.

Fredriks, A.M., Van Buuren, S., Sing, R.A., Wit, J.M., & Verloove-Vanhorick, S.P. (2005). Alarming prevalences of overweight and obesity for children of Turkish, Moroccan and Dutch origin in the Netherlands according to international standards. *Acta Paediatrica, 94*, 496-498.

Fulkerson, J.A., Keel, P.K., Leon, G.R., & Dorr, T. (1999). Eating-disordered behaviors and personality characteristics of high school athletes and nonathletes. *International Journal of Eating Disorders, 26*, 73-79.

Gard, M. (2009). Understanding obesity by understanding desire. In H. Malson & M. Burns (Eds.), *Critical feminist approaches to eating dis/orders* (pp. 35-45). New York: Routledge.

Garner, D.M., & Garfinkel, P.E. (1979). The Eating Attitudes Test: An index of the symptoms of anorexia nervosa. *Psychological Medicine, 9*, 273-279.

Garner, D.M., & Garfinkel, P.E. (1980). Socio-cultural factors in the development of anorexia nervosa. *Psychological Medicine, 10*, 647.

Garner, D.M., Olmsted, M.P., Bohr, Y., & Garfinkel P.E. (1982). The Eating Attitude Test: Psychometric features and clinical correlates. *Psychological Medicine, 12*, 871-878.

Garner D.M., Olmsted M.P., & Polivy J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders, 2*, 14-34.

Garner D.M. (1991). *Manual for the Eating Disorder Inventory.* Odessa, FL: Psychological Assessment Resources Inc.

Garner, D.M. (2004). *Eating Disorder Inventory-3*. Lutz, FL : Psychological Assessment Resources.

Garvin, V., & Striegel-Moore, R.H. (2001). Health services research for eating disorders in the United States: A status report and a call to action. In R.H. Striegel-Moore & L. Smolak (Eds.), *Eating disorder : Innovative directions in research and practice* (pp. 135-152). Washington, DC : American Psychological Associaton.

Gerner, B., & Wilson, P.H. (2005). The relationship between friendship factors and adolescent girls' body image concern, body dissatisfaction and restrained eating. *International Journal of Eating Disorders, 37*, 313-320.

Ghaderi, A., & Scott, B. (2001). Prevalence, incidence and prospective risk factors for eating disorders. *Acta Psychiatrica Scandinavica, 104,* 122-130.

Goldschmidt, A.B., Aspen, V.P., Sinton, M.M., Tanofsky-Kraff, M., & Wilfley, D.E. (2008). Disordered eating attitudes and behaviours in overweight youth. *Obesity, 16*, 257-264.

Gordon, R.A. (2000). *Eating disorders: Anatomy of a social epidemic* (2nd edn). Malden, MA: Blackwell.

Gowers S., & Shore A. (2001). Development of weight and shape concerns in the etiology of eating disorders. *The British Journal of Psychiatry, 179*, 236-242.

Gual, P., Perez-Gaspar, M., Martinez-Gonzalez, M.A., Lahortiga, F., de Irala-Estevez, J., & Crvera-Enguix, S. (2002). Self-esteem, personality, and eating disorders: baseline assessment of a prospective population-based cohort. *International Journal of Eating Disorders, 31*, 261-273.

Gusella, J., Goodwin, J., & Roosmalen, E. (2008). 'I want to lose weight': Early risk for disordered eating? *Paediatrics & Child Health, 13*, 105-110.

Gustafsson, S.A., Edlund, B., Kjellin, L., & Norring, C. (2008). Personal standards, self-evaluation and perceived benefits of thinness in girls and young women with disturbed eating. *European Eating Disorders Review, 16*, 463-471.

Halmi, K.A., Sunday, S.R., Strober, M., Kaplan, A., Woodside, D.B., Fichter, M., Treasure, J., Berrettini, W.H., & Kaye, W.H. (2000). Perfectionism in Anorexia Nervosa: Variation by clinical subtype, obsessionality, and pathological eating behavior. *The American Journal of Psychiatry, 157*, 1799-1805.

Halvarsson, K. (2000). Dieting and eating attitudes in girls: Development and prediction. Acta Universitatis Upsaliensis. *Comprehensive Summaries of Uppsala Dissertations from the Faculty of Social Sciences*, 96, 60 pp. Uppsala University, Uppsala, Sweden.

Halvarsson, K., Lunner, K., Westerberg, J., Anteson, F., & Sjödén, P-O. (2002). A longitudinal study of the development of dieting among 7–17-year-old Swedish girls. *International Journal of Eating Disorders, 31*, 32-42.

Hansson K. (1989). *Family diagnostic*. Academic dissertation, Department of Child and Adolescent Psychiatry, Lund University, Lund, Sweden.

Harpaz-Rotem, I., Leslie, D.L., Martin, A., & Rosenbeck, R.A. (2005). Changes in child and adolescent inpatient psychiatric admission diagnosis between 1995 and 2000. *Social Psychiatry and Psychiatric Epidemiology*, *40*, 642-647.

Hayward, C., Killen. J.D., Wilson, D.M., Hammer, L.D., Litt, I.F., Kraemer, H.C., Haydel, K.F., Varady, A., & Tayler, C.B. (1997). Psychiatric risk associated with early puberty in adolescent girls. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 255-262.

