

A Longitudinal Study of the Development of Dieting Among 7–17-Year-Old Swedish Girls

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Abstract: Objective: To examine the extent to which the prevalence of self-reported dieting and the wish to be thinner changed in 7–15-year-old girls over a 3-year period, and to explore potential differences between cohorts recruited in 1995 and 1999. In addition, changes in eating attitudes (Children's Eating Attitudes Test [ChEAT]) were compared between 1995 and 1999. **Method:** A three-wave longitudinal study including girls ($n = 1,076–1,279$) in five age groups (7, 9, 11, 13, 15, the Main Cohort) and an age-matched cross-sectional sample consisting of 1,759 girls (the Societal Cohort). **Results:** A marked increase of the wish to be thinner was evident in the 10–14-year-old age range and significant increases in dieting attempts occurred mainly among 9–13-year-old girls. ChEAT scores were significantly higher among 11-year-olds in 1999 than in 1995. However, more 7-year-olds scored above the ChEAT cutoff (≥ 15) in 1995 compared with 1999. **Discussion:** There was an increasing trend in the wish to be thinner and in dieting attempts among 9–14-year-olds. Attitudes and behaviors associated with disturbed eating had increased between 1995 and 1999 only among the 11-year-olds. © 2002 John Wiley & Sons, Inc. *Int J Eat Disord* 31: 32–42, 2002.

Key words: dieting behavior; eating attitudes; multicohort longitudinal design; children; adolescents

INTRODUCTION

Dieting and weight concerns are common phenomena among both adolescents (Edlund, Hallqvist, & Sjöden, 1994; Edlund, Halvarsson, Gebre-Medhin, & Sjöden, 1999; Grigg, Bowman, & Redman, 1996; Huon, 1994; Neumark-Sztainer, Palti, & Butler, 1995; Taylor et al., 1998; Wertheim et al., 1992; Worsley, Worsley, McConnon, & Silva, 1990) and younger school children (Halvarsson, Lunner, & Sjöden, 2000; Halvarsson & Sjöden, 1998; Hill, Oliver, & Rogers, 1992). The knowledge is still limited about factors that initiate and maintain dieting, as well as about its developmental course in children and

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adolescents (Hill, Draper, & Stack, 1994; Huon & Strong, 1998). This is a serious matter because dieting among nonclinical adolescent girls and subjects with bulimia nervosa (ages 16–35) has been demonstrated to predict the onset of bingeing, purging, and bulimia nervosa (Fairburn, Welch, Doll, Davies, & O'Connor, 1997; Stice, Killen, Hayward, & Taylor, 1998). Also, dieting is the most important predictor of new cases of eating disorders (Killen et al., 1994; Patton, Selzer, Coffey, Carlin, & Wolfe, 1999). Eating disorders occur in about 1–3% of adolescents, but many more (5–10%) suffer from partial syndrome disorders (Killen et al., 1996; Shisslak, Crago, & Estes, 1995). Research has demonstrated that female teenagers (age 14–15) who diet severely are 18 times more likely, and girls who diet moderately are five times more likely, to develop an eating disorder than are their nondieting peers (Patton et al., 1999).

The present study is part of a prospective longitudinal study, the aim of which is to map eating behaviors, study their changes over time, and identify risk and protective factors in relation to disordered eating behaviors in 7–22-year-old Swedish girls. The specific aims of the present paper were to explore changes in the wish to be thinner and weight loss attempts for 3 consecutive years among five age groups (7, 9, 11, 13, and 15 years of age in 1995, Main Cohort). Also, an age-matched cross-sectional sample (Societal Cohort) was included in 1999 to explore potential differences between 1995 and 1999 among 7–15-year-old girls in these outcome variables. Thus, the intention was to investigate the extent to which attitudes to eating and dieting had changed in these age groups over a 4-year period. It was hypothesized that wishes to be thinner and weight loss attempts would increase with increasing age within and between age groups. Because an increase in the prevalence of dieting in Sweden over a 20-year period had been suggested (Edlund et al., 1994; Nylander, 1971), we assumed that more of the 7–15-year-olds in the Societal Cohort (1999) would report dieting and a wish to be thinner and that they would show more disturbed eating attitudes than those in the Main Cohort (1995).

METHOD

Design

The present study is part of a prospective longitudinal study of risk and protective factors related to the development of eating disturbances in girls. The study employs an accelerated multicohort design. The main characteristic of this design is the simultaneous assessment of at least two groups. These groups differ in age when included, which enables the study of developmental processes (Kazdin, 1998). Children and adolescents are included in different age groups that overlap one another (e.g., one group 7 years at inclusion and another 9), and thereafter are assessed annually. This design provides the opportunity to study within-group and between-group differences, without having to study one group for an extended period of time (Kazdin, 1998). Data will be presented from the first 3 years (Main Cohort), as well as those from an additional group assessed at Year 5 (Societal Cohort).

