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Eating Disorders

*Prevalence, Incidence, and Prospective Risk
Factors for Eating Disorders among Young Adult
Women in the General Population*

BY

ATA GHADERI



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ABSTRACT

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Eating disorders (ED) constitute a significant source of psychiatric morbidity and are an important public health concern in Western societies. Knowledge about risk factors for ED is crucial for early detection and implementation of preventive interventions. The aim of the present thesis was to examine the prevalence, incidence, correlates, and the risk factors for ED among 1,157 young adult women in the general population. The studies in the thesis used a prospective design with the potential of addressing methodological limitations in earlier research.

In Study I, conducted in 1997, the lifetime and point prevalence of DSM-IV-based diagnoses of ED was, respectively, 7.85% and 2.59%. Participants with ED reported higher body dissatisfaction, lower perceived social support from the family, and lower self-esteem compared to participants with no ED. In Study II, it was shown that highest relative use of escape-avoidance coping was reported among participants with ED, followed by dieting participants with no ED, and least among those neither dieting nor with ED. In Study III, (i.e., the follow-up in 1999), the point prevalence of ED was 3.15% and the cumulative 2-year first time incidence was .0105 (n=8). The total incidence group (n=34), as compared to the participants with no ED (controls, n=643), reported significantly lower premorbid self-esteem, and perceived social support from the family and higher body dissatisfaction, higher relative use of escape-avoidance coping, and dieting. Furthermore, the incidence group reported a significant increase in body dissatisfaction and relative use of escape-avoidance coping, and a significant decrease in self-esteem as compared to controls from 1997 to 1999. In Study IV, it was shown that the *Survey for Eating Disorders* is a reliable and valid self-report questionnaire for the screening of ED and case ascertainment.

In conclusion, it is suggested that premorbid low self-esteem, perceived low social support, high body dissatisfaction, high relative use of escape-avoidance coping, and dieting be regarded as risk factors for a later development of ED among young adult women. It is also proposed that more attention be devoted to these factors both in designing prevention interventions and in refining current treatments.

Key words: Eating disorders, coping, risk factors, bulimia, anorexia, prevalence, incidence.

Ata Ghaderi, Department of Psychology, Uppsala University, Box 1225, SE-751 42 Uppsala, Sweden

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This doctoral thesis consists of this summary and the following studies*, which will be referred to in the text by their Roman numerals:

- I. Ghaderi, A., & Scott, B. (1999). Prevalence and psychological correlates of eating disorders among females ages 18-30 years in the general population. *Acta Psychiatrica Scandinavica*, 99, 261-266.
- II. Ghaderi, A., & Scott, B. (2000). Coping in dieting and eating disorders: A population-based study. *Journal of Nervous and Mental Disease*, 188, 273-279.
- III. Ghaderi, A., & Scott, B. (2000). Prevalence, Incidence and Prospective Risk Factors for Eating Disorders. Manuscript submitted for publication.
- IV. Ghaderi, A., & Scott, B. (2000). The preliminary reliability and validity of the Survey for Eating Disorders (SEDs): A self-report questionnaire for diagnosing eating disorders. Manuscript submitted for publication.

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Abbreviations

AN: Anorexia nervosa

BED: Binge Eating Disorder

BMI: Body Mass Index (Weight (kg)/Height (m)²)

BN: Bulimia nervosa

BSQ: Body Shape Questionnaire

CBT: Cognitive Behavior Therapy

DietCr: Participants with no ED but with current dieting (n=132) in Study II

DietPa: Participants with no ED but with a past history of dieting (n=342) in Study II

DSM-IV: Diagnostic and Statistical Manual of Mental Disorders (4th edition)

ED: Eating disorders

EDNOS: Eating Disorders Not Otherwise Specified

EDPa: Participants with a past history of eating disorders (Eating Disorders in the Past)

EDCr: Participants with a current eating disorder (Eating Disorders, Currently)

Non-ED: The group of participants with no history of eating disorders

EDL: Participants with a lifetime history of eating disorders

PSS-Fa: Perceived social support from the family

PSS-Fr: Perceived social support from friends

SEDs: Survey for Eating Disorders. A self-report questionnaire for diagnosing eating disorders

SCQ: Self Concept Questionnaire

T1: first assessment time in 1997

T2: follow-up assessment in 1999

WCQ: E-A: Ways of coping questionnaire: Escape-avoidance subscale

Introduction

Eating disorders (ED) are characterized by severe disturbances in eating behavior. Anorexia nervosa (AN) and bulimia nervosa (BN) are the two most well known ED that constitute a significant source of psychiatric morbidity (Fairburn & Cooper, 1993a), and an important public health concern in the Western world (Wakeling, 1996).

Eating disorders in the course of history

Anorexia nervosa is not a new disorder. It is best conceptualized as a clinical syndrome, since a single specific etiology is lacking (Romano, 1999a). Early religious literature contains many descriptions of what was probably AN (Silverman, 1997), and the description of AN in the medical literature was evident as early as the 17th century. Perhaps the earliest medical report of AN was that of Richard Morton in 1689 which was largely focused on the physical manifestation of the disorder including the absence of fever or other signs of known diseases (Romano, 1999a). During the last three centuries, there have been numerous case descriptions and theories about the etiology of AN. The current description of AN in the field of psychiatry and the views on etiology and possible risk factors for the development of AN will be outlined later.

Bulimia nervosa, like AN, represents a clinical syndrome with multiple factors contributing to its etiology. The term bulimia is from the Greek meaning "ox-hunger" (derived from Greek word *limos* meaning "hunger" with the prefix *bou* meaning "bull" or "ox"), and is an adequate description of the primary feature of the disorder, binge eating (Romano, 1999b). Bulimia (simply meaning, episodic overeating) has been recognized since antiquity, but it is essential to avoid jumping to the conclusion that overeating (bulimia) or vomiting in ancient accounts is equivalent to the disorder we now know as bulimia nervosa (Russell, 1997). Compared to AN, bulimia nervosa is a new and distinctive disorder that was identified in the late 1970s, but presumably commenced at some uncertain period between the 1940s and the 1960s (Russell, 1997).

The course and outcome of AN are highly variable. According to Russell (1997), the modern "cult of thinness" has exerted powerful and harmful effects on young women and has determined the frequency, clinical form, and psychological content of both AN and BN (Russell, 1997). Some individuals with AN recover fully after a single episode, some exhibit a fluctuating pattern of weight gain

followed by relapse, and others experience a chronically deteriorating course of the illness over many years (American Psychiatric Association, 1994). The long-term outcome of bulimia nervosa is relatively poor (Fairburn, Cooper, Doll, Norman, & O'Connor, 2000; Keel, Mitchell, Miller, Davis, & Crow, 2000). The course may be chronic or intermittent, with periods of remission alternating with recurrences of binge eating (American Psychiatric Association, 1994). Disturbed eating behavior persists for at least several years in a high percentage of clinic samples. In a study, with more than 10 years following onset of ED among the participants, 11% met full criteria for BN, 6% met full criteria for AN, and an additional 18.5% met criteria for eating disorders not otherwise specified (Keel et al., 2000).

Current classification of eating disorders

There has been considerable change in the understanding of the psychopathology of eating disorders and this has had a significant impact on diagnosis and classification (Garfinkel, Kennedy, & Kaplan, 1995). In the studies comprising the present thesis, eating disorders were classified according to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association, 1994). Since the process of identifying risk factors for eating disorders highly depends on the way these disorders are classified and investigated, it is necessary to describe the diagnostic criteria and the underlying reason for choosing this diagnostic system in this research. The pros and cons of this choice will also be discussed.

The current edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association, 1994) divides ED into three principal diagnoses/categories, of which AN and BN are the two most well-established. The principal clinical features of AN are:

1. the presence of an abnormally low body weight of 15% below the expected,
2. amenorrhea (i. e., the absence of three consecutive menstrual cycles) among females, in whom the disorder predominantly occurs, and
3. disturbance in the way body weight or shape is experienced, such as the undue influence of body weight and shape on self-evaluation, or the denial of the seriousness of abnormally low weight (DaCosta & Halmi, 1992).

The diagnostic criteria for AN according to DSM-IV are shown in Table 1. Some individuals with AN engage in regular binge eating and/or purging during the course of the disorder. Thus, the DSM-IV diagnosis of AN comprises two subtypes: Restricting Type and Binge-Eating /Purging Type.

Table 1. Diagnostic criteria for anorexia nervosa (307.1) according to DSM-IV

- A Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected 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.
- C Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.
- D In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration.)

Bulimia nervosa is also characterized by three major clinical features:

1. binge eating,
2. inappropriate compensatory methods such as purging (self-induced vomiting or laxative abuse), fasting or vigorous exercise to prevent weight gain, and
3. body shape and weight unduly influencing self-evaluation.

The diagnostic criteria for bulimia nervosa according to DSM-IV are shown in Table 2. BN can also be divided into two subtypes: Purging Type and Non-purging Type.

Table 2. Diagnostic criteria for bulimia nervosa (307.51) according to DSM-IV

- 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 what 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 (i.e., a feeling that one cannot stop eating or control what or how much one is eating)

Table 2. Cont. Diagnostic criteria for bulimia nervosa according to DSM-IV

-
- B The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for three months.
- C Body shape and weight unduly influence self-evaluation.
- D The disturbance does not occur exclusively during episodes of Anorexia Nervosa.
-

The third and last category of eating disorders in DSM-IV is "Eating Disorders Not Otherwise Specified" (EDNOS). This category covers those who have an eating disorder of clinical severity but do not meet formal diagnostic criteria for AN or BN (see Table 3). An example of EDNOS is cases that include all the features of BN but at too low a frequency of binge eating or compensatory behavior to meet the diagnostic criteria for BN.

Table 3. Eating disorders not otherwise specified (307.50) according to DSM-IV

-
1. For females, all of the criteria for Anorexia Nervosa are met except for the fact that the individual has regular menses.
 2. All of the criteria for Anorexia Nervosa are met except that, despite substantial weight loss, the individual'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 at a frequency of less than twice a week or for a duration of less than 3 months.
 4. The regular use of inappropriate compensatory behavior by an individual of normal body weight after eating small amounts of food (e.g., self-induced vomiting after the consumption of two cookies).
 5. Repeated chewing and spitting out, but not swallowing, of large amounts of food.
 6. Binge eating disorder; recurrent episodes of binge eating in the absence of the regular use of inappropriate compensatory behaviors characteristic of bulimia nervosa.
-

Binge eating disorder as a new diagnosis in the EDNOS category has attracted intensive research. The principal feature of this disorder is recurrent binge eating episodes and the lack of extreme compensatory behavior such as purging or the attitudinal disturbance required for the diagnosis of BN (Spitzer et al., 1992).

Many reasons such as a relatively high prevalence of BED in the general population (Bruce & Agras, 1992) and among individuals presenting for treatment for obesity (Marcus, 1993; Spitzer et al., 1993), as well as the distinctiveness of the diagnosis (Fichter, Quadflieg, & Brandl, 1993) led to the inclusion of binge eating disorder in the DSM for the first time in the fourth edition. Recent research has presented increased evidence for the distinctiveness of this diagnosis (Cowen, Clifford, Walsh, Williams, & Fairburn, 1996). The suggested research criteria for BED in DSM-IV are presented in Table 4.

Table 4. Suggested research criteria for binge eating disorders according to DSM-IV

- 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 in a similar period of time under similar circumstances.
 2. A sense of lack of control over eating during the episode (i.e., a feeling that one cannot stop eating or control what or how much one is eating)
- B The binge-eating episodes are associated with three (or more) of the following:
1. eating much more rapidly than normal
 2. eating until feeling uncomfortably full
 3. eating large amounts of food when not feeling physically hungry
 4. eating alone because of being embarrassed by how much one is eating
 5. feeling disgusted with oneself, depressed, or very guilty after overeating
- C Marked distress regarding binge eating.
- D The binge eating occurs, on average, at least 2 days a week for 6 months.
- E The binge eating is not associated with the regular use of inappropriate compensatory behaviors (e.g., purging, fasting, excessive exercise) and does not occur exclusively during the course of Anorexia Nervosa or Bulimia Nervosa.
-

Research on the validity of the DSM-diagnoses of eating disorders (Drewnowski, Doris, Candace, & Dean, 1994; Hay & Fairburn, 1998; Hay, Fairburn, & Doll, 1996; Wilson, 1992) suggests that the changes in the revisions of the DSM criteria for ED have, generally, resulted in an improvement of the boundaries of ED diagnoses. On the other hand, some researchers argue that the diagnoses of

different types of ED lack either scientific validity or clinical utility, and that the recent changes in the diagnostic nomenclature for ED is unlikely to improve any of these concerns (Beumont, Garner, & Touys, 1994; Waller, 1993). In a critical review of psychiatric nomenclature during the last fifty years, Houts (2000) clearly demonstrates that there has been a phenomenological growth in the area of diagnostic nomenclature (i.e., an 800% increase in diagnostic labels). On the other hand, this vast growth may reflect a political rather than a scientific process (Houts, 2000). Ideally, the process of diagnosis should go beyond simply describing a clinical entity. It should convey some understanding of the pathological process or underlying cause of a disorder (Russell, 1988). The new DSM diagnostic system has become the "system of choice" in research, teaching, and contemporary psychiatry (Tucker, 1998). Virtually all the recent studies of epidemiology of ED have used some widely accepted criteria, such as those in the DSM-IV or the International Classification of Diseases-10 (World Health Organization, 1993), which is quite similar to the DSM-IV (Hsu, 1996). Almost all new modern handbooks of clinical and abnormal psychology, as well as manual-based, empirically supported psychological treatments have implemented the DSM-system for the classification of psychological disorders. It has been argued that classification schemes based on nomothetic response covariation, such as the DSM, can complement but not substitute for an idiographically-based functional analysis and behavioral assessment (Farmer & Nelson, 1999). However, research on risk factors aiming at contributing to the present body of knowledge needs to use the most widely applied nosology to be comparable and additive.