He, Q., Albertsson-Wikland, K., & Karlberg, J. (2000). Population-based body mass index reference values from Göteborg, Sweden: Birth to 18 years of age. *Acta Paediatrica, 89*, 582-592.

Heatherton, T.F., Mahamedi, F., Striepe, M., Field, A.E., & Keel, P. (1997). A 10-year longitudinal study of body weight, dieting, and eating disorder symptoms. *Journal of Abnormal Psychology, 106,* 117-125.

Hetherington, M.M. (2000). Eating disorders: diagnosis, etiology, and prevention. *Eating Disorders, 16*, 547-551.

Hewitt, P.L., & Flett, G.L. (1991). Perfectionism in the self and social context: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology, 60*, 456-470.

Hewitt, P.L., Flett, G.L., & Ediger, E. (1995). Perfectionism traits and perfectionistic self-presentation in eating disorder attitudes, characteristics, and symptoms. *International Journal of Eating Disorders, 18*, 317-326.

Hoek, H.W. (1993). Review of the epidemiological studies of eating disorders. *International Review of Psychiatry, 5*, 61-74.

Hsu, L.K. (1996). Epidemiology of the eating disorders. *Psychiatric Clinics of North Am*erica, *19*, 681-700.

Hudson, J.I., Hiripi, E., Pope, H.G., & Kessler, R.C. (2007). The prevalence and correlates of eating disorders in the National Comorbidity Survey. *Biol Psychiatry, 61*, 348-358.

Hutchinson, D.M., & Rapee, R.M. (2006). Do friends share similar body image and eating problems? The role of social networks and peer influence in early adolescence. *Behaviour Research and Therapy, 45*, 1557-1577.

Jacobi, C., Hayward, C., de Zwaan, M., Kraemer, H.C., & Agras, W.S. (2004). Coming to terms with risk factors for eating disorders: application of risk terminology and suggestions for a general taxonomy. *Psychological Bulletin*, *130,* 19-65.

Jacobson-Widding, A. (1990). The shadow as an expression of individuality in Congolese conceptions of personhood. In M. Jackson & I. Karp (Eds.), *Personhood and agency: The experience of self and other in African cultures* (pp 31-58). Stockholm: Almqvist & Wiksell International.

Janssen, I., Katzmarzyk, P.T., Boyce, W.F., King, M.A., & Pickett, W. (2004). Overweight and obesity in Canadian adolescents and their associations with dietary habits and physical activity patterns. *Journal of Adolescent Health, 35*, 360-367.

Jose, P.E. (2008). ModGraph-I: A programme to compute cell means for the graphical display of moderational analyses: The internet version, Version 2.0. Victoria University of Wellington, Wellington, New Zealand. Retrieved (08-12-04) from http://www.victoria.ac.nz/psyc/staff/paul-jose-files/modgraph/modgraph.php

Kaiser Family Foundation (2010). *Generation M^2: Media in the lives of 8- to 18-year-olds*, Kaiser Family Foundation website: www.kff.org, Washington, DC.

Katz, D. (1960). The functional approach to the study of attitudes. *Public Opinion Quarterly, 24*, 163-204.

Kazdin, A.E., Kraemer, H.C., Kessler, R.C., Kupfer, D.J., & Offord, D.R. (1997). Contributions of risk-factor research to developmental psychology. *Clinical Psychology Review, 17*, 375-406.

Kazdin, A.E. (1998). *Research design in clinical psychology*. Boston, MA: Allyn & Bacon.

Kazdin, A.E. (2003). *Research design in clinical psychology* (4th edn) Boston, MA: Allyn & Bacon.

Keys A., Fidanza F,. Karvonen M.J., Kimura N., & Taylor H.L. (1972). Indices of relative weight and obesity. *Journal of Chronic Diseases, 25,* 329-343.

Kjelsås, E., Bjornstrom, C., & Götestam, G. (2004). Prevalence of eating disorders in female and male adolescents (14–15 years). *Eating Behaviors, 5*, 13-25.

Kling, K.C., Hyde, J.S., Showers, C.J., & Buswell, B.N. (1999). Gender differences in self-esteem: A meta-analysis. *Psychological Bulletin, 125*, 470-500.

Kondracki, N.L., Wellman, N.S., & Amundson, D.R. (2002). Content analysis: Review of methods and their applications in nutrition education. *Journal of Nutrition Education and Behavior, 34*, 224-230.

Kotler, L.A., Cohen, P., Davies, M.P.H., Pine, D.S., & Walsh,B.T. (2001). Longitudinal relationships between childhood, adolescent, and adult eating disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 1434-1440.

Kraemer, H.C., Stice, E., Kazdin, A.E., Offord, D.R., & Kupfer, D.J. (2001). How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. *American Journal of Psychiatry, 6,* 848-856.

Krug, I., Treasure, J., Anderluh, M., Bellodi, L., Cellini, E., Collier, D., di Bernardo ,M., Granero, R., Karwautz, A., Nacmias, B., Penelo, E., Ricca, V., Sorbi, S., Tchanturia, K., Wagner, G., & Fernández-Aranda, F. (2009). Associations of individual and family eating patterns during childhood and early adolescence: a multicentre European study of associated eating disorder factors. *The British Journal of Nutrition*, *101*, 909-918.

Latzer, Y., Azaiza, F., & Tzischinsky, O. (2009). Eating attitudes and dieting behavior among religious subgroups of Israeli-Arab adolescent females. *Journal of Religion and Health, 48*, 189-199.

Lee, G., Ha, Y., Vann, J.J., & Choi, E. (2009). Weight perception and dieting behavior among Korean adolescents. *The Journal of School Nursing, April 7*.

Levine, M.P., & Smolak, L. (1992). Toward a model of the developmental psychopathology of eating disorders: The example of early adolescence. In J.H. Crowther, D.L. Tennenbaum, S.E. Hobfoll, & M.A.P. Stephens (Eds.), *The etiology of bulimia nervosa: The individual and familial context* (pp. 59-80). Washington, DC: Hemisphere.

Levine, M.P., & Smolak, L. (2006). *The prevention of eating problems and eating disorders: theory, research, and practice*. New Jersey: Lawrence Erlbaum Associates.

Linde, J.A., Wall, M.M., Haines, J., & Neumark-Sztainer, D. (2009). Predictors of initiation of unhealthy weight control behaviours in adolescents. *International Journal of Behavioral Nutrition and Physical Activity, 29*, 6:72.

Lundstedt, G., Edlund, B., Engström, I., Thurfjell, B., & Marcus, C. (2006). Eating disorder traits in obese children and adolescents. *Eating and Weight Disorders, 11*, 45-50.

Lunner, K., Wertheim, E.H., Thompson, K., Paxton, S.J., McDonald, F., & Halvaarson, K.S. (2000). A cross-cultural examination of weight-related teasing, body image, and eating disturbance in Swedish and Australian samples. *International Journal of Eating Disorders, 28,* 430-435.

Lunner, K. (2003). Restrained eating. Development and models of prediction in girls. Acta Universitatis Upsaliensis. *Comprehensive Summaries of Uppsala Dissertations from the Faculty of Social Sciences* 125, 95 pp. Uppsala University, Uppsala, Sweden.

Maloney, M.J., McGuire, J.B., Daniels, S.R., & Specker, B. (1989). Dieting behavior and eating attitudes in children. *Pediatrics, 84,* 482-489.

Mantzoros, C.S. (1999). Leptin and the hypothalamus: Neuroendocrine regulation of food intake. *Molecular Psychiatry, 4*, 8-12.

Marchi, M., & Cohen, P. (1990). Early childhood eating behaviors and adolescent eating disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 29*, 112-117.

Marcus, C., Nyberg, G., Nordenfelt, A., Karpmyr, M., Kowalski, J., & Ekelund, U. (2009). A 4-year, cluster-randomized, controlled childhood obesity prevention study: STOPP. *International Journal of Obesity, 33*, 408-417.

Markey, C.N. (2004). Culture and the development of eating disorders: a tripartite model. *Eating Disorders, 12*, 139-156.

Martin, C.L., Ruble, D.N., & Szkrybalo, J. (2002). Cognitive theories of early gender development. *Psychological Bulletin, 128*, 903-933.

Martinez-Gonzalez, M.A., Gual, P., Lahortiga, F., Alonso, Y., de Irala-Estevez, J., & Cervera, S. (2003). Parental factors, mass media influences, and the onset of eat-

ing disorders in a prospective population-based cohort. *Pediatrics, 111*, 315-320.
Martinsen, M., Bratland-Sanda, S., Eriksson, A.K., & Sundgot-Borgen, J. (2010). Dieting to win or to be thin? A study of dieting and disordered eating among adolescent elite athletes and non-athletes controls. *British Journal of Sports Medicine, 44*, 70-76.
Matsumoto, S., Kumano, H., & Sakano, Y. (1999). Investigation of social influence on eating tendencies and dieting behavior among female students. *Japanese Journal of Behavior Therapy, 25*, 11-23.
McCabe, M.P., Riccardelli, L.A., Stanford, K.H., Keegan, S., & Miller, L. (2007). Where is all the pressure coming from? Messages from mothers and teachers about preschool children's appearance, diet and exercise. *European Eating Disorders Review, 15*, 221-230.
McKnight Investigators. (2003). Risk factors for the onset of eating disorders in adolescent girls: results of the McKnight longitudinal risk factor study. *American Journal of Psychiatry, 160*, 248-254.
Minuchin, S. (1996). *Mastering family therapy*. New York: John Wiley & Sons.
Morgan, H., & Russell, G.F.M. (1975). Value of family background and clinical features as predictors of long term outcome in anorexia nervosa: Four-year follow up study of 41 patients, *Psychological Medicine, 5*, 355-371.
Mumford, D.B., Whitehouse, A.M., & Platts, M. (1991). Sociocultural correlates of eating disorders among Asian schoolgirls in Bradford. *British Journal of Psychiatry, 158*, 222-228.
Nasser, M. (1988). Culture and weight consciousness. *Journal of Psychosomatic Research, 32*, 573-577.
Nasser, M. (1997). *Culture and Weight Consciousness*. London: Routledge.
Neumark-Sztainer, D. (1995). Excessive weight preoccupation: Normative but not harmless. *Nutrition Today, 30*, 68-74.
Neumark-Sztainer, D. (2005). Can we simultaneously work toward the prevention of obesity and eating disorders in children and adolescents? *International Journal of Eating Disorders, 38*, 220-227.
Neumark-Sztainer, D. (2009). Preventing obesity and eating disorders in adolescents: What can health care providers do? *Journal of Adolescent Health, 44*, 206-213.
Neumark-Sztainer, D., Hannan, P.J., Story, M., Croll, J., & Perry, C. (2003). Family meal patterns: associations with sociodemographic characteristics and improved dietary intake among adolescents. *Journal of the American Dietetic Association, 103,* 317-322.
Neumark-Sztainer, D., Story, M., & Faibisch, L. (1997). Perceived stigmatization among overweight African-American and Caucasian adolescent girls. *Journal of Adolescent Health, 23*, 1-7.
Neumark-Sztainer, D., Story, M., Hannan, P.J., Beuhring, T., & Resnick, M.D. (2000). Disordered eating among adolescents: Associations with sexual/physical abuse and other familial/psychosocial factors. *International Journal of Eating Disorders, 28,* 249-258.
Neumark-Sztainer, D., Wall, M.M., Haines, J.I., Story, M.T., Sherwood, N.E., & van der Berg, P.A. (2007). Shared risk and protective factors for overweight and disordered eating in adolescents. *American Journal of Preventive Medicine, 33,* 359-369.
Newby, P.K., Muller, D., Hallfrisch, J., Qiao, N., Andres, R., & Tucker, K.L. (2003). Dietary patterns and changes in body mass index and waist circumference in adults. *American Journal of Clinical Nutrition, 77*, 1417-1425.