Prevalence of eating disorder

The main purpose of epidemiological studies is to provide statistics concerning the extent of morbidity in a population, and to relate such statistics to the environment and to characteristics of the population in order to detect their association with possible causative factors (Hsu, 1996). The actual prevalence of ED is still a matter of debate due to methodological problems and shortcomings in many of the conducted epidemiological studies, such as periodical changes in the diagnostic criteria for ED, use of different instruments and methods for case detection, and the study of limited samples. In a review of studies of the epidemiology of BN, Fairburn and Beglin (1990) found increased consensus that the prevalence rate among adolescent and young adult women was about 1%. According to studies with more rigorous methods of screening (interview-based studies), the total prevalence rate of BN was estimated to be between 1% and 3%

(Fairburn & Beglin, 1990). Studies that relied on self-report questionnaires reported much higher rates for BN (between 2.6% and 9.0%) (Fairburn & Beglin, 1990). In a review by Hsu (1996) on the prevalence of ED among women in Western cultures, AN was estimated to affect about .5% and BN about 2%. Despite the uncertainty surrounding the accurate prevalence of ED among females, the prevalence of ED in males has consistently been about one tenth of that in females in the studies that examined both males and females (Hsu, 1996).

Incidence of eating disorders

Regarding the incidence of ED, some authors report that there is no evidence of an increase of ED (Fombonne, 1995; Fombonne, 1996). Other reviews (e.g., Hsu, 1996), however, show that the studies with rigorous methodology have consistently reported a recent increase in the incidence of AN. The relationship between lifetime and point prevalence, as well as between prevalence and incidence of BN (e.g., Drevnowsky, Yee, & Krahn, 1988; Gøtestam & Agras, 1995), suggests a certain amount of remission. There is no clear cut evidence for an increase in the incidence of BN since its first formulation as a distinct syndrome by Russell (1979), given the changes in the diagnostic criteria after the introduction of the syndrome and given the above-mentioned methodological problems of many of the studies. Nonetheless, reviews of epidemiological studies (Hsu, 1996) and clinical experience (Hartley, 1998) suggest an increase in the incidence of ED. Regardless of the incidence rate, ED constitute a significant source of psychiatric morbidity because of their relatively poor outcome, and thus they require major efforts for primary prevention. The need for prevention and the type of research that might best contribute to such an undertaking are discussed below.

The need for identifying risk and buffering factors for prevention

Eating disorders are one of the most common psychiatric disorders affecting young women (Kendler et al., 1991; Whitaker et al., 1990). Because of their high morbidity and mortality, early detection of cases is important. Early detection and implementation of preventive measures are dependent on knowledge of underlying risk and buffering factors. Epidemiological studies may generate information of relevance to the etiology of ED (Fairburn, Hay, & Welch, 1995), but a contribution such as the one mentioned above requires a change of emphasis in epidemiological studies (e.g., Garfinkel, Garner, & Goldbloom, 1987; Patton & King, 1991). One point of view is that despite the large volume

of literature on ED, very few issues can be regarded as even near being settled (Gillberg, 1994). Future research needs to concentrate on controlled population-based and replication studies to confirm or reject hypotheses that are supported by interesting preliminary results (Gillberg, 1994). The need for prospective population-based studies on ED has been pointed out by many researchers (e.g., Gillberg, 1994; Patton & King, 1991; Wakeling, 1996). Research in eating disorders has progressed, but definitive longitudinal data are still absent from the literature (Steiner & Lock, 1998). Longitudinal research using community samples is needed to shed light on mechanisms that influence the development of ED symptoms and to identify variables that could serve as potential targets for preventive interventions (Fairburn & Beglin, 1990; Wonderlich, Peterson, & Mitchell, 1997).

Despite the enormous accumulated knowledge emanating from earlier epidemiological studies and studies on the correlates and risk factors for ED, the results of many of these studies are limited due to methodological shortcomings. The shortcomings include factors such as method of case detection and ascertainment, choice of instrument, definition of ED, inclusion and investigation of a limited number of correlates or risk factors, the cross-sectional nature of most of the studies, sample size, and sample selection. The potential problem of a low base rate of ED has resulted in reliance on cases presenting for hospital or day care treatment for estimating rates and risk factors in many studies (Wakeling, 1996). This method of case selection could well introduce a substantial bias in the results. Examining only those who are psychiatric inpatients (as most published studies have done) may result in a highly atypical sample (Gillberg, 1994). Prospective, population-based studies on ED are a necessary next step for a better understanding of risk factors for ED (e.g., Gillberg, 1994; Patton & King, 1991; Wakeling, 1996). Furthermore, because of the low base rate of ED, large populations need to be studied to obtain accurate figures for incidence and prevalence (Wakeling, 1996).

The following section summarizes the current knowledge about risk factors for ED gained from previous studies.

Overview of risk factors

The last 2 decades have witnessed a growing interest in studying risk factors for ED (e.g., Canals, Carbajo, Fernandez, Marti Henneberg, & Domenech, 1996; Cantrell & Ellis, 1991; Fairburn, Welch, Doll, Davies, & O'Connor, 1997; Leon, Fulkerson, Perry, & Early-Zald, 1995; Leung, Geller, & Katzman, 1996;

Mildred, Paxton, & Wertheim, 1995; Neumark Sztainer, Butler, & Palti, 1995; Stice, Agras, & Hammer, 1999; Williamson et al., 1995). Furthermore, there has been interest in investigating the etiology as well as predictors of eating psychopathology (e.g., Button, Sonuga Barke, Davies, & Thompson, 1996; Calam & Waller, 1998; Goodwin, Fairburn, & Cowen, 1987; Grant & Fodor, 1986; Greenberg & Harvey, 1986; Paa & Larson, 1998; Patton, Selzer, Coffey, Carlin, & Wolfe, 1999; Wood, Waller, & Gowers, 1994). Various factors have been hypothesized as having an effect on the development, course and maintenance of ED. Sociocultural factors, dieting, self-esteem, body image, social support, social adjustment, coping, attitudes about food and eating, body dissatisfaction, family interaction and environment, body concern, major negative life events, and a childhood history of being teased for one's appearance are among the factors that have been investigated separately or in various combinations.

Sociocultural factors

Sociocultural factors have been proposed as strongly contributive to the development of ED (e.g., Garner & Garfinkel, 1980; Levine, Smolak, & Hayden, 1994; McCarthy, 1990; Raphael & Lacey, 1992; Vandereycken, 1993). The fashion and entertainment industries have exposed women to role models for physical attractiveness who are so gaunt as to represent virtually no women in the actual population. This is said to have resulted in restrictive dieting and increased vulnerability to ED (Garner, 1997). The effect of sociocultural factors on the development of ED has received empirical support through epidemiological studies. Eating disorders are more common in Western countries where there has been a clear shift toward a thinner ideal for young women. Eating disorder symptoms proliferate among young women in more weight-tolerant cultures who nonetheless assimilate the thinness-conscious Western culture (e.g., Bulik, 1987; Dolan, 1991; Lee & Lee, 1996). In Western cultures, females in professions such as ballet, dance or gymnastics who are strongly exposed to pressure to diet because of emphasis on leanness for performance or appearance are at greater risk of ED (Abraham, 1996a; Abraham, 1996b; Garner & Rosen, 1991; Hamilton, Brooks-Gunn, Warren, & Hamilton, 1988). Interestingly, in males who engage in eating disorder behaviors to enhance performance, the behavior generally remits following disengagement from the activity (Romano, 1999a, p.50).

In addition, the Western standards of female attractiveness have changed within the context of increasing population weight norms (Garner & Garfinkel, 1980).

The cultural idea of thinness, which is below the average weight of women in that culture, is a direct cause of body dissatisfaction to a higher degree among women than men (McCarthy, 1990). To be thin is thought to be attractive, healthy and self-disciplined. To be overweight is perceived as being unattractive, lazy and probably incompetent (Ansari, 1994). Given these premises and the ensuing body dissatisfaction, it is not peculiar that dieting – considered to be a major contributing factor for the development of ED – has become a highly prevalent practice among women in Western societies.

Dieting

Dieting is a common practice among females (Hill, Oliver, & Rogers, 1992; Seidell, 1995), and has been linked to the development and maintenance of ED (e.g., Neumark Sztainer et al., 1995; Polivy, 1996; Rossiter, Wilson, & Goldstein, 1989; Wilson, 1993) as well as to the onset of binge eating (Wilson, 1993). Starvation and self-imposed dieting appear to lead to binge eating once food is available, as well as to such psychological manifestations as a preoccupation with food and eating, increased emotional responsiveness and dysphoria, and distractibility (Polivy, 1996). Although the Body Mass Index (BMI: $\text{Weight (kg)/Height (m)}^2$) does not seem to be associated with binge eating, dieters using dangerous dieting methods report significantly more bingeing than those exclusively using moderate methods (Neumark Sztainer et al., 1995). On the other hand, Lowe (1993) argues that eating behavior exhibited by restrained eaters emanates from their frequent dieting and overeating in the past, rather than from their current state of dietary or cognitive restraint. Finally, dieting, even in moderate forms, has been shown to cause serotonin (5-HT_{2C}) receptor supersensitivity (Cowen et al., 1996). It has been suggested that alteration in brain serotonin neurotransmission can play a part in dieting-induced dysregulation of eating and the development of clinical ED.

Although dieting and particularly dangerous methods of dieting seem to be an especially important correlate of eating disorders, they cannot per se predict occurrence of eating disorders. Rossiter et al. (1989) found that bulimic patients seemed to be quite similar to their restrained, nonbulimic counterparts in relation to dietary concern and ideas of slenderness. As a consequence of the insufficiency of dieting in explaining the development of ED, researchers have investigated the significance of a variety of other factors, of which body concern is one of the principal factors. The accumulated knowledge from available

studies on the importance of body concern/body image on the development and maintenance of ED is briefly summarized below.

Body image, body concern, and body dissatisfaction

Body image is conceptualized as a multidimensional construct that incorporates a number of components, including body percept, which involves size estimation, and body concept, which reflects cognitive and attitudinal factors (Pruzinsky & Cash, 1990; Waller & Hodgson, 1996). Nowadays, the media are probably the most influential of the sociocultural factors. Media-related variables may contribute to body image dissatisfaction and eating-related pathology through constant exposure of the idealized thin body (Levine, Smolak, & Hayden, 1996). Concerns about body shape are often found among adolescent girls in community surveys (e.g., Wardle & Beales, 1986). Extreme concerns about body shape constitute a central feature of AN and BN (Cooper, Taylor, Cooper, & Fairburn, 1987). Furthermore, overvalued ideas about shape and weight are a necessary diagnostic feature (Cooper & Fairburn, 1993). Clinical observations and research data concerning the importance of body image and body dissatisfaction have motivated longitudinal research on the causal relationship between the pursuit of thinness, early body dissatisfaction/body concern and an increased risk of developing eating disorders (e.g., Attie & Brooks Gunn, 1989; Killen et al., 1994). Body image dissatisfaction has received the greatest empirical support as a precursor to eating disturbances (Thompson, Heinberg, Altabe, & Tautleff-Dunn, 1999a) and the association between body dissatisfaction and binge eating or disturbed eating patterns has been demonstrated in several studies (e.g., Fisher, Schneider, Pegler, & Napolitano, 1991; Levine et al., 1994; Neumark Sztainer et al., 1995). These studies indicate that body dissatisfaction and weight concerns reflect the adoption of a socially approved female role, and that they are significantly associated with the onset of ED.

In spite of the social norms of the ideal body shape, not all women who are dissatisfied with their body image and are on a diet develop ED. Consequently, other psychological factors, such as self-esteem, social support and coping, have been studied in an attempt to specify risk factors for ED.

Self-esteem

Self-esteem can be defined as the sense of contentment and self-acceptance that results from a person's appraisal of one's own worth, attractiveness, competence,

and ability to satisfy one's aspirations (Robson, 1989). There is extensive empirical data on the presence of low self-esteem in dieting disordered patients (Griffits et al., 1991). The association between self-esteem and eating disorders, binge eating or disturbed eating has been demonstrated in numerous studies (e.g., Akan & Grilo, 1995; Fisher et al., 1991; Grant & Fodor, 1986; Neumark Sztainer et al., 1995). In a series of community-based case-control studies, Fairburn et al. showed that low self-esteem was a significant risk factor for both BN (Fairburn et al., 1997) and AN (Fairburn, Cooper, Doll, & Welch, 1999). Prospective research on risk factors for ED among schoolgirls has also shown that low self-esteem constitutes a risk factor for developing more severe signs of eating disorders and other psychological problems (Button et al., 1996) or unhealthy eating attitudes (Wood et al., 1994).

Social support

Perceived availability of support has been shown to protect individuals from the psychological impact of stressful life events and chronic life strain (Cohen & Wills, 1985). Social adjustment and social support are two interrelated aspects of social functioning. Although social adjustment (or level of role functioning) among women with ED has received considerable empirical attention, far less attention has been paid to social support (Rorty, Yager, Buchwalter, & Rossotto, 1999). Furthermore, the role of social support in the onset and perpetuation of ED is not well understood. The findings among participants with eating disorders indicate less perceived social support from friends and family (Grissett & Norvell, 1992) and a more limited and deficient social network in comparison to controls (Tiller et al., 1997). There is a considerable gap in our knowledge of the relationship between support and serious health outcome (Cohen & Wills, 1985). This has implications for ED as well, i.e., the importance of social support as a buffering factor against a later development of ED or the lack of social support as a risk factor for such a development needs to be studied.