Nylander, I. (1971). The feeling of being fat and dieting in a school population. *Acta Socio-medica Scandinavica, 1*, 17-26.

O'Dea, J.A., & Abraham, S. (1999). Onset of disordered eating attitudes and behaviors in early adolescence: Interplay of pubertal status, gender, weight, and age. *Adolescence, 34*, 671-679.

O'Dea, J.A., & Abraham, S. (2000). Improving the body image, eating attitudes, and behaviours of young male and female adolescents: a new educational approach that focuses on self-esteem. *International Journal of Eating Disorders, 28,* 43-57.

O'Dea, J.A., & Abraham, S. (2002). Eating and exercise disorders in young collage men. *Journal of American College Health*, 50, 273-278.

Ogden, C.L., Carroll, M.D., Curtin, L.R., McDowell M.A., Tabak, C.J., & Flegal, K.M. (2006). Prevalence of overweight and obesity in the United States, 1999–2004, *JAMA, 295*, 1549-1555.

Ouvinen-Birgerstam, P.(1985). *"I Think I Am" Manual*, Stockholm: Psykologiförlaget.

Parker, P.D., Martin, A.J., Martinez, C., Marsh, H.W., & Jackson, S.A. (2009). Stages of change in physical activity: A validation study in late adolescence. *Health Education & Behavior*, April 1.

Patrick, K., Norman. G.J., Calfas, K.J., Sallis, J.F., Zabinski, M.F., Rupp, J., & Cella, J. Diet (2004). Diet, physical activity, and sedentary behaviors as risk factors for overweight in adolescence. *Archives of Pediatrics & Adolescent Medicine. 158*, 385-390.

Patton, G.C., Coffey, C., & Sawyer, S.M. (2003). The outcome of adolescent eating disorders: findings from the Victoria Adolescent Health Cohort Study. *European Child & Adolescent Psychiatry, 12*, 125-129.

Patton, G.C., Selzer, R., Coffey, C., Carlin, J.B., & Wolfe, R. (1999). Onset of adolescent eating disorders: Population-based cohort study over 3 years. *BMJ, 318,* 765-768.

Paxton, R.J., Valois, R.F., & Drane, J.W. (2004). Correlates of body mass index, weight goals, and weight-management practices among adolescents. *The Journal of School Health, 74*, 136-143.

Pesa, J. (1999). Psychosocial factors associated with dieting behaviors among female adolescents. *Journal of School Health, 69*, 196-201.

Polit, D.F., & Beck, C.T. (2004). *Nursing research: principles and methods* (7th edn). Philadelphia, PA: Lippincott Williams & Wilkins.

Polivy, J., & Herman, P. (2004). Sociocultural idealization of thin female body shapes: an introduction to the special issue on body image and eating disorders. *Journal of Social and Clinical Psychology, 23*, 1-6.

Prouty, A.M., Protinsky, H.O., & Canady, D. (2002). College women: eating behaviours and help-seeking preferences. *Adolescence, 37*, 353-363.

Puhl, R., & Brownell, K. (2001). Obesity, bias, and discrimination. *Obesity Research, 8,* 788-805.

Rand, C., & Kuldau, J.M. (1991). Restrained eating (weight concerns) in the general population and among students, *International Journal of Eating Disorders, 10*, 699-708.

Ravaldi, C., Vanacci, A., Bolognesi, E., Mancini, S., Faravelli, C., & Ricca, V. (2006). Gender role, eating disorder symptoms, and body image concern in ballet dancers. *Journal of Psychosomatic Research, 4*, 529-535.

Ravussin, E., & Bogardus, C. (2000). Energy balance and weight regulation: genetics versus environment. *The British Journal of Nutrition, 83*, 17-20.

Reddan, J., Wahlstrom, K., & Reicks, M. (2002). Children's perceived benefits and barriers in relation to eating breakfast in schools with or without Universal School Breakfast. *Journal of Nutrition Education and Behavior, 34*, 47-52.

Reilly, J.J. (2005). Descriptive epidemiology and health consequences of childhood obesity. *Best Practice Research Clinical Endocrinology Metabolism, 19*, 327-341.