Coping

Coping is believed to be of particular importance as a mediator of life stress and the onset of psychiatric stress. It has also been used as a key concept in theory and research regarding adaptation and health (Lazarus, 1993). In general, people who rely more on approach coping adapt better to life stressors and experience fewer psychological symptoms (Holahan, Moos, & Schaefer, 1996, p. 28). In contrast, avoidance coping such as denial and withdrawal is generally associated

with psychological distress. However, some prominent coping researchers, like R. S. Lazarus, are reluctant to make such a generalization, arguing that in situations where nothing can be done, wishing is at least not harmful. The contextual principle should be that only when denial or wishful thinking prevents a person from trying more productive strategies in a situation that can in fact be ameliorated should these strategies be regarded as negative coping (Lazarus, 1993).

If an individual is predisposed to respond to life events with high levels of stress, he or she may engage in disordered eating as a method of coping with this stress (Leon, Keel, Klump, & Fulkerson, 1997). Interestingly, relatively few studies have directly examined the relationship between coping and eating disturbance (Koff & Sangani, 1997). Women suffering from ED or eating disturbance have been shown to use proportionately more avoidance coping than controls (Mayhew & Edelman, 1989; Neckowitz & Morrison, 1991; Troop, Holbrey, & Treasure, 1998; Troop, Holbrey, Trowler, & Treasure, 1994), and less active cognitive and behavioral coping (Janzen, Kelly, & Saklofske, 1992; Mayhew & Edelman, 1989; Shatford & Evans, 1986). However, Tobin and Griffing (1985) found that avoidance or disengaged coping may be related more to affective symptoms than to bulimia itself. Although there is a clear congruity in the conclusions from the research on coping in ED, the role of coping as a putative risk factor for the development and maintenance of ED has not been investigated in longitudinal studies among individuals in the general population. Given its potential importance for ED, coping was investigated as a possible risk factor in the present thesis, along with other risk factors (low self-esteem, low perceived social support from family and friends, and body dissatisfaction). Further, the coping pattern among participants with past and current ED as well as among participants with past or current dieting (without ED) was compared to participants with neither ED nor dieting. The aim was to gain deeper knowledge surrounding the significance of coping for the development of ED and dieting, the latter being one of the strongest risk factors for ED.

Other putative risk factors

In the research literature, many other variables have been suggested as possible risk factors for the development and maintenance of ED. There have been multiple reasons for an exclusion of these factors here, mostly based on the assumption that a thorough study would be impossible. The workload of the participants and the use of self-report format put a limit on how extensive the

composite questionnaire could be. Some risk factors, like teasing, are more relevant during childhood and have been studied only retrospectively in Study I. Other factors, such as major negative life events, have been studied using a simple set of questions, and the psychometric qualities of such a measure is naturally questionable. More extensive questionnaires need to be used when studying such factors as perfectionism, attitudes toward food and eating, and current depression, although a set of very few questions has been included to obtain a broader picture. Other factors, such as family interaction and environment, are more difficult to define and measure by means of brief self-report questionnaires. Although these factors were excluded or only partly investigated in the present thesis, a short description is given below in order to present a broad picture of the current status of knowledge.

Being teased

One important sociocultural factor is appearance-related teasing that seems to play a possible etiological role in the development of body concern, body image dissatisfaction or/and eating disturbances (Thompson, Covert, & Stormer, 1991). Childhood history of teasing as a risk factor for developing ED has also been studied in some prospective studies (Cattarin & Thompson, 1994; Thompson, Covert, Richards, Johnson, & Cattarin, 1995). One identified factor of importance in these studies was the level of obesity that predicted teasing. Teasing led to overall dissatisfaction with appearance, and body dissatisfaction predicted restrictive eating practices. Furthermore, teasing has been shown to be one of the common triggers of dieting (Muir, Wertheim, & Paxton, 1999) and it is thereby considered to be a risk factor for ED. However, these findings need to be replicated and validated.

Perfectionism

Perfectionism and low self-esteem are recognized as predisposing personality traits in AN and BN, and more recently in binge eating disorder (Hartley, 1998). Slade (1982) suggested regarding "perfectionism" and "general dissatisfaction" as setting conditions for ED. Although this hypothesis has been confirmed in some studies (e.g., Kiemle, Slade, & Dewey, 1987; Waller, Wood, Miller, & Slade, 1992), other have failed to confirm such a connection (e.g., Rosenvinge, Borgen, & Boerresen, 1999).

In addition, it has been shown that some characteristics of AN, including perfectionism, persist after good outcome and recovery, raising the question of whether these behaviors are traits that contribute to the pathogenesis of AN (Srinivasagam, Kaye, Plotnicov, & Greeno, 1995). The findings of Srinivasagam and colleagues have received some support, highlighting the enduring characteristic of perfectionism in AN patients even one year after sustained recovery (Bastiani, 1995; Szabo & Terre-Blanche, 1997). Lastly, in a seven-year longitudinal study of psychosocial characteristics in early teenage years as predictors of eating characteristics in early adulthood (Calam & Waller, 1998), perfectionism was only weakly linked to subsequent eating habits. The specific role of perfectionism in the development and maintenance of ED, as well as its interaction with other risk factors, needs to be investigated prospectively for the whole spectrum of ED.

Family interaction and environment

A large body of research has explored the family environment of patients with eating disorders, showing a significant relationship between family environment and the risk of developing AN or bulimia in adolescents (e.g., Felker & Stivers, 1994; Pike & Rodin, 1991; Rastam & Gillberg, 1991; Waller, Calam, & Slade, 1989). Families of patients with ED have been characterized as less expressive, less cohesive, and experiencing more conflicts than normal control families (Laliberté, Boland, & Leichner, 1999). In a two-stage study of family factors specific to eating disorders, Laliberté et al. (1999) found that the family process variables (conflict, cohesion, and expressiveness) are typical of distressed families in general. These variables are more generally related to individual psychopathology and may say very little about the specific etiology of ED (Laliberté et al., 1999). On the other hand, perceptions of the family's concern for weight and shape, social appearance, and emphasis on achievement comprise a conceptually distinct set of variables that might be regarded a family climate for ED (Laliberté et al., 1999). As these authors conclude, the next obvious step is to study the family climate variables prospectively. If these variables show evidence of etiological significance, then they may be valuable to the content of prevention efforts.

Personality

Personality is an evolving latent variable with many different definitions and content (Watson, Clark, & Harkness, 1994). Although the meaning of personality

is readily apparent to the average person, a scientific definition of personality is more elusive than the widespread usage of it may suggest (Watson et al., 1994). There is a large body of research investigating some traits and behavioral patterns, such as perfectionism or excessive compliance, as personality risk factors for ED. However, there is a paucity of research on the relevance of personality for the development of ED, when personality is stringently operationalized¹. Most of the existing studies have focused on the association between personality structure and ED (e.g., Brookings & Wilson, 1994; Casper, Hedeker, & McClough, 1992; Feldman & Eysenck, 1986; Geissler & Kelly, 1994; Janzen, Saklofske, & Kelly, 1993; Slade, Newton, Butler, & Murphy, 1991). A consistent finding in these studies was the strong relationship between bulimic symptomatology and neuroticism and the lack of association between bulimic symptoms and extraversion. One of the very few studies that investigated predisposing personality traits for AN in terms of a comprehensive personality model is that of Strober (1991). Low novelty seeking, high avoidance, and high reward dependence was shown to be predisposing for AN. Recently, some prospective studies of the significance of personality for the later development of ED have been conducted (e.g., Ghaderi & Scott, 2000a; Narduzzi & Jackson, 2000; van-der-Ham, van-Strien, & van-Engeland, 1998). These studies demonstrate the relevance of certain personality attributes as they may increase our understanding of the development of ED. However, these findings should be integrated with behavioral, biological, and social risk factors in further research to examine the utility of the concept of personality in multifactorial risk research.

Stress and life events

Many researchers have studied the association between negative major life events and psychopathology. Studies of the influence of life events on adolescents suffering from AN have shown that these patients have had significantly higher negative event scores than healthy controls (Horesh et al., 1995). In addition, stressful life events or difficulties precede the onset of AN and BN in most cases (Schmidt, Tiller, Blanchard, Andrews, & Treasure, 1997).

In summary, the importance of life events and stress in the development and maintenance of ED have repeatedly been pointed out in recent research (e.g., Schmidt et al., 1997; Sohlberg & Noring, 1992; Troop et al., 1998) as well as

¹ A well-established definition is that of Allport (in Watson et al., 1994): "Personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustment to his environment."

earlier (e.g., Shatford & Evans, 1986; Soukup, Beiler, & Terrel, 1990). However, further investigation in prospective, multifactorial research is called for.

Depression

The high prevalence of depression among ED patients has been reported in several studies (e.g., Braun, Sunday, & Halmi, 1994; Cargill, Clark, Pera, Niaura, & Abrams, 1999; Casper, 1998; Kennedy et al., 1994). It has been suggested that ED are preceded by depression (Wamboldt, Kaslow, Swift, & Ritholz, 1987), and that they represent an atypical affective illness (Katz, 1986). Furthermore, the occurrence of low self-esteem in ED patients has been viewed as a symptom of a depressive illness (Eckert, Goldberg, Halmi, Casper, & Davis, 1982). However, there is some evidence showing that self-esteem and depression are separate variables (Grubb, Sellers, & Waligroski, 1993), that there is some overlap of items between some self-esteem and depression scales, and that this may sometimes account for a positive correlation between self-esteem and depression (Maclachlan, 1985). In addition, although it is not uncommon for patients with ED to have been depressed prior to the onset of ED (Fairburn, 1995), it does not appear to directly cause ED, but may be mediated through coping responses or stress mediators (Shatford & Evans, 1986). Finally, the possible causal connection between depression and ED needs to be investigated using longitudinal data in the general population, using multidimensional models and multivariate methods.

Sexual abuse, obesity, impulsivity, personality disorders, and biological risk factors

Studies investigating sexual abuse as a risk factor for eating disorders have been contradictory and controversial (Fallon & Wonderlich, 1997). In an extensive review of six controlled and numerous uncontrolled studies examining the relation between childhood sexual abuse and BN, Pope and Hudson (1992) concluded that there was no evidence to support the hypothesis that childhood sexual abuse is a risk factor for BN. In addition, more recent studies, reviewed by Fallon and Wonderlich (1997), have put forth strong evidence that the relationship between childhood sexual abuse and the ED is nonspecific. In summary, even if sexual abuse is a non-specific risk factor for BN (Fallon & Wonderlich, 1997), there is no specificity for the link between sexual abuse, even using a broader definition (i.e., not necessarily childhood abuse), and ED in general (Welch & Fairburn, 1994).

Numerous other factors have been suggested as possible risk factors for the development and maintenance of eating disorders. Some of these factors have received some preliminary empirical evidence. Example of such factors are obesity (e.g., Fairburn et al., 1997; Hay et al., 1996) and impulsivity (Irving, McCluskey-Fawcett, & Thissen, 1990; Myers & Burket, 1989; Thompson, Wonderlich, Crosby, & Mitchell, 1999b). In addition, personality disorders, particularly those of cluster B and C² according to DSM-III-R (American Psychiatric Association, 1987), have been shown to be present among a substantial number of individuals with ED (e.g., Carroll, Touyz, & Beumont, 1996; Grilo, Levy, Becker, Edell, & McGlashan, 1996; Herzog, Keller, Lavori, Kenny, & Sacks, 1992; Skodol et al., 1993), but the significance of axis II disorders as prospective risk factors for ED needs to be investigated in future studies.

Finally, biological risk factors need to be mentioned when applying a biopsychosocial perspective to the study of the development and maintenance of ED. Biological factors have been investigated in a series of controlled studies. One of the most important aspects of biological risk factors for the development of ED is genetic predisposition, investigated in terms of psychopathology in the family and in twin studies (Kendler et al., 1991; Strober, Lampert, Morrel, Burroughs, & Jacobs, 1990; Treasure & Holland, 1995; Wade, Martin, & Tiggemann, 1998; Walters & Kendler, 1995; Walters et al., 1992). Other biological factors are neurotransmitter dysfunction, hormonal dysregulation, metabolically determined weight differences, and problems with peripheral functioning in the gastrointestinal system (Leon et al., 1997). However, with the exception of behavioral genetics, most of the biological approaches are very costly and invasive, and cannot examine potential risk factors free of the confounding effects of the eating disorder itself. Behavioral genetic studies, on the other hand, through their investigation of biological and adopted relatives, may be a cost-effective and productive area for future biological risk factor research (Leon et al., 1997).

General aims of the present thesis

The general aims of the present thesis were to estimate the prevalence and incidence of ED according to the DSM-IV in the general population of females

² Cluster B comprises antisocial, borderline, narcissistic and histrionic personality disorders while cluster C consists of avoidant, dependent, obsessive-compulsive and passive-aggressive personality disorders.

(18-30 years), as well as risk factors for the development of clinical ED across the ED diagnoses. In addition, the psychometric properties of the diagnostic questionnaire used for screening and case ascertainment were established to provide an economic and reliable instrument for questionnaire-based population studies, and to investigate the reliability and validity of the findings. Accordingly, the findings might further elucidate possible causal sequences for the development and perpetuation of ED among young adult females.

Method

To address the potential limitations of previous research (e.g., method of case detection, choice of instrument, definition of ED, biased samples, the cross-sectional nature of most of the studies, sample size), a sample of females from the general population was recruited. Several factors that demonstrated strong associations to ED according to previous research were studied both cross-sectionally and longitudinally. A self-report questionnaire constructed according to the DSM-IV criteria for ED (Götestam & Agras, 1995) was used as a means of case detection.

Thus, the longitudinal design of the project, the process of sample selection, and the inclusion of several putative risk factors in the present studies were in accordance to the suggested guidelines by well-known researchers in the field (e.g., Fairburn et al., 1995; Garfinkel et al., 1987; Gillberg, 1994; Patton & King, 1991; Steiner & Lock, 1998; Wakeling, 1996; Wonderlich et al., 1997). Using a multiple risk factor model to explain the development of ED permits both a prediction of individuals at high risk and helps the therapeutic intervention to be adjusted to each person's particular needs (Garfinkel et al., 1987).

Participants and procedure

Study I

A randomly selected sample of 2,000 women aged 18-30 was recruited for the first study. The random selection was made from a Swedish national register. To increase the response rate, respondents were invited to take part in a lottery whereby five participants would win a cruise. Of the original 2,000 chosen participants, 48 could not be traced or were excluded because of unknown addresses, mental retardation, travel abroad, or refusal, yielding a total of 1,952 potential respondents. A reminder was sent out to the non-respondents after four

weeks. The sum of completed questionnaires received after the first and second requests was 1,157 (59.3%).

Because of the high attrition rate, a short questionnaire comprising demographic data and questions about occurrence of binge eating, dieting, and periods of starvation was sent out to 200 randomly selected non-responders in order to analyze the attrition. Of the 195 potential participants (5 could not be reached because of unknown address or travel abroad), a total of 102 individuals (52%) responded. This group is called the attrition group. The analyses showed no significant differences between this group and the respondents who answered the original questionnaire (n=1,157) concerning age, marital status, education or BMI. However, there was a significant difference between the groups in regards to occupation. A higher proportion of the attrition group was employed and a smaller proportion consisted of students. Despite the difference, the distribution of occupation among the respondents was not substantially biased. There were no significant differences between the groups concerning dieting, binge eating or fear of weight gain combined with self-induced starvation. Thus, the sample of respondents might be regarded as a representative sample of persons for the age group.

Study II

The same sample of participants as in Study I was used for this study. However, the participants were grouped slightly differently than in Study I, although the first and second group were identical to those in Study I. Thus, participants were clustered into five groups: 1)- participants with a past history of ED (*EDPa*), 2)- participants with current ED (*EDCr*), 3)- participants with no ED but with a past history of dieting (*DietPa*), 4)- participants with no ED but with current dieting (*DietCr*), and 5)- participants with no history of ED or dieting (*Controls*). These groups were then compared regarding their proportional use of different coping strategies. These comparisons were then rerun when controlling for the effect of depressive symptomatology.

Study III

The same sample of participants as in Study I was reassessed after two years. The same composite of questionnaires as in 1997 was sent out to the participants. A total of 35 potential participants could not be followed up (1 death, 6 refusals, 7 unknown addresses, 3 protected addresses, 4 were travelling abroad, and 14 had emigrated). In total, 1,122 potential respondents were available, of which 826

individuals (73.6%) completed the same questionnaire as in 1997 after two reminders were sent out. The attrition group in this study (n=296) was compared to the respondents concerning age, marital status, education, and work situation. There were no significant differences concerning age, marital status, and work situation. However, a significant difference was found between the groups concerning education. Participants in the attrition group had on average a slightly lower level of education compared to respondents. Once again, although statistically significant, the differences were not large enough to cause a considerable bias in the group of respondents. In addition, the groups did not show any significant differences in regards to BMI or the life time history of ED.

Study IV

Two different samples of participants were engaged in the Study IV. The clinical sample consisted of 45 females who were recruited from respondents (n=75) to a local newspaper advertisement announcing a study of the treatment of binge-eating-related ED. The mean age of this sample was 27.6 years (SD=10.0). Of the respondents, 9.3% were married and 2.3% divorced, while 18.6% were currently living with a partner and 69.8% were single. The mean BMI was 24.7 (SD=6.0). After a comprehensive phone screening, a composite of questionnaires including the Survey for Eating Disorders (SEDs) was sent out to the potential participants in the treatment study (those who initially were estimated to meet the criteria for an eating disorder, i.e., 45 of 75 participants). After the participants responded to the questionnaires (n=45), they were scheduled for an assessment interview by means of the Eating Disorder Examination (EDE) that is considered to be the "gold standard" for the assessment of ED. The participant's response to the SEDs was then compared to the results of the EDE.

The second sample comprised 124 undergraduate students (80.7% females, and 19.3% males) with a mean age of 28.7 years (SD=6.3). In this sample, 17% were married, 3% divorced, 27% were currently living with a partner and 53% were single. The mean BMI was 22.2 (SD=4.1). The students were given course credits for participation in the study. They were instructed to respond anonymously to a composite of questionnaires, including the SEDs and Eating Disorders Inventory (EDI), on two occasions with a two-week interval. On the first occasion, the students were asked to respond to six questions (favorite book, music, film, etc.) and to remember their responses in order to use them to respond in the same way on the next occasion. This procedure enabled us to relate the two sets of questionnaires administered at different time points. In

total, 144 students responded to the first questionnaire, and 124 responded to the second. The mean number of days between the first and second response to the questionnaires was 14 (SD=8 days).

Instruments

Survey for Eating Disorders (SEDs): A diagnostic questionnaire according to DSM IV

The SEDs was developed by Gøtestam and Agras (1995). It was slightly modified in order to address the potential shortcomings pointed out by the constructors of the questionnaire. Since different individuals may define binge eating in very different ways, a definition of binge eating according to DSM-IV was presented to the responders before the questions concerning the occurrence of binge eating. Another modification concerned questions about purging behavior. These questions were combined into four questions, asking about occurrence, method, frequency, and duration of purging. This modified version of the SEDs consisted of 36 questions, 18 of which are necessary for diagnosis, four are demographic, and the others provide helpful information regarding age of onset for dieting and binge eating and antecedents as well as triggers of dieting and binge eating. The procedure for establishing the diagnoses was in line with the criteria requirements in the DSM-IV. For example, a subject diagnosed as having BN had to report repeated binge eating episodes characterized by eating in a discrete period of time (e.g., within any 2-hour period), substantial intake of food that is definitely larger than most people would eat during the same period of time and under similar circumstances, and a sense of loss of control over eating during the episode. Further, it was required that the subject reported recurrent inappropriate compensatory behavior in order to prevent weight gain. The binge eating and the inappropriate compensatory behaviors must occur on average at least twice a week for three months. In addition to these behavioral criteria, if the subject also reported that body shape and weight always (or very often) unduly influenced her self-evaluation, then she would be considered to have the diagnosis of bulimia nervosa according to DSM-IV. For the diagnosis of binge eating disorder, the same set of requirements was stipulated, with the exception that the subject should not report use of compensatory behaviors and that the duration of binge eating should be at least 6 months. An equally stringent procedure was used to establish diagnoses of AN and the other forms of non-specified eating disorders than binge eating disorder.

Body Shape Questionnaire

The Body Shape Questionnaire (BSQ) is a self-report questionnaire (Cooper et al., 1987). It consists of 34 questions measuring the extent of psychopathology of concerns about body shape, in particular the experience of “feeling fat.” Item examples are: “Have you been so worried about your shape that you have been feeling that you ought to diet?” or “Have you felt excessively large and rounded?” The questions refer to the participants’ state over the previous four weeks and are answered on a six-point scale, from “never” to “always.” The BSQ has proved to have good concurrent and discriminative validity (Cooper et al., 1987). In order to obtain accuracy in the translation, the BSQ was translated into Swedish and then back-translated by two independent translators, who had English or Swedish as their native language. Reliability by means of Cronbach’s alpha was .97 in Studies I and II, and the corresponding split-half reliability was .97 and .96 respectively.

Perceived Social Support

The Perceived Social Support questionnaire (PSS) is a 20-item self-report questionnaire, developed by Procidano and Heller (1983). It has been designed to measure the extent to which an individual perceives his or her family (PSS-Fa) and friends (PSS-Fr) as fulfilling his or her needs for support, feedback and interaction. Item examples are: “I have a deep sharing relationship with a number of friends” and “My family is sensitive to my needs.” In the original version, the response categories were “yes,” “no,” and “don’t know.” To increase the sensitivity of response categories, a five-point scale from “always” to “never” was introduced. PSS-Fr and PSS-Fa have proved to have high internal consistency (Cronbach’s alpha of .88 and .90, respectively), construct validity, and ability to distinguish between friends and family in the provision of social support (Procidano & Heller, 1983; Sarason, Shearin, Pierce, & Sarason, 1987). Cronbach’s alpha for the PSS-Fa was .93 in Study I, and .94 in Study III. Further, the split-half reliability was .93 and .94 respectively. The internal consistency of the PSS-Fr was almost identical to that of the PSS-Fa. The PSS (for both family and friends) was translated through the same procedure as used for the BSQ.

Self-Concept Questionnaire

The Self-Concept Questionnaire (SCQ) is a self-report scale measuring self-esteem (Robson, 1989). It consists of 30 items (e.g., “I have control over my

life,” “I feel emotionally mature,” “I can like myself even if others don’t”). The items are based on seven components of self-esteem, according to theoretical and empirical information reviewed by Robson (Robson, 1988). The scoring is performed on a seven-point scale, ranging from “completely disagree” to “completely agree.” The SCQ has proved to have good reliability (Cronbach’s alpha of .89) and good validity (clinical validity of .70) (Robson, 1989). The obtained reliability in Study I showed high homogeneity (Cronbach’s alpha .89) and the corresponding value in Study III was .91. Split-half reliability was .87 and .89 in Study I and II, respectively. The SCQ was translated into Swedish through the same procedure as used for the BSQ and PSS.

Ways of Coping Questionnaire

The revised version of Ways of Coping questionnaire (WCQ), developed by Folkman and Lazarus (Folkman & Lazarus, 1988), is a self-report questionnaire, containing eight subscales (factors), assessing thoughts and actions used by individuals to cope with the stressful encounters of everyday life. The internal consistency of the subscales, measured by Cronbach’s alpha, is regarded as more satisfactory than most of the measures of coping process, and the same applies to reliability (Folkman & Lazarus, 1988). Furthermore, the face and construct validity of WCQ are supported to the extent that the findings are consistent with the theoretical predictions (Folkman & Lazarus, 1988).

In the studies included in the present thesis, five factors from the WCQ were used: Confrontive Coping, Self-controlling, Seeking Social Support, Escape-Avoidance, and Planful Problem Solving. Participants were asked to think of a current stressor and to indicate on a four-point scale, from “Not used at all” to “Used very much,” the degree to which each of the items was used to deal with the stressor. Relative scores of coping strategies were then obtained, that is, the degree to which each subscale (factor) was used relative to all the others. This was calculated by dividing the mean for each coping strategy by the sum of the means for all coping strategies.

Depressive Symptoms

Participants were asked to report the frequency of various depressive symptoms (tiredness, poor appetite, anxiety, low mood, crying episodes, insomnia, reduced concentration, reduced interest in various activities, pessimism, and suicide preoccupation) during the past six months on a five-point scale from “never” to “always.” The responses were summed to make an index of the frequency of

depressive symptoms. The higher the scores, the more frequent were the depressive symptoms.

Eating Disorder Examination (EDE)

The EDE (Fairburn & Cooper, 1993b) is a semi-structured interview that assesses the two key behavioral aspects of ED and provides frequency ratings for their occurrence that may be used to generate operationally defined eating disorder diagnoses. It provides four subscales (Restraint, Shape concern, Weight concern, and Eating concern). Purging and non-purging compensatory behaviors and three types of overeating (of which "Objective Bulimic Episodes" are equivalent to DSM-IV binge eating) can be assessed using the EDE. This instrument was only used in Study IV. The author was trained to use the EDE by the constructor of the scale in Oxford, England, and during an extensive training period with Dr Wilfley's ED research team in San Diego, USA.

Eating Disorders Inventory-2 (EDI-2)

The EDI-2 is a widely used self-report measure of symptoms of eating disorders. It consists of 91 questions, 64 of which are from the original version of the EDI (Garner, Olmsted, & Polivy, 1984), providing standardized subscales on eight dimensions that are clinically relevant to eating disorders. The additional 27 items add three new constructs that form the EDI provisional subscales (Garner, 1991). A cut-off score of 14 on the subscale of Drive for Thinness has been used to identify individuals with ED. The Swedish version of the EDI has been validated (Norrning & Sohlberg, 1988) and normative information for the Swedish population of students and patients is available. In the Swedish version, the item-subscale correlations and the internal consistencies of the subscales were highly satisfactory, and replicated the corresponding findings in the original EDI manual (Garner, 1991). However, the Swedish controls scored significantly lower than their North American counterparts in six of the eight subscales even though the patient group in the Swedish validation study had EDI subscale means very similar to those reported by Garner (Garner, Olmsted, & Polivy, 1983), except in the bulimia scale where they scored lower. In the present study, as in the Swedish validation study, the participants' responses to the EDI were scored according to the instructions in the original manual (Garner et al., 1983), by which the most pathological responses scores 3 points, the adjacent response scores 2, and the next 1, with the remaining three scoring 0 points. This instrument was used only in Study IV.

Comments on the choice of instruments

There are at present no perfect instruments for the assessment and evaluation of many complex psychological variables (e.g., self-esteem and body concern). In fact, criticism can be raised against all instruments, since the constructs they are intended to measure are so immensely complex, changing or even controversial.

The choice of SEDs as the diagnostic instrument was based on the decision to use an instrument with the potential of assessing the whole spectrum of ED according to the DSM-IV, and the possibility of including sub-clinical ED in the risk model for the development of ED. There is little question that the last edition of the DSM has relied much more on empirical data than any of its predecessors and that the DSM-IV can be considered empirical and accessible, but not ideal (Nathan, 1994).