Robins, R.W., & Trzesniewski, K.H. (2005). Self-esteem development across the life span. *Psychological Science, 14*, 158-162.

Rodgers R.F., Paxton S.J., & Chabrol, H. (2009). Effects of parental comments on body dissatisfaction and eating disturbance in young adults: a sociocultural model. *Body Image, 6*, 171-177.

Rosen, J.C., Gross, J., & Vara, L. (1987). Psychological adjustment of adolescents attempting to lose or gain weight. *Journal of Consulting and Clinical Psychology, 55*, 742-747.

Rosendahl, J., Bormann, B., Aschenbrenner, K., Aschenbrenner, F., & Strauss, B. (2009). Dieting and disordered eating in German high school athletes and non-athletes. *Scandinavian Journal of Medicine & Science in Sports, 19,* 731-739.

Rosenvinge, J.H., & Børresen, R. (1999). Preventing eating disorders – Time to change programmes or paradigms? Current update and further recommendations. *European Eating Disorders Review, 7*, 5-16.

Rukavina, T., & Pokrajac-Bulian, A. (2006). Thin-ideal internalization, body dissatisfaction and symptoms of eating disorders in Croatian adolescent girls. *Eating and Weight Disorders*, *11*, 31-37.

Russell, G.F.M. (1979). Bulimia nervosa: An ominous variant of anorexia nervosa. *Psychological Medicine*, *9*, 429-448.

Ryden, O., Nevander, L., Johnsson, P., Hansson, K., Kronvall, P., Sjoblad, S., & Westbom, L. (1994). Family therapy in poorly controlled juvenile IDDM: effects on diabetic control, self-evaluation and behavioural symptoms. *Acta Paediatrica, 83*, 285-91.

Sallis, R.E. (2009). Exercise is medicine and physicians need to prescribe it. *British Journal of Sports Medicine, 43*, 3-4.

Saukko, P. (2009). A critical discussion of normativity in discourses on eating disorders. In H. Malson, & M. Burns (Eds.), *Critical feminist approaches to eating dis/orders* (pp. 46-59). New York: Routledge.

Schoemaker, C., van Strien, T., & van der Staak, C. (1994). Validation of the Eating Disorders Inventory in a non-clinical population using transformed and untransformed responses. *International Journal of Eating Disorders*, *15*, 387-393.

Schutz, H.K., & Paxton, S.J. (2007). Friendship quality, body dissatisfaction, dieting and disordered eating in adolescent girls. *British Journal of Clinical Psychology, 46*, 67-83.

Schwartz, D.J., Phares, V., Tantleff-Dunn, S., & Thompson, J.K. (1999). Body image, psychological functioning and parental feedback regarding physical appearance. *International Journal of Eating Disorders, 25*, 339-343.

Schmidt, U. (2003). Aetiology of eating disorders in the 21st century: New answers to old questions. *European Child & Adolescent Psychiatry*, *12*, 130-137.

Schur, E.A., Sanders, M., & Steiner, H. (2000). Body dissatisfaction and dieting in young children. *International Journal of Eating Disorders, 18*, 209-219.

Shisslak, C.M., Crago, M., & Estes, L.S. (1995). The spectrum of eating disorders. *International Journal of Eating Disorders,* 27, 74-82.

Shisslak, C.M., Crago, M., Gray, N., Estes, L.S., McKnight, K., Parnaby, O.G., Sharpe, T., Bryson, S., Killen, J., & Taylor, C.B. (1998). The McKnight foundation prospective study of risk factors for the development of eating disorders. In

G. Nordenboos & W Vandereycken (Eds). *The prevention of eating disorders* (pp.57-74). London: Athlone Press.
Shorter, E. (1984). *History of women's bodies*, London: Pelican.
Silverstone, P.H., & Salsali, M. (2003). Low self-esteem and psychiatric patients: part I – the relationship between low self-esteem and psychiatric diagnosis. *Annals of General Hospital Psychiatry, 11*, 1-9.
Skidmore, P.M., & Yarnell, J.W. (2004). The obesity epidemic: prospects for prevention, *QJM: Monthly Journal of the Association of Physicians, 97*, 817-825.
Smolak, L., & Levine, M.P. (1994). Psychometric properties of the Children's Eating Attitudes Test. *International Journal of Eating Disorders, 16*, 275-282.
Smolak, L, Levine, M.P., & Schermer, F. (1999). Parental input and weight concerns among elementary school children. *International Journal of Eating Disorders*, *25*, 263-271.
Smolak, L., & Murnen, S.K. (2004). A feminist approach to eating disorders. In J.K. Thompson (Ed.), *Handbook of eating disorders and obesity* (pp. 590-605). Hoboken, NJ: Wiley.
Snoek H.M., van Strien T., Janssens J.M.A.M., Engels R.C.M.E. (2009). Longitudinal relationships between fathers', mothers', and adolescents' restrained eating. *Appetite, 52*, 461-468.
Sobal, J., & Stunkard, A. (1989). Socioeconomic status and obesity: A review of the literature, *Psychological Bulletin, 105*, 260-275.
Sohlberg, S., Berg, I., & Holmgren, S. (1984). *A cross-cultural multi-sample validation of the Eating Attitudes Test.* Uppsala: Rapport från Institutionen för Psykiatri, Akademiska sjukhuset.
Spitzer, R.L., Yanovski, S., Wadden, T,, Wing, R., Marcus, M., Stunkard, A., Devlin, M., Mitchell, J., Hasin, D., & Horne, R.L. (1993). Binge eating disorders: Its further validation in a multisite study. *International Journal of Eating Disorders*, *13*, 137-153.
Steiger, H., & Bruce, K. (2004). Personality traits and disorders in anorexia nervosa, bulimia nervosa and binge eating disorder. In Brewerton T.D. (Ed.), *Eating disorders*. New York: Marcel Dekker**.**
Steiner-Adair, C. (1986). The body politic: normal female adolescent development and the development of eating disorders. *Journal of the American Academy of Psychoanalysis, 14*, 95-114.
Stenhammar, C., Sarkadi, A., & Edlund, B. (2007). The role of parents' educational background in healthy lifestyle practices and attitudes of their 6-year-old children. *Public Health Nutrition, 10*, 1305-1313.
Stice, E. (1998). Modeling of eating pathology and social reinforcement of the thin-ideal predict onset of bulimic symptoms. *Behaviour Research and Therapy, 36*, 931-944.
Stice, E. (2001). Risk factors for eating pathology: recent advances and future directions. In R.H. Striegel-Moore & L. Smolak (Eds.) *Eating Disorders: Innovative directions in research and practice*. Washington, DC: American Psychological Association.
Stice, E. (2002). Risk and maintenance factors for eating pathology: a meta-analytic review. *Psychological Bulletin, 28*, 825-848.
Stice, E. (2003). Ethnicity may be linked to thin body preoccupation and social pressure in development of eating disorders. *Evidence-Based Mental Health, 6*, 95.
Stice, E., Presnell, K., Shaw, H., & Rohde, P. (2005). Psychological and behavioral risk factors for obesity onset in adolescent girls: a prospective study. *Journal of Consulting and Clinical Psychology, 73*, 195-202.