To date, the Body Shape Questionnaire is the most valid instrument for assessing levels of body concern (body dissatisfaction).

Reliable investigation of the importance of social support as a relevant factor for the development of ED depends on the use of a support instrument that provides a precise measure of theoretically defined support functions. In the studies included in the present thesis, perceived social support was investigated by means of Perceive Social Support from Family and from Friends, instead of objective available support. There are two reasons for this choice. First, the accurate estimation of the support and sources of support would require extensive method development and instruments. Second, a personal cognitive evaluation of available support (i. e. perceived social support) has been considered to have greater importance than the objective support (Procidano & Heller, 1983; Sarason et al., 1987; Sarason, Sarason, & Shearin, 1986).

The inherent vagueness of the concept of self-esteem has led to attempts to reduce and refine the concept. Such reduction and refinement may result in measures whose content lacks intuitive credibility or is conceptually primitive, even though they may be psychometrically sophisticated (Robson, 1989). This is the main shortcoming of the most commonly used measure of self-esteem, Rosenberg Self-esteem Scale (Rosenberg, 1979). Considering self-esteem as a composite might result in a concept worth further pursuit. The choice of Self-Concept Questionnaire was based on this view and its good psychometric properties.

Ways of Coping Questionnaire (WCQ) offers the best measure of coping both theoretically and psychometrically at present. To the author's knowledge, there are currently no other measures that provide a more sophisticated general picture of coping on a behavioral level than the WCQ.

The Eating Disorders Examination is considered to be the most valid instrument for the assessment of ED and the Eating Disorders Inventory is a widely used self-report instrument with established psychometric qualities.

Statistical analyses

All of the analyses in the present thesis were preceded by a thorough series of exploratory data analyses as suggested by Hair and colleagues (1995). The statistical analyses for investigating demographic data were chi-square, t-test and Wilcoxon matched pairs test. Investigation of group differences concerning continuous variables was performed by means of Multivariate Analysis of Variance (MANOVA), Univariate Analysis of Variance (ANOVA), Multivariate Analysis of Covariance (MANCOVA) and Univariate Analysis of Covariance (ANCOVA). The Tukey *post hoc* test for unequal group sizes (Spjotvoll and Stoline HSD) was then used for establishing group differences.

Given the difference in sample size in most of the analyses of variance and the requirements of ANOVA (e.g., homogeneity of variance), the distribution of variance was carefully investigated and examined by Bartlett chi-square test, whenever needed, to ensure the validity of the analyses. In most of the cases of heterogeneous variance, the larger variance was found with the larger group, indicating that the true probability of type I error was less than the nominal probability (Glass & Hopkins, 1996). When the larger variance was found in the smaller group, the H_0 -hypothesis was examined using the Welch t' -test (Glass & Hopkins, 1996, p. 295). The analyses showed that the true probability of type I-error was not greater than the nominal and thus the analyses are not presented in the studies. In Study IV, Wilcoxon matched pairs test was also used to test the derived diagnoses from the questionnaire (SEDs) and interview (EDE). Analyses of the reliability (internal consistency) of the instruments were conducted by means of Cronbach's alpha. Throughout the summary of the present thesis, significant differences concerning group comparisons refer to significant results in the *post hoc* tests and not only the overall F-test. A p-value smaller than .05 was considered statistically significant.

Empirical Studies

Study I: Prevalence and psychological correlates of eating disorders among females aged 18-30 years in the general population

Aim

The primary aim of this study was to estimate prevalence and correlates of ED in the general population of females (18-30 years). Identification of correlates was carried out by comparing participants without ED (controls) with both participants with a current ED and participants with a past (but not current) history of ED.

Major findings

The lifetime and point prevalence of different types of ED according to DSM-IV in the investigated population can be seen in Table 5.

Table 5. Lifetime and point prevalence of different types of eating disorders according to DSM-IV in females (18-30 years), from the general population (n=1,157).

Diagnoses	Lifetime prevalence		Point prevalence	
	%	n	%	n
Anorexia Nervosa, AN	0.86	10	-	-
Bulimia Nervosa, BN	2.85	33	1.73	20
AN + BN	0.61	7	-	-
Binge Eating Disorder, BED	1.04	12	0.52	6
Eating Disorders Not Otherwise Specified	2.42	28	0.34	4
Eating disorders, total	7.78	90	2.59	30

As can be seen, none of the participants currently met the criteria for AN, but almost 1% reported a past history of AN. The 95% confidence interval for the point prevalence of ED (total) was .017 to .035.

There were no significant differences between the participants with a past history of eating disorders (EDPa) and participants with a current eating disorder (EDCr)

and the participants with no history of eating disorders (Non-ED) concerning demographic characteristics. Thus, the potential significance of demographic variables in the group comparisons could be ruled out in further analyses.

The EDCr and the EDPa reported a significantly lower level of self-esteem and perceived social support from the family as compared to the Non-ED. Furthermore, the EDCr reported the highest level of body dissatisfaction, significantly different from both the Non-ED and EDPa. On the other hand, there were no significant differences between the groups concerning perceived social support from friends.

Discussion

The findings concerning the prevalence of ED did not support some of the earlier questionnaire-based reports, reviewed by Hsu (1996), that suggested that ED had reached epidemic proportions. The prevalence rate in Study I (2.59%, 95%CI=.017 to .035) was in line with studies that employed more sophisticated measures of case detection (Hsu, 1996) than self-report, which show a total point prevalence of ED of between 1% and 3%.

Concerning the correlates of ED, the findings in Study I are in line with earlier reports in which low self-esteem, perceived low social support, and high levels of body dissatisfaction have been reported as correlates of eating disorders. However, the unique contribution of Study I was to investigate the prevalence of ED and the putative correlates of ED among a randomly selected sample of females from the general population. The choice of strict psychiatric criteria for case formulation was another important component of the study, as there have been many questionnaire-based studies of ED, but with other criteria for case formulation, that raise the question of whether the population being studied is really suffering from ED. The statistical analyses were confined to more conservative tests (e.g., Tukey post hoc test instead of less conservative tests such as Fisher's LSD or Newman-Keuls test) in order to decrease the type-I error (rejecting H_0 when in fact it is true). In summary, Study I showed that ED are relatively prevalent among females aged 18-30 years, and that those with a current ED report lower levels of self-esteem and perceived social support from the family and more body dissatisfaction than those with no history of ED. Further, the study showed that, although to a lesser extent than the EDCr, the EDPa still feel significantly lower self-esteem and perceived social support from the family, and more body dissatisfaction than participants with no ED.

Study II: Coping in dieting and eating disorders: A population-based study

Aim

Given the theoretical importance of coping in the development and maintenance of ED, and dieting as a specific risk factor for ED, the aim of Study II was to explore the role of coping in dieting and ED by comparing a group of participants with past or current ED or dieting to participants with neither ED nor dieting.

Major findings

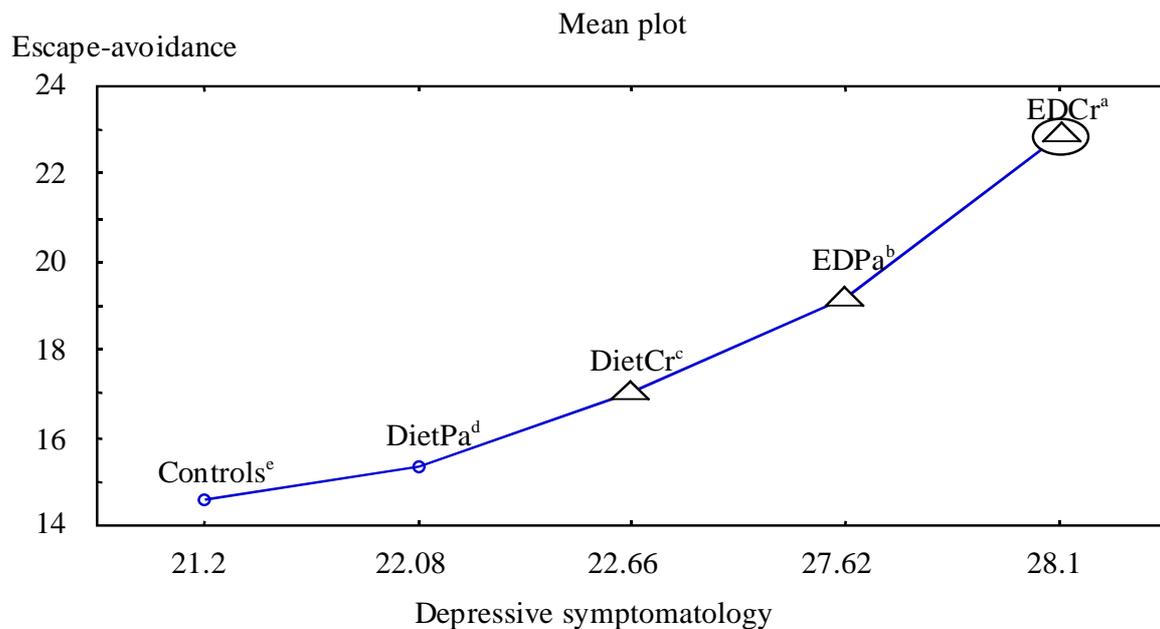
Participants with ED sought less social support as a coping strategy and less purposeful problem-solving compared to dieting participants with no ED and controls (participants with neither ED nor dieting). On the other hand, participants with past or current ED used significantly more escape-avoidance coping than controls. Furthermore, participants with a current ED were also significantly different from participants with past or current dieting regarding the relative use of escape-avoidance coping. Finally, those with current dieting reported more use of escape-avoidance coping than controls. There was a continuous and consistent change in the proportional use of coping strategies with an increasing degree of severity from controls to participants with a current ED, resembling a linear trend. Another important finding was that the group differences remained after controlling for depressive symptomatology. The groups' proportional use of escape-avoidance coping in relation to depressive symptomatology is illustrated in Figure 1.

Discussion

The significant difference between participants with current ED and those without ED is in line with earlier research (Neckowitz & Morrison, 1991; Troop et al., 1994). However, the finding concerning the significant difference between the participants with a past history of ED compared to those without any history of ED or dieting is new. Maintenance of high escape-avoidance coping among participants with a past history of ED may be valuable in predicting and understanding relapse. In Study II, it was shown that the proportional use of escape-avoidance coping increases with the presence of past and current dieting as well as past and current ED. In contrast, the proportional use of purposeful problem-solving and seeking social support decreases from those with neither

dieting nor ED to those with a current ED. Thus, a gradual and consistent change in coping pattern seems to be associated with corresponding changes in dieting and eating behavior.

Figure 1. The relation between depressive symptomatology and proportional use of escape-avoidance coping among the groups.



^aEDCr: participants with current ED (n=23)

^bEDPa: participants with past history of ED (n=52)

^cDietCr: participants with no ED but with current dieting (n=132)

^dDietPa: participants with no ED but with a past history of dieting (n=342)

^eControls: participants with neither history of ED nor dieting (n=427)

△ used significantly more Escape-avoidance coping than Controls

○ used significantly more Escape-avoidance coping than the DietPa & DietCr

This may have an impact on the prevention and treatment of ED. The examination of the effects of purposeful and skill-focused coping in prevention programs seems to be motivated. In conformity with the relevance of coping for prevention, attention should be focused on increasing the patient's coping skills in treatment programs for ED. It has been suggested that avoidant or disengaged coping among patients with BN may be more related to affective symptoms than to BN itself (Tobin & Griffing, 1995). The findings in Study II suggest that the higher use of escape-avoidance coping among participants with ED and participants with current dieting compared to those with neither ED nor dieting is

related more to dieting and eating problems than to depressive symptoms. One important question is whether dieting participants continue to diet and successively develop an eating disorder and whether coping plays a significant role in this transition. To answer this question, follow-up studies are needed to prospectively analyze the role of coping in the development of ED. This is at least partially answered in Study III.

Study III: Prevalence, incidence and prospective risk factors for eating disorders

Aim

This study was designed to estimate incidence of ED after two years (follow-up) in the same sample as in Study I, and to investigate risk factors for the development of ED. The question of significance, durability, and stability of putative risk factors was of great importance in Study III.

Major findings

The total prevalence of eating disorders at follow-up (3.15%) was slightly higher than the corresponding rate in 1997 (2.59%). First-time incidence, which is the number of participants who developed an eating disorder for the first time in their lives divided by the number of participants who had never had the disorder, was .0066 (n=5) which is evidently less than the total incidence of .016 (Table 6).

Table 6. The 1-year incidence at follow-up for females aged 20-32 with various diagnoses of eating disorders according to DSM-IV.

Diagnoses	1-year incidence	
	Proportion	n
Anorexia nervosa (AN)	.0012	1
Bulimia nervosa (BN)	.0048	4
Binge eating disorder (BED)	.0060	5
Eating disorders not otherwise specified	.0036	3
Total eating disorders	.0156	13

The incidence rate is quite high compared to the prevalence rate. The 1-year first time incidence was .0066 (n=5). The 95% confidence interval for this figure is

.002 to .014. The cumulative 2-year first time incidence was .0105 (n=8). Given the prevalence, the incidence figures might suggest that there is a relatively high spontaneous remission of ED or high transition into subclinical forms of ED.

There were no significant differences between participants with any ED symptoms before or during the follow-up period (control group) and the extended incidence group³ before (T1, 1997) or during the follow-up (T2, 1999) regarding demographic characteristics (marital status, education or work situation).