Strauss, R.S. (1999). Self-reported weight status and dieting in a cross-sectional sample of young adolescents – National Health and Nutrition Examination Survey III. *Archives of Pediatrics & Adolescent Medicine, 153*, 741-747.

Striegel-Moore, R.H., & Franko, D.L. (2003). Epidemiology of binge eating disorder. *International Journal of Eating Disorders, 34*, 19-29.

Striegel-Moore, R.H., McMahon, R.P., Biro, F.M., Schreiber, G., Crawford, P.B., & Voorhees, C. (2001). Exploring the relationship between timing of menarche and eating disorder symptoms in black and white adolescent girls. *International Journal of Eating Disorders*, *30*, 421-433.

Strong, W.B., Malina, R.M., Blimkie, C.J., Daniels, S.R., Dishman, R.K., Gutin, B., Hergenroeder, A.C., Must, A., Nixon, P.A., Pivarnik, J.M., Rowland, T., Trost, S., & Tradeau, F. (2005). Evidence based physical activity for school-age youth. *Journal of Pediatrics, 146*, 732-737.

Stunkard, A.J. (1993). A history of binge-eating. In C.G. Fairburn & G.T. Wilson (Eds.), *Binge-eating. Nature, assessment, and treatment* (pp. 15-34). New York: Guilford Press.

Sutandar-Pinnock, K., Woodside, D.B., Carter, J.C., Olmsted, M.P., & Kaplan A.S. (2003). Perfectionism in anorexia nervosa: a 6–24-month follow-up study. *International Journal of Eating Disorders, 33*, 225-229.

Swarr, A.E., & Richards, M.H. (1996). Longitudinal effects of adolescent girls' pubertal development, perceptions of pubertal timing and parental relations on eating problems. *Developmental Psychology, 32*, 636-646.

Swenne, I. (2001). Changes in body weight and body mass index (BMI) in teenage girls prior to the onset and diagnosis of an eating disorder. *Acta Paediatrica, 90,* 677-681.

Swenne, I. (2008). Weight and growth requirements for menarche in teenage girls with eating disorders, weight loss and primary amenorrhea. *Hormone Research, 69*, 146-151.

Söderlind, M., & Johnsson, B. (2006). *Family Climate, a validation*. Academic dissertation, Department of Child and Adolescent Psychiatry, Lund University, Lund, Sweden.

Thompson, J.K., Heinberg, M.A. Altabe, M., & Tantleff-Dunn, S. (Eds.), (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. Washington, DC: American Psychological Assossiation.

Thurfjell, B., Edlund, B., Arinell, H., Hägglöf, B., & Engström, I. (2003). Psychometric properties of Eating Disorder Inventory for Children (EDI-C) in Swedish girls with and without an eating disorder. *Eating and Weight Disorders, 8*, 296-303.

Thurfjell, B., Eliasson, M., Swenne, I., von Knorring, A.L. & Engström, I. (2006). Perception of gender ideals predict outcome of eating disorders in adolescent girls. *Eating Disorders, 14*, 287-304.

Tiggemann, M., Gardiner, M., & Slater, A. (2000). "I would rather be size 10 than have straight As": a focus group study of adolescent girls' wish to be thinner. *Journal of Adolescence, 23*, 645-659.

Tiggemann, M. (2005). Body dissatisfaction and adolescent self-esteem: Prospective findings. *Body Image, 2*, 129-135.

Van Hoeken, D., Sieidell, J., & Hoek, H.W. (2003). Epidemiology. In J. Treasure, U. Schmidt, & E. Van Furth (Eds.) *Handbook of eating disorders* (pp. 12-34). Chichester: John Wiley & Sons.

Vereecken, C.A., Todd, J., Roberts, C., Mulvihill, C., & Maes, L. (2006). Television viewing behaviour and associations with food habits in different countries. *Public Health Nutrition, 9*, 244-250.

Videon, T.M., & Manning, C.K. (2003). Influences of adolescent eating patterns: the importance of family meals. *Journal of Adolescent Health, 32*, 365-373.

Vizcaíno, V.M., Aguilar, F.S., Gutiérrez, R.F., Martínez, M.S., López, M.S., Martínez, S.S., García, E.L., & Artalejo, F.R. (2008). Assessment of an after-school physical activity program to prevent obesity among 9- to 10-year-old children: a cluster randomized trial. *International Journal of Obesity, 32*, 12-22.

Wade, T.D., & Lowes, J. (2002). Variables associated with disturbed eating habits and overvalued ideas about the personal implications of body shape and weight in a female adolescent population. *International Journal of Eating Disorders, 32*, 39-45.

Wallin U., & Kronvall, P. (2002). Anorexia nervosa in teenagers: changes in family function after family therapy, at 2-year follow-up. *Nordic Journal of Psychiatry, 56*, 363-369.

Walsh, M. (1979). The democratisation of fashion: The emergence of the women's dress pattern industry, *Journal of American History, 66*, 299-313.

Weber, R.P. (1990). *Basic Content Analysis*, Newbury Park, CA: Sage.

Weltzin, T.E., Weisensel, N., Franczyk, D., Burnett, K., Klitz, C., & Bean, P. (2005). Eating disorders in men: Update. *Journal of Men's Health & Gender, 2*, 186-191.

Wertheim, E.H., Koerner, J., & Paxton, S.J. (2001). Longitudinal predictors of restrictive eating and bulimic tendencies in three different age groups of adolescent girls. *Journal of Youth and Adolescence, 30*, 69-81.

Wertheim, E.H., Paxton, S.J., Schutz, H.K., & Muir, S.L. (1997). Why do adolescent girls watch their weight? An interview study examining sociocultural pressures to be thin. *Journal of Psychosomatic Research, 42*, 345-355.

Wilkin, T.J., Mallam, K.M., Metcalf, B.S., Jeffrey, A.N., & Voss, L.D. (2006). Variation in physical activity lies with the child not his environment: Evidence for an 'activitystat' in young children (EarlyBird 16). *International Journal of Obesity, 30*, 1050-1055.

Wilksch, S.M., & Wade, T.D. (2009). Reduction of shape and weight concerns in young adolescents: A 30-month controlled evaluation of a media literacy program. *Journal of the American Academy of Child and Adolescent Psychiatry, 48*, 652-661.

Williamson, S., & Delin, C. (2001). Young children's figural selections: accuracy of reporting and body size dissatisfaction. *International Journal of Eating Disorders, 29*, 80-84.

Woo, J.G., Zeller, M.H., Wilson, K., & Inge, T. (2009). Obesity identified by discharge ICD-9 codes underestimates the true prevalence of obesity in hospitalized children. *Journal of Pediatrics, 154*, 327-331.

Woodside, D.B., Bulik, C.M., Halmi, K.A., Fichter, M.M., Kaplan, A., Berrettini, W.H., Strober, M., et al. (2002). Personality, perfectionism, and attitudes toward eating in parents of individuals with eating disorders. *International Journal of Eating Disorders, 31*, 290-299.

Yeh, H.W., Tzeng, N.S., Chu, H., Chou, Y.H., Lu, R.B., O'Brien, A.P., Chang, Y.C., Hsieh, C.J., & Chou, K.R. (2009). The risk of eating disorders among female undergraduates in Taiwan. *Archives of Psychiatric Nursing*, *23*, 430-440.

Zachrisson H.D., Vedul-Kjelsås E., Götestam K., & Mykletun A. (2008). Time trends in obesity and eating disorders. *International Journal of Eating Disorders, 41*, 673-680.

Appendices

Appendix 1

DSM-IV Diagnostic Criteria for Eating Disorders

Anorexia Nervosa (AN)

A. Refusal to maintain body weight at or above a minimally normal weight for age and height. Weight loss leading to maintenance of body weight gain during period of growth, leading to body weight less than 85% of that expected.
B. Intense fear of gaining weight or becoming fat, even though underweight or emaciated.
C. Distorted view of one's body weight or shape. Undue influence of body weight or shape of self-evaluation, or denial of the seriousness of the current low body weight.
D. Amenorrhea (lost of menses) in females for at least 3 months.

Specific type:

Restricting Type: The person has not regularly engaged in binge-eating or purging behavior such as self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

Binge-Eating/Purging Type: The person has regularly engaged in binge-eating or purging behavior such as self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

Bulimia Nervosa (BN)

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following: (1) Eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances. (2) A sense of lack of control over eating during the episode (e.g., feeling that one cannot stop eating or control what or how much one is eating).
B. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas or other medications; fasting or excessive exercise.

C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for 3 months.
D. Self-evaluation is unduly influenced by body shape and weight.
E. The disturbance does not occur exclusively during episodes of anorexia nervosa.

Specific type:

Purging Type: During the current episode of bulimia nervosa, the person has regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics or enemas.

Non-purging Type: During the current episode of bulimia nervosa has used inappropriate compensatory behaviors, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics or enemas.