In order to examine the significance of the putative risk factors for ED, the extended incidence group was compared to the control group. The MANOVA, with Time defined as a within-subjects factor, and with reported self-esteem, body concern, relative use of escape-avoidance coping, and perceived social support from the family in T1 and T2 as the independent variables, showed significant main effects for grouping and Time as well as a significant interaction. The significant interaction concerned self-esteem, body concern, and relative use of escape-avoidance coping. The means and standard deviations for each group in T1 and T2 are shown in Table 7.

As Table 7 shows, the extended incidence group reported lower self-esteem and higher body concern compared to controls in T1 (significant differences on the *post hoc* tests). There were no significant changes in self-esteem and body concern for controls between T1 and T2, while there was a tendency toward a significant change in self-esteem and a significant change in body concern for the incidence group between T1 and T2.

As for the relative use of escape-avoidance coping, the same pattern as for body concern can be seen (Table 7). There was a tendency toward a significant increase in the relative use of escape-avoidance coping in the incidence group from T1 to T2. Further, there were significant differences between the extended incidence group and the control group in T1 and T2, indicating that elevated relative use of escape-avoidance coping may be a risk factor for the development of an eating disorder.

³ The extended incidence group was comprised of all the participants who developed an eating disorder after T1 (n=28) and six participants who met all the criteria for BN but reported that their self-evaluation often is unduly influenced by body shape and weight. Only participants who reported that their self-evaluation always or very often was unduly influenced by body shape and weight were considered to fulfil the D- criterion of bulimia nervosa when the diagnoses were established strictly according to DSM-IV.

For the PSS-Fa, there were significant group differences both in T1 and T2, indicating that low perceived social support may be a risk factor for the development of ED. However there was no significant interaction for grouping and Time in terms of PSS-Fa. To investigate the role of the putative risk factors in the development, course, and maintenance of ED, all of the participants were grouped according to the pattern of ED symptoms in T1 and T2 into seven groups (Exhaustive grouping), and then compared in regards to risk factors.

Table 7. Mean and standard deviation for the control group (n=643) and the extended incidence group (n=34) in T1 (1997) and T2 (1999) concerning the results from the SCQ, BSQ, WCQ: E-A, and PSS-Fa.

Variables ^a	Control group		Extended incidence group	
	T1	T2	T1	T2
	M (SD)	M (SD)	M (SD)	M (SD)
SCQ	154.8 (17.5)	155.6 (19.8)	139.8 (22.6)	132.7 (19.5)
BSQ	69.5 (25.4)	69.8 (26.3)	103.2 (26.0)	121.6 (27.7)
WCQ: E-A (%)	14.7 (6.9)	15.5 (8.8)	19.7 (7.6)	23.6 (9.2)
PSS-Fa	75.8 (11.9)	77.1 (12.6)	65.3 (14.5)	67.0 (12.6)

^a SCQ: Self-Concept Questionnaire, BSQ: Body Shape Questionnaire, WCQ:E-A: Ways of Coping Questionnaire, Escape Avoidance subscale, and PSS-Fa: Perceived Social Support from the family.

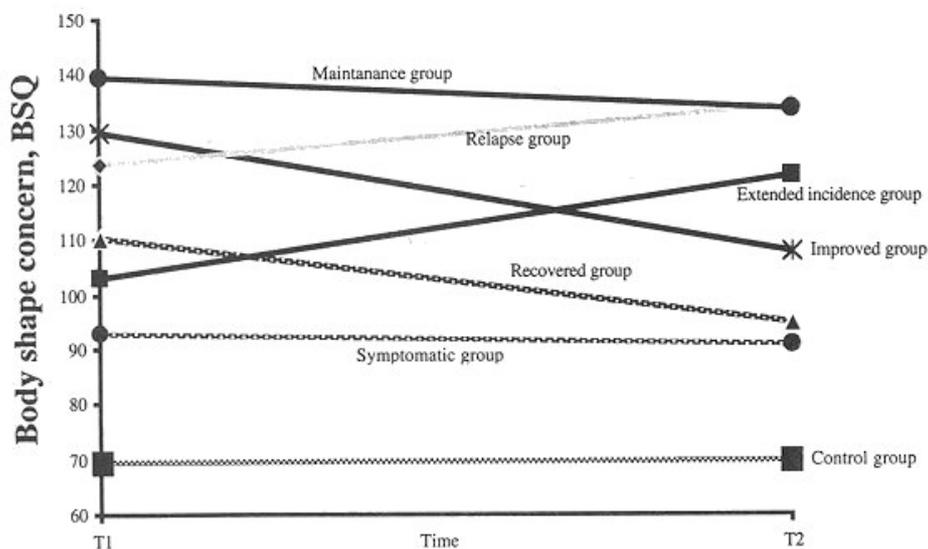
Exhaustive grouping. Some participants (n=155) could not be classified into either the extended incidence group or the control group. In order to investigate the course and development of ED symptoms for all the participants in relation to the investigated psychological variables self-esteem, body concern, relative use of escape-avoidance coping, and perceived social support from the family, a more comprehensive grouping was made. Participants were divided into seven groups according to their level of ED symptoms and ED diagnosis. These groups were:

1. The control group: Participants with no history or symptoms of ED in T1 and T2 (n=643).
2. The symptomatic group: Participants not entirely fulfilling the criteria for any diagnoses of ED, but with some symptoms of ED (n=84).

3. The improved group: Participants with an ED diagnosis in T1 who reported fewer or less severe symptoms in T2 and thereby did not fulfill the criteria for any ED diagnoses in T2 (n=7).
4. The maintenance group: Participants with an ED diagnosis in T1 with maintained ED in T2 (n=14).
5. The recovered group: Participants with an ED diagnosis before T1 (and not in T1) who did not fulfill an ED diagnosis in T2 (n=31).
6. The relapse group: Participants with an ED diagnosis before T1 (and not in T1) who did fulfill an ED diagnosis in T2 (n=13).
7. The extended incidence group: Participants with no diagnosis of ED in T1 who met an ED diagnosis in T2 (n=34).

The differences and the change in body dissatisfaction over time for the seven groups are illustrated in Figure 2.

Figure 2. Two-way interaction concerning body shape concern (body dissatisfaction) for the seven-group comparison with Time as within-subjects factor.



As seen in Figure 2, the control group (participants who never reported any symptoms of ED) reported the lowest level of body dissatisfaction. The reported body dissatisfaction was constant from T1 to T2. The symptomatic group (participants who reported some ED symptom but never met the criteria for a complete diagnosis of ED) reported the next lowest level of body dissatisfaction.

The improved and recovered group (participants who had a ED diagnosis in T1 or earlier but did not meet the same set of criteria in T2) reported a sharp decrease in body dissatisfaction. The change was significant for the recovered group. Further, both the relapse group and the extended incidence group reported an increase in body dissatisfaction in T2, although the change was significant only for the latter group. Despite the fact that the changes for the relapse and the recovered group over time were clinically considerable, they were not statistically significant. The reason for this is the low number of participants in these groups (13 and 7, respectively).

When self-esteem, measured using SCQ, was considered in an identical group comparison as above, the same pattern of results emerged. The control group reported the highest level of self-esteem, followed by the symptomatic group, while the maintenance group reported the lowest level of self-esteem. The extended incidence group reported decreased self-esteem in T2 while the improved and the recovered group reported increased self-esteem in T2.

Relative use of escape-avoidance coping proved to be a clear risk factor for the development of eating disorders, as the extended incidence group used significantly more escape-avoidance coping compared to the control group and reported an increase from T1 to T2.

The control group and the symptomatic group reported low levels of relative use of escape-avoidance coping in T1, with no significant change from T1 to T2. The improved and the recovered group reported a decrease in the relative use of escape-avoidance coping from T1 to T2. The extended incidence and the relapse groups reported an increase in the relative use of escape-avoidance coping from T1 to T2, respectively.

The observed changes from T1 to T2 concerning perceived social support from the family were not significant for any of the groups. However, there was a significant interaction between Time and group. The pattern of changes for ED groups was in line with clinical observations. The extended incidence group, the relapse group, and the maintenance group reported a slight increase in social support from T1 to T2. This finding may be interpreted as a result of increased attention toward the individual from the family. These groups had low mean scores on PSS-Fa in both T1 and T2, while the control group and the symptomatic group had the highest on both occasions. On the other hand, the improved group reported decreasing perceived social support in T2 compared to the corresponding level in T1.

Further findings in Study III, not included in Paper III

A substantial number of participants with a past history of BN or AN (before T1) had only some bulimic symptoms or BN in T1. In addition, in T2, many of these participants made further improvements. Many participants with BN in T1 did not any longer meet the full criteria for BN in T2 and several participants with EDNOS in T1 were no longer diagnosed with EDNOS in T2, since the frequency and duration of symptoms had decreased substantially. Thus, some degree of spontaneous recovery has been observed, as expected.

Another finding was that a very small proportion of participants sought professional help. In total, 23% of participants (n=21) with a lifetime prevalence of ED had sought professional help in T1, While only 15% of the participants (n=5) in the extended incidence group sought professional help during the follow-up period.

Of all the participants in the extended incidence group, 85.3% reported that they at least once had gone on a diet to lose weight during the follow-up period. The corresponding proportion for the participants in the control group (those who never reported any symptoms of ED) was 34.4%. In addition, only 48.8% of the control group reported that they have ever gone on a diet when asked in T1, compared to 82.4% of the extended incidence group. On the other hand, an almost equal proportion of the control group (63.1%) and the extended incidence group (55.9) reported current dieting in T1. These figures provide some evidence for the three-factor model (Lowe, 1993; Lowe, Whitlow, & Bellwoar, 1991) of dieting, as opposed to the restraint model (Herman & Polivy, 1984; Polivy, 1996) and the role of dieting in the development of ED. This will be discussed in the "General discussion and further implications."

Discussion

The findings of Study III supported the findings of the first study and further extended those results by offering prospective evidence for the significance of the putative risk factors that had been shown to be important correlates of ED. The relatively high incidence of ED shown in Study III confirms some of the current ideas about the prevalence and course of ED in the general population. It has been shown that only a very small proportion of individuals with ED seek treatment and are referred to psychiatric inpatient or outpatient treatment, and for

many cases, ED symptoms wax and wane in severity (Drewnowsky et al., 1988; Gillberg, Rastam, & Gillberg, 1994; Striegel Moore, Silberstein, Frensch, & Rodin, 1989; Whitaker et al., 1990). Further, a large number ($n=8$) of the total 1-year incidence rate of .016 ($n=13$) consisted of relapses among participants who had an eating disorder before T1.

The prevalence rate in Study III was slightly higher than the rate in the first study. It is however within the 95% confidence interval for the prevalence rate in T1 (95%CI= .017 to .035). The most plausible explanation for the discrepancy is the expected statistical fluctuation in the point prevalence rate when the incidence and transition of symptoms are high and the underlying sample is not big enough to compensate for it.

Study III showed that low self-esteem and perceived social support from the family as well as high body dissatisfaction and a proportionally higher use of escape-avoidance coping are risk factors for later development of ED among young adult females in the general population. The specificity of these factors and specifically their combination and interactions need to be further investigated in the future, since these factors per se cannot offer a complete explanation and many other variables (e.g., dieting, reinforcement contingencies, and social pressure toward body focus) are involved in the development of ED. Further, Study III provided some preliminary evidence for the role of these factors in the maintenance of ED. The maintenance group did not show any significant improvement in any of these factors from T1 to T2. On the contrary, the recovered group showed a considerable decrease in body concern and a corresponding increase in self-esteem. However, these results were not statistically significant because of the small number of participants in that group ($n=7$).

The process of developing a disorder involves a complex contribution from many variables. It seems needless to point out the need for further research for clarifying the process. Such research requires comprehensive models to clearly define the process in the development and maintenance of ED. Study III may contribute to the knowledge needed for generating such a model by identifying some of the major risk factors for the development of ED in the general population.

Study IV: The preliminary reliability and validity of the Survey for Eating Disorders (SEDs): a self-report questionnaire for diagnosing eating disorders

Aim

The fourth study was aimed at addressing the methodological problems of screening and case ascertainment when the latter are done solely by means of self-report questionnaire. Although the best approach for screening and case ascertainment is to apply a two-stage survey methodology, a cost-effective alternative would be to conduct screening and case ascertainment using self-report. The most important disadvantage of a questionnaire survey approach in the field of ED is the uncertain validity of questionnaires used to measure eating pathology (Patton, Johnson-Sabine, Wood, Mann, & Wakeling, 1990). To address this concern, the questionnaire used in the studies of the present thesis was compared to clinical interview and other questionnaires with established psychometric qualities both among students (i.e., a non-clinical sample) and a in clinical sample. Among important concepts in examining the psychometric qualities of a test are the concepts of sensitivity, specificity, reliability, and positive and negative predictive value. The probability that a test correctly classifies people with preclinical disease as positive is referred to as the sensitivity of the test, and the specificity is the probability that the test classifies subjects as negative when they indeed are not diseased (Morrison, 1998). Sensitivity and specificity measure the ability of a test to correctly identify diseased and nondiseased people. In contrast, the reliability of a test is its capacity to give the same result – positive or negative, whether correct or incorrect – on repeated application on a person with a given level of disease. The positive predictive value in a screening program is the proportion of people with a positive test who have the disease in question (Morrison, 1998). Finally, the negative predictive value is the probability that a screened negative is not a case (Williams, Hand, & Tarnopolsky, 1982).

Negative predictive value was not considered in Study IV, since it can be shown that, even if there is only chance agreement between screening test and being a case, negative predictive value will always be above .90 provided that the prevalence of the disease is 10% or less (Williams et al., 1982).

Major findings

Students diagnosed with a current (N=5) or past diagnosis of ED (N=18) along with those with no ED diagnoses (N=101) were reclassified into the same categories according to their retest scores on the SEDs (after about 2 weeks). This complete concordance demonstrates a very high level of reliability of the instrument. There were no significant differences concerning any demographic variables.

Regarding the validity of the SEDs, student with a current diagnosis of ED according to the SEDs had significantly higher Drive for Thinness (M=13.6) and Bulimia (M=7.4) compared to those with a past history of ED (M=6.5 and M=.94, respectively) and students with no history of ED (M=1.4 and M=.32, respectively). Furthermore, the mean total scores of EDI (sum of the eight original subscales, divided by eight) for students with a current ED diagnosis (M=62.4) was significantly higher than the mean score for the students with a past history of ED (M=36.1) and students with no ED diagnosis (M=17.5). The results showed that the diagnostic groups (according to the SEDs) were significantly different from each other on the scores from the EDI. Further, the mean total scores of EDI and the EDI subscales (Drive for Thinness and Bulimia) for the students with a current diagnosis of ED were very close to or above the cut-off score for ED. In summary, these results present some evidence of concurrent and discriminant validity of the SEDs.

In the clinical sample, there were no significant differences between the derived diagnoses from the SEDs and the Eating Disorder Examination (EDE). The majority of patients (31 of 45) diagnosed by SEDs with BN, BED or EDNOS were diagnosed into the same categories when interviewed using the EDE. Seven patients diagnosed with BN on the SEDs received an EDNOS diagnosis on the EDE (i.e., they were over-diagnosed by the SEDs). On the other hand, two patients diagnosed with BED on the SEDs received a BN diagnosis on the EDE and three patients with the EDNOS on the SEDs were diagnosed with BN or BED on the EDE (i.e., they were under-diagnosed by the SEDs). Finally, two participants that met the criteria for EDNOS on the SEDs did not meet the criteria for any formal ED diagnosis on the EDE (i.e., two false positive cases out of 45).

In summary, the results of the comparison between the SEDs and the EDE showed that SEDs can be regarded as an accurate instrument for diagnosing

cases of ED, although some “under-diagnosing” and “over-diagnosing” occurs. The sensitivity of the SEDs in this preliminary study was high, but the specificity of the instrument needs further evaluation since it could not be determined due to of the nature of this study. However, the positive predictive value of the instrument for detecting cases of eating disorders is as high as .96 (i.e., 43/45), since there were only two false positive cases out of 45.

Discussion

Study IV offered preliminary evidence for a high test-retest reliability of the SEDs by complete convergence of the derived diagnoses in the student group between the first and second assessment. A plausible explanation for this observation is the use of unambiguous and simple words and the straightforward formulation of the questions in the SEDs. The possibility of subjective interpretation and misunderstanding was minimized by presenting a clear definition of binge eating before asking questions concerning this topic. Furthermore, most of the questions in the SEDs are profoundly behavioral in nature. These combined factors facilitate the process of responding to the questions and increase the level of certainty of the responses. This might be the explanation behind the high test-retest reliability of the instrument. In Study I, several participants filled in the SEDs a second time (1-4 weeks after their initial response) after erroneously receiving a reminder along with the composite questionnaire, including the SEDs. The same high test-retest reliability was observed in those cases.

The conventional method of illustrating the concurrent validity of a test is to demonstrate that it has a strong relationship with other measures of the same construct (Garner, 1991). The comparison between the SEDs and the students' response to the EDI showed some evidence of concurrent validity. Students who met the diagnostic criteria for a current ED diagnosis according to the SEDs had significantly higher scores on the mean total of the EDI and the EDI Drive for Thinness and Bulimia subscales as compared to students with a past history of ED and students with no ED diagnosis. Thus, Study IV offers empirical data illustrating the concurrent and discriminant validity of the SEDs. It can be argued that the mean EDI-Bulimia subscale for students with a current ED according to SEDs ($M=7.4$) was much lower than the cut-off point ($M=10.5$) for combined eating disorders in the EDI-manual (Garner, 1991). However, the cut-off score for this subscale has been shown to be 7.7 in the validation study of the EDI in Sweden (Norrning & Sohlberg, 1988). Furthermore, the mean EDI-Bulimia

subscale for the students with a current ED ($M=7.4$) is clearly above the cut-off at the maximum score of controlled subjects ($M=6.0$) in the validation study (Norrington & Sohlberg, 1988). This cut-off (i.e., $M=6.0$) eliminated all controls and left only patients (positive predictive value, in percent=100) in the validation study (Norrington & Sohlberg, 1988).

Positive predictive value is defined as the probability of a screened positive (i.e., a respondent who has an above-threshold score on the screening questionnaire) is actually a case (Williams et al., 1982). The SEDs showed a high positive predictive value (.96) in classifying participants with ED as patients in the clinical group since there were only two false positive cases of 45 on the SEDs, when patients were reassessed using the EDE-interview.

Concerning the correct classification of ED diagnostic categories (BN, BED, and EDNOS), the SEDs has a relatively high positive predictive value ($31/45=.69$). Self-report questionnaires have been criticized for over-diagnosing ED (Fairburn & Beglin, 1990; Hsu, 1996). In contrast to the other self-report measures of ED, the SEDs both over- ($n=7$) and under-diagnosed some cases ($n=5$), although to a lesser extent. Different interpretations of some key terms, such as binge eating, or the failure to recall the frequency and duration of binge eating or compensatory behaviors might explain both the over- and under-diagnosing. Further investigation of data from those who were over-diagnosed showed in all cases that they had an insufficient number of objective episodes of binge eating on the EDE, even though they reported at least two such episodes per week during the last three months on the SEDs. Under-reporting the frequency of compensatory behaviors (in 3 cases), binge eating (1 case) and the duration of binge eating (1 case) caused the under-diagnosing.

Three major limitations of Study IV need to be mentioned. These were 1) the absence of cases of AN among both the student and the clinical group, 2) the use of different instruments for validation of the SEDs in these groups (EDE in clinical sample, EDI in the student sample), and 3) restricted sample size. However, many of the questions about the key features of AN are less ambiguous than questions regarding binge eating, and thus a higher level of reliability and validity is to be expected. In addition, the psychometric properties of the EDI are well known and a critical comparison is thereby possible. Finally, the clinical sample was comprised of community patients (not severely disturbed inpatients), which is beneficial to the generalization of the results. Thus, despite these limitations, Study IV offers preliminary evidence for regarding the SEDs as a

reliable and valid instrument with a high positive predictive value for the screening of ED, and for case ascertainment. It is important to keep in mind that the positive predictive value is considered to be the most important factor for identifying cases in a population (Williams et al., 1982) for uncommon disorders.

General discussion and further implications

It has been suggested that very few issues can be regarded as even near settled in regards to ED, despite the immense volume of literature in the field (Gillberg, 1994). The studies presented in this thesis were designed to contribute to more complete answers to several important questions surrounding the epidemiology and risk factors for ED. The core strategies were to employ a prospective design and the examination of a randomly selected sample of females in the general population.

Epidemiology of eating disorders

The results showed that, when the case ascertainment is done by means of self-report questionnaire and the diagnoses are defined according to DSM-IV, the point prevalence of ED in the general population of young adult females is between 2% to 3% . A review of four questionnaire-based studies of the epidemiology of bulimia nervosa (BN) (Fairburn & Beglin, 1990) using DSM-III-R (American Psychiatric Association, 1987) or Russell (Russell, 1979) criteria showed a mean prevalence rate of 2.6% (SD=1.0, Range: 2-4%). However, the reviewers (Fairburn & Beglin, 1990) suggest that there is an evolving consensus about the prevalence rate of BN among adolescents and young women (about 1%) referring to the impressive consistency of the most sophisticated studies. In a more recent review of the two-stage studies of the epidemiology of ED, the prevalence rate of BN was reported to be between 2%-3% (Hsu, 1996). Studies I and III in the present thesis showed a point prevalence of 1.73% and 1.33% respectively, for BN. Although slightly higher than the above-mentioned consensus regarding the rate of BN, these figures are in line with the findings from the sophisticated two-stage studies, reviewed by Hsu (1996). However, the reported lifetime and point prevalence of eating disorders in the present thesis (7.8% and 2.6%, respectively) are less than in other questionnaire-based studies in the general population. Götestam and Agras (1995) reported higher lifetime and point prevalence (12.7% and 6.3%) for the corresponding age cohort (18-30 years). These differences may be due to a more

extended procedure in establishing the diagnoses according to DSM-IV and to the formulation of the questions in the present thesis. The fluctuation in the prevalence rate of this disorder, as shown in Studies I and III, has previously been observed in other longitudinal studies of ED (Drewnowsky et al., 1988; Johnson, Tobin, & Lipkin, 1989; King, 1989; Yager, Landsverk, Edelstein, & Jarvik, 1988). There were no current cases of AN in T1, and only one participant in T2 met the criteria for AN. The lifetime prevalence of AN in T1 was .86%. Two-stage studies have shown a prevalence of .2%-.5% among young women (Hsu, 1996). Given the age of the sample in the Studies I and III, and the fact that the onset of AN is usually earlier than the onset of BN, the very low point prevalence of AN was expected. Furthermore, the lifetime prevalence of .86% represents a very reasonable accumulated figure of the epidemiology of AN among young adult females in the general population. Concerning the other diagnoses (EDNOS, including BED), there was a substantial increase from T1 to T2 because of relapse and first time incidence as well as transformation from BN to the EDNOS category. It has been shown that AN often transforms into bulimic symptoms and even BN (Gillberg et al., 1994). The results from Study I and III can be used to explore the course of relapse and recovery in ED. It was observed that many participants with a past history of BN or AN (before T1) had only some bulimic symptoms or BN at T1. By T2, many of these participants showed further improvement as they did not meet the criteria for BN but only for some variant of EDNOS and in some cases no ED diagnoses at all. Observations of the change process, especially in relation to other psychological factors, might contribute to our understanding of the recovery process and have implications for secondary prevention, especially if it is related to an empirical model of behavior change like the transtheoretical model (Prochaska & DiClemente, 1992).

The incidence of ED (.016) was quite high in relation to the point prevalence. The major part of the incidence was due to relapses and the first-time incidence was only .0066 (n=5). These numbers confirm an observation from earlier longitudinal studies of ED showing that ED symptoms in many cases wax and wane in severity, but there is a substantial group whose eating disorders appears to persist (Fairburn & Beglin, 1990). This has further implications for the prevention and treatment of ED. Future studies are needed to investigate the causal factors involved in cases where the ED symptoms decrease and finally disappear. There may be factors that protect these individuals from developing a chronic eating disorder. Although some progress has been made in finding adequate predictors of outcome (e.g., Calam & Waller, 1998; Fairburn, Peveler, Jones, Hope, & Doll, 1993b; Herzog et al., 1993; Herzog, Deter, Fiehn, &

Petzold, 1997; Wood et al., 1994), more prospective research among subjects in the general population is needed to confirm and refine the findings from these studies.

Risk factors for the development of ED among young adult women

Studies I to III contribute to the body of present knowledge by supporting and refining some previously observed correlates and risk factors for ED. In addition, they further investigated the putative risk factors among a randomly selected sample of females from the general population. Low premorbid self-esteem and perceived low social support from the family, high premorbid body dissatisfaction, and the high relative use of escape-avoidance coping showed themselves to be significant risk factors for the later development of ED among young adult women. Further, it was shown that perceived social support from friends as a measure could not differentiate between those who developed an eating disorder and those who did not. A major proportion of participants in the incidence group (85.3%) reported that they had gone on a diet to lose weight at least once during the follow-up period (T1 to T2), which can be compared to the control group's figure of 34.4%. Dieting is a frequent practice in modern Western cultures, not only among adults but also among adolescents (e.g., Rosen & Gross, 1987) and children (e.g., Edlund, Halvarsson, & Sjöden, 1996). However, despite this widespread practice, only a small percentage eventually develop clinically diagnosable ED (e.g., Attie & Brooks Gunn, 1989; Patton et al., 1990). Dieting is an important risk factor for the development of ED, and its role in that regard becomes clearer if it is viewed from the perspective of the three-factor model (Lowe, 1993; Lowe et al., 1991). This model suggests that repeated unsuccessful dieting may work to lower the individual's self-confidence in his or her ability to diet successfully, which can contribute to overeating (Lowe, 1993). Studies I to III offer some support for this assumption, although this does not mean that alternative hypotheses and models like the restraint model have been falsified. A much larger proportion of the incidence group reported premorbid dieting and dieting practices during the follow-up period. Frequent, unsuccessful dieting might be expected given the high body dissatisfaction, low self-esteem, and more frequent use of escape-avoidance coping, and the fact that the most common disinhibitor of an ongoing dieting is emotional distress (Grilo, Shiffman, & Wing, 1989; Schlundt & Johnson, 1990). Thus, not only current dieting, but also repeated earlier efforts to lose weight, might have a substantial effect on eating behavior and the risk of developing ED.