Eating Disorders Not Otherwise Specified (EDNOS)

1. For female patients, all of the criteria for Anorexia Nervosa are met except that the patient has regular menses.
2. All of the criteria for Anorexia Nervosa are met except that, despite significant weight loss, the patient's current weight is in the normal range.
3. All of the criteria for Bulimia Nervosa are met except that the binge eating and inappropriate compensatory mechanisms occur less than twice a week or for less than 3 months.
4. The patient has normal body weight and regularly uses inappropriate compensatory behavior after eating small amounts of food (e.g., self-induced vomiting after consuming two cookies).
5. Repeatedly chewing and spitting out, but not swallowing, large amounts of food.
6. Binge-eating disorder (BED): recurrent episodes of binge eating in the absence of the regular use of inappropriate compensatory behaviors characteristic of Bulimia Nervosa.

Appendix 2

CHILDREN'S VERSION OF THE EATING ATTITUDES TEST

Please place an (X) under the word which best applies to the statement below:

Answering alternative:

Always	Very Often	Often	Sometimes	Rarely	Never
( )	( )	( )	( )	( )	( )

---

1. I am scared about being overweight.
2. I stay away from eating when I am hungry.
3. I think about food a lot of the time.
4. I have gone on eating binges where I feel that I might not be able to stop.
5. I cut my food into small pieces.
6. I am aware of the energy (calorie) content in the foods that I eat.
7. I try to stay away from foods such as breads, potatoes, and rice.
8. I feel that others would like me to eat more.
9. I vomit after I have eaten.
10. I feel very guilty after eating.
11. I think a lot about wanting to be thinner.
12. I think about burning up energy (calories) when I exercise.
13. Other people think I am too thin.
14. I think a lot about having fat on my body.
15. I take longer than others to eat my meals.
16. I stay away from foods with sugar in them.
17. I eat diet foods.
18. I think that food controls my life.
19. I can show self-control around food.
20. I feel that others pressure me to eat.
21. I give too much time and thought to food.
22. I feel uncomfortable after eating sweets.
23. I have been dieting.
24. I like my stomach to be empty.
25. I enjoy trying new rich foods.
26. I have the urge to vomit after eating.

Appendix 3

DEMOGRAPHIC AND DIETING QUESTIONS

Instructions
Please place an (X) under the column which applies best to each of the statements below. The purpose of the questionnaire is to help us to understand better children's attitudes about food. Please answer each question carefully. Thank you.

Have you ever wished to be thinner? (Yes/No)

Do you wish to be thinner today? (Yes/No)

If you have ever wished to be thinner was it in order to:

(On these questions you can choose more than one answer alternative)
Avoid being teased by your friends? (Yes/No)
Become more popular among boys? (Yes/No)
Become better accepted by other girls? (Yes/No)
Dare to go to parties? (Yes/No)
Maintain good health? (Yes/No)
Feel less clumsy doing sports? (Yes/No)
Feel better about yourself? (Yes/No)
Something else? (open-ended question)

Are you trying to lose weight today? (Yes/No)

If you are trying to lose weight, what methods are you using? (open-ended question)

Would your friends like you more if you were thinner? (Yes/No)

Have you ever had a friend on a diet to lose weight? (Yes/No)

How many days a week do you usually eat breakfast?

Never	1 day	2 days	3 days	4 days	5 days	6 days	7 days
( )	( )	( )	( )	( )	( )	( )	( )

I usually eat breakfast with

Mother	Father	Sibling	Family	Someone else	Alone
( )	( )	( )	( )	( )…….	( )

How many days a week do you usually eat school lunch/lunch?

Never	1 day	2 days	3 days	4 days	5 days
( )	( )	( )	( )	( )	( )

How many days a week do you usually eat afternoon snack?

Never	1 day	2 days	3 days	4 days	5 days	6 days	7 days
( )	( )	( )	( )	( )	( )	( )	( )

How many days a week do you usually eat dinner?

Never	1 day	2 days	3 days	4 days	5 days	6 days	7 days
( )	( )	( )	( )	( )	( )	( )	( )

I usually eat dinner with

Mother	Father	Sibling	Family	Someone else	Alone
( )	( )	( )	( )	( )…….	( )

How many days a week do you usually eat evening meal?

Never	1 day	2 days	3 days	4 days	5 days	6 days	7 days
( )	( )	( )	( )	( )	( )	( )	( )

How many hours of TV do you watch a day on weekdays?

0–1	2–3	4–5
( )	( )	( )

How many hours of TV do you watch a day on weekends?

0–1	2–3	4–5
( )	( )	( )

What applies best on you? (Please chose one alternative)

Sit almost always still ( )
(doing sports, cycling or are almost never outdoors)
Are outdoors sometimes ( )
(doing sports, cycling, or walking)
Are outdoors rather often ( )
(doing sports, cycling or walking)
Are outdoors often ( )
(doing sports, cycling or walking)
Are involved in sports/ ( )
Exercise several times a week

How often do you exercise together with someone in your family?

Never	Once a month	1–3 times a month	Once a week	Several times a week
( )	( )	( )	( )	( )

I live together with

Both of my parents	One of my parents	Someone else
( )	( )	( )……

Have you, or anyone in your family, immigrated to Sweden?

Me	My mother	My father	Sibling	Grandparents (mother's side)	Grandparents (father's side)
( )	( )	( )	( )	( )	( )

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