In addition to a possible conditioning between emotional distress and eating (Booth, 1988) as a result of frequent past dieting and frequent failings because of unreasonable weight goals, coping might also contribute to further understanding of frequent dieting in the development of ED. In Study II, it was shown that the EDPa and the EDCr used significantly more escape-avoidance coping compared to the controls (participants with no ED). Since this was a cross-sectional study, it was not clear if these observed differences were a result of the disorder or a preceding risk factor. However, the relevance of escape-avoidance coping as a prospective risk factor for ED was shown in Study III. Emotion-focused coping (including escape-avoidance coping) has been shown to be used more often in situations appraised as not amenable to change. The relation between repeated unsuccessful dieting and increased relative use of escape-avoidance coping is strong, but the direction of causality is not clear. There may be a mutual causal link between these factors. Observation of the relation between coping and dieting as well as eating problems (Study II) showed a consistent change in the proportional use of escape-avoidance coping with increasing dieting and eating problems. Gradual and consistent changes in coping pattern seem to be associated with corresponding changes in dieting and eating behaviors. Future studies need to ascertain the interrelationship of these variables in terms of process and direction of causality, as well as the probable interaction with other risk factors. A possible hypothesis is to expect further deterioration of the individual's self-esteem, since escape-avoidance coping does not result in a resolution of the problem (the situation remains unchanged). Negative self-perception is an integral part of depression, which may be expressed as self-derogation (Tomori & Rus-Makovec, 2000). Decreased self-esteem might set the scene for further increase in body dissatisfaction and depressive symptoms. Furthermore, body shape and weight are important elements of self-evaluation in general (Tomori & Rus-Makovec, 2000). Thus, given this interrelationship and the documented association between emotion-focused coping and negative body image (general body dissatisfaction and body size distortion), a polygonal influence between these constructs is expected. Low perceived social support might increase the risk of the development of vicious cycles comprised of unsuccessful outcome of dieting efforts, low and decreasing self-esteem, high body dissatisfaction (body concern), and increased use of escape-avoidance coping. The complex interaction of these variables, and most probably several other problems including biological predisposition, could eventually result in the development of ED.

Problems and limitations

Several limitations and methodological problems in the studies of the present thesis need to be mentioned and hopefully addressed in future studies. The most profound limitation of the Studies I to III was that case ascertainment was done only by means of questionnaires. The chosen method of case detection and case ascertainment and the choice of instrument present a major difficulty in studies of the epidemiology and risk factors of ED. This is the most crucial limitation in all questionnaire-based studies of ED, bringing with it strong criticism of these questionnaire-based studies (Fairburn & Beglin, 1990; Hsu, 1996). When conducting a nationwide study in a representative sample, the most economic method of case detection and ascertainment would be to rely on the subjects' response to self-report questionnaires. Two-stage procedures are to be preferred whenever possible, since the second stage comprises interview-based assessment and case ascertainment, which is a more reliable and valid method. The consequence of solely using questionnaires for case ascertainment is that the choice of instrument becomes central for the reliability and validity of the results. This concern has been addressed in Study IV, which showed that the diagnostic questionnaire (i.e., SEDs) has reasonable psychometric qualities and thus the conclusions based on the derived diagnostic categories from the SEDs can be regarded as reliable and valid. The reliability and validity of the other questionnaires that assess risk factors for ED in the present thesis are more thoroughly established and less controversial.

The most well validated instrument for assessment of the specific psychopathology of eating disorders is the Eating Disorder Examination (EDE) (Fairburn & Cooper, 1993b). The EDE is an investigator-based, semi-structured clinical interview that is generally considered to be the "gold standard" for the assessment of eating disorders (e.g., Fairburn & Beglin, 1994; Rosen, Vara, Wendt, & Leitenberg, 1990; Wilson & Smith, 1989) and can be used to derive DSM-IV diagnoses of ED.

Binge eating as in DSM-IV has been operationally defined as objective bulimic episodes, in contrast to subjective bulimic episodes that also comprise a sense of lack of control over eating. The difference is that the amount of food eaten in a subjective episode is not definitely larger than most people would eat during a similar period of time and under similar circumstances. However, the EDE is a complicated and time-consuming instrument (Wilfley, Schwartz, Spurrell, & Fairburn, 1997b) and its proper use requires extensive training to ensure that the

interviewers fully understand the concepts being assessed (Fairburn & Cooper, 1993b; Wilfley et al., 1997b). The EDE is also available in questionnaire format (EDE-Q), but it has the same limitations as most other self-report instruments regarding accurate assessment of binge eating and other key concepts as defined in DSM-IV. In other words, case ascertainment presents a major difficulty in the questionnaire-based studies of ED. On the other hand, one line of research has shown that the size of a binge does not seem to matter (Pratt, Niego, & Agras, 1998) and the current definition of binge eating in DSM-IV is a matter of debate (e.g., Pryor, 1995; Rossiter & Agras, 1990). Given the results of the empirical research and questions regarding case ascertainment, the diagnostic procedure used in the studies in the present thesis seems to be adequate and justified.

Another concern or possible limitation is the use of the DSM-IV criteria for the definition of the outcome variable. Some researchers argue that use of broader psychological definitions or criteria might be more fruitful in the search for risk factors (Gillberg, 1994; Hsu, 1996). On the other hand, the use of a questionnaires like Eating Attitudes Test (Garner & Garfinkel, 1979; Garner, Olmsted, Bohr, & Garfinkel, 1982), which captures broader aspects of ED, is not recommended because of its low positive predictive value. Furthermore, there is no consensus regarding a broader psychological definition of, or criteria for, ED. In a historical analysis of the psychiatric nomenclature, Houts (2000) refers to some researchers who criticize the DSM system for being more political than empirical. However, recent research has shown that classification of ED within community samples and through empirical methods resembles the current classification of the DSM-IV (Bulik, Sullivan, & Kendler, 2000). Needless to say, further research is needed to improve the empirical basis of the classification systems.

One limitation of prospective and longitudinal studies with only two measurement points is the uncertainty surrounding trend of change and stability in the results. In order to study the stability of results, three or more assessment points are to be preferred. Furthermore, although prospective studies provide some information about the possible causal relations between different variables, the definite answer to the question of causality can theoretically be answered only in experimental studies. However, experimental studies of the risk factors for ED cannot be conducted because of the ethical issues, and prospective studies are very likely the best approach for identifying risk factors for ED.

The researcher's choice of predictor (risk) variables can always be debated. The risk factors in this thesis were those that according to earlier research and theoretical arguments have been shown to be of importance in the development and maintenance of ED. In some of the important studies of the risk factors for ED (e.g., Patton et al., 1990), there has been an overlap between the risk factors and outcome variables. Since such an overlap might obstruct the interpretation and utility of the findings, the risk factors to be investigated in the studies of the present thesis were chosen carefully to avoid such confounding.

The participants in the studies of risk factors were all women. Thus, the current thesis does not provide any information about ED among men. However, there is a consistency in research showing that the prevalence of ED in males is about one tenth of that in females (Hsu, 1996). With a few exceptions (e.g., Leon et al., 1995), there is essentially no empirical knowledge about the risk factors for ED among men. Future studies need to address this lack of knowledge.

Significance of the results

Besides providing figures of current interest on the prevalence and incidence of ED among young adult females in the general population, the present thesis replicated and refined earlier findings concerning risk factors for ED.

Furthermore, it has contributed to the development of the methods of screening and case ascertainment for ED. Finally, the results may have important implications for the following topics:

Primary prevention

Those who advocate primary prevention stress the advantage of blocking the development of a behavior over altering the existing behavior (Albee, 1987). Some researchers believe that in the case of ED, this means intervening before the weight concerns that may lead to ED become entrenched (Smolak, 1999).

Finding factors to better identify those at risk for later development of an eating disorder is necessary for developing primary prevention programs (Leon et al., 1997). Investigations of age at onset of ED (e.g., Woodside & Garfinkel, 1992) show that a substantial number of cases develop ED after adolescence. It is likely that there are some differences in the risk patterns of those who have a later onset of ED compared to those who have an early onset. Although several important

prospective studies of ED have been conducted among children and adolescents⁴ (e.g., Cattarin & Thompson, 1994; Gillberg et al., 1994; Killen et al., 1994; Leon et al., 1995), there have been, at least to the author's knowledge, no prospective studies of individuals in the age span of 18-30 *in the general population*. This is in spite of the fact that this age span constitutes the age of onset of ED for a substantial number of cases (Garfinkel & Garner, 1982; Woodside & Garfinkel, 1992). Knowledge about the operating risk factors among those with a later onset of ED is as important as knowing the corresponding risk factors among children and adolescents, since primary prevention is preferable whenever possible, regardless of the age of the individuals at risk.

Some of the studies of the primary prevention of ED raised the question of the utility and efficacy of primary prevention (e.g., Carter, Stewart, Dunn, & Fairburn, 1997; Killen et al., 1993). The results of the broad school-based prevention program by Carter and colleagues (1997) suggested that this kind of program might be counterproductive in the longer term. However, newer prevention studies focusing on self-esteem have shown better long-term outcomes in terms of improved body image and self-esteem (e.g., O'Dea & Abraham, 2000). It has also been suggested that coping interventions may be useful in terms of primary and relapse prevention (Troop & Treasure, 1997). The thesis at hand provides some support for the importance of escape-avoidance coping, low self-esteem, high body dissatisfaction, and perceived low social support from the family as risk factors for later development of ED.

Given the knowledge on the operative risk factors among young adult females, and the difficulties in treating ED, serious efforts are needed in the field of initiating and conducting primary prevention. Given the age span, the media may play a crucial role in this regard.

Implications for secondary prevention and treatment of ED

Secondary prevention by means of early detection of ED provides the possibility of early intervention in the development of the disorder, with improved prognosis (Noordenbos, 1994). Knowledge about the operating risk factors is crucial for early detection. Reviews of the treatments for BN suggest that psychosocial treatments are effective and probably more effective than pharmacological interventions (Mitchell, Taymond, & Specker, 1993; Wilfley & Cohen, 1997).

⁴ In addition to the already conducted studies among children and adolescents, several promising longitudinal studies are on the way.

Among psychosocial treatment Cognitive Behavior Therapy (CBT) has been considered to be the "treatment of choice" for BN (e.g., Fairburn, 1995). The efficacy of this treatment has been confirmed in both controlled clinical trials (e.g., Fairburn et al., 1991; Fairburn, Jones, Peveler, Hope, & O'Connor, 1993a; Fairburn, Kirk, O'Connor, & Cooper, 1986; Garner et al., 1993) and meta-analytic studies (e.g., Ghaderi & Andersson, 1999; Lewandowski, Gebing, Anthony, & O'Brien, 1997). However, a summary of the studies that evaluated the outcome of CBT yielded a mean reduction in purging of 79% with a 57% remission figure (Craighead & Agras, 1991). A more recent summary of eight studies yielded comparable figures of 86% reduction in purging with a 55% remission rate (Wilson, 1996). Meta-analyses of the effect of antidepressants on BN show a remission rate of 20% (Bacaltchuk, Trefiglio, de-Oliveira, Lima, & Mari, 1999) and that pharmacotherapy is generally less effective than CBT (Whittal, Agras, & Gould, 1999). These figures mean that a substantial subgroup of patients with BN do not respond well to either CBT or pharmacological interventions. In an authoritative review of the treatment of BN, Wilson (1996) mentions that treating non-responders is hampered by a lack of treatment-specific predictor variables. Although there have been some studies on the predictors of treatment outcome, there have not been any efforts to consider the possible significance of risk factors for developing ED as perpetuating or mediating variables among the patients. Proportionally more use of escape-avoidance coping is one of the risk factors that emerged in Study III. Although one of the modules in the cognitive behavior therapeutic treatment of BN is problem solving, which might be considered as one aspect of coping, there is no active treatment component addressing the high use of escape-avoidance coping. In clinical practice, the best results might be obtained in some cases by increasing some desirable and adaptive behaviors, while in other cases, optimal results may also require decreasing undesirable and less adaptive behaviors.

Other risk factors that might be important in relation to treatment are low self-esteem and body concern, since low self-esteem and attitudes toward weight and shape have been shown to be significantly associated with treatment outcome (Fairburn et al., 1993b). CBT has broad effects and a reliable finding has been its broad effect on associated psychopathology. Most studies have shown striking improvements in depression, self-esteem, social functioning, and measures of personality disorders (Wilson, 1996). However, there are no specific components in the treatment for improving self-esteem. Very low self-esteem may be a major factor explaining the absence of efficacy among non-responders. CBT contains many components that require active application on the part of the patients.

Patients with very low self-esteem might not consider themselves capable of applying the techniques and methods suggested by the therapist or they may regard themselves as lacking too much of a subjective sense of significance and worthiness to assimilate the cognitive components of the treatment. More research is required to clarify and test these hypotheses.

Implication for the models of the risk factors for ED

To date, a number of more or less integrated models of the risk factors for the development of ED have been proposed (e.g., Davis, 1997; Shatford & Evans, 1986; Slade, 1982; Wilfley, Pike, & Striegel-Moore, 1997a; Williamson et al., 1995). The diversity of the focus among the existing models of the risk factors for ED generates a series of important questions, of which two of them are perhaps more central:

- 1) Are there different operating risk factors for individuals in different age cohorts?
- 2) Do we need specific models of the risk factors for each ED diagnosis?

Although the present thesis cannot offer a complete answer to these questions, it shows that some risk factors seem to be operating across the whole spectrum of clinical forms of ED. Furthermore, by investigating a fairly large age span, it has helped highlight the common risk factors for this age group. A more thorough understanding of the development, course, and maintenance of ED could be promoted by comparing the results in the present thesis with the models and risk factors that focus on children and young adolescents. Finally, an identification of common risk factors and their possible role in the perpetuation of ED may contribute to a better classification of these disorders, as there is a keen debate on dimensional versus categorical classification, as well as on the core features and etiology of ED.

Theoretically, a considerable number of risk factors should be studied simultaneously. Although the idea is highly appealing, it would be nigh impossible to conduct such a study in practice with stable results. The results of the present thesis will hopefully help guide the direction of research in the field of ED and contribute to the prevention and treatment of ED.

In summary, the current thesis investigated the prevalence, incidence, and multiple prospective risk factors for ED among young adult women in the general population, showing that for this age group:

1. The total prevalence of ED is between 2.6% to 3.2%,
2. The incidence of ED is relatively high in relation to the prevalence, and
3. Premorbid low self-esteem, dieting, high body concern, perceived low social support from the family, and high use of escape-avoidance coping are to be considered risk factors for the later development of ED.

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