Subjects and Procedure

Main Cohort

Subjects were girls in five age groups: 7, 9, 11, 13, and 15 years of age Year 1, 1995 (Table 1; henceforth, the groups in the Main Cohort will be referred to with their age Year

Table 1. Number of participants in each year of assessment

Age Year 1	Main Cohort 1995			Societal Cohort 1999
	Year 1	Year 2	Year 3	Year 5
7	221	200	184	269
9	212	189	194	303
11	260	247	237	275
13	304	261	270	496
15	282	179	200	416
Total	1,279	1,076	1,085	1,759

1). The sample was achieved by a stratified random sampling procedure based on all school classes in Uppsala county (central Sweden, population 289,062). Uppsala county was first divided into six areas in order to represent the city, urban communities, and the countryside. The purpose was to achieve a random sample of girls that would match the distribution of Uppsala county as closely as possible, in order to enhance external validity. A total of 38 schools were sampled randomly from the 97 schools ($N = 7,330$) in the county. Recruitment was terminated when the number of girls who had accepted the invitation had reached at least 250 per age group. Year 1, 2,197 girls were invited (age: 7: 397; age 9: 396; age 11: 390; age 13: 459; age 15: 555). One-thousand two-hundred and eight (55%) and eleven girls (46%) accepted the invitation, 413 (19%) declined participation, and 571 (26%) did not reply to the invitation. Two hundred and sixty-eight additional girls (12%) were included after delayed consent (decision to participate on the day of the data collection). Thus, the total number of participants was 1,279 (58%) in Year 1 (1995). In Year 2 (1996), all girls who had participated were invited again. One thousand and eleven girls (79%) accepted the invitation, 128 (10%) declined, and 141 (11%) did not reply. An additional 65 girls were included who had not replied to the invitation in time, resulting in a total of 1,076 participants (84%) in Year 2 (1996). The same procedure for inviting the girls was performed in Year 3 (1997), 909 (71%) accepted the invitation, 93 (7%) girls declined the invitation, and 288 (22%) never replied. A total of 1,085 (85%) girls participated.

All principals were sent a written invitation for their school to participate. Three of the invited 38 schools declined (two schools participated in other research projects, no reason was given for one school). Two additional schools were excluded from the study due to their requirement of economic compensation and language problems among the girls. Six new schools replaced the nonparticipating schools, leaving 39 schools in the final sample. When the principal of each school had been informed about the purpose and procedure of the study, and had approved the school's involvement, separate invitations were sent to the girls, their parents, teachers, and school nurses. These letters included information about the purpose and procedure of the study, and that all data were to be treated confidentially. Informed consent was required from both the girls and their parents in order for the girls to participate. Girls in grades below Grade 4 participated in an individual structured interview (also used with a few older girls with reading and writing difficulties) conducted by one of the research staff (regular class time). Girls in Grade 4 and above completed questionnaires during regular class time supervised by the research staff. The participants were informed about the longitudinal design of the study and they were told they would receive new invitations each year. After the girls had completed the assessment, they were asked to bring an envelope with questionnaires home to their

parents, who were asked to return the completed forms by mail (data presented elsewhere). The teachers received forms after the assessments in the schools (data presented elsewhere). Height and weight were recorded on a separate occasion by the school nurse at the two first assessments and by self-report in Year 3.

Prior to the first data collection, the project staff met with all teachers involved to make sure that they had proper information about the study. All the staff involved in the project received interview training.

Societal Cohort

In order to investigate whether there had been any changes between 1995 and 1999 in the 7–15-year-old age range, an additional group was recruited in 1999 with the same age distribution as the 1995 age of the Main Cohort. A total of 3,929 girls were invited, mainly from the same schools as the Main Cohort: 1,279 (33%) accepted the invitation, 648 (17%) declined, and 1,972 (51%) did not reply. In total, 1,759 girls (45%) participated (Table 1). The same procedure as for the Main Cohort Year 1 (1995) was employed for invitations, information, staff training information meetings, and data collection.

The Research Ethics Committee at the Faculty of Medicine, Uppsala University, approved the project.

Instruments

Children's Eating Attitudes Test

A Swedish version (Edlund et al., 1994) of the ChEAT (Maloney, McGuire, Daniels, & Specker, 1989) was used. The ChEAT is a 26-item questionnaire assessing attitudes toward eating and dieting behavior. Each item is rated on a 6-point Likert scale (*never* to *always*). The response reflecting the most disturbed eating attitude is scored 3, the adjacent response 2, and the next response 1. The remaining three responses are not scored. Data will be presented in terms of these values referred to as ChEAT scores (Garner & Garfinkel, 1979). Items 19 (Edlund et al., 1999; Maloney, McGuire, & Daniels, 1988; Smolak & Levine, 1994) and 25 (Smolak & Levine, 1994) have been reported to have low item-total correlations and were excluded. As a consequence, a new cutoff score of ≥ 15 (high-risk group) was employed in the present study (as well as in our previous studies; Edlund et al., 1999; Halvarsson, Lunner, & Sjöden, 2000).

Demographic and Dieting Questionnaire

A 43-item demographic and dieting questionnaire (Edlund et al., 1994) was employed. It includes 5 demographic questions, 12 questions about physical activity, 19 questions about dieting behaviors, and 9 questions regarding the children's ideas about family and self-dieting patterns, body image, and peer pressure to be thin. The question, Are you trying to lose weight today? (yes/no), was employed to assess dieting behavior (Current Dieters), and the question, Do you wish to be thinner today? (yes/no), was used to assess current wishes for a thinner body shape (Current Thinner). The present paper reports data only from the latter two questions.

The following instruments are included in the longitudinal 7-year study, data from which will be presented elsewhere: Dutch Eating Behavior Questionnaire (DEBQ; van Strien, Frijters, Berger, & Defares, 1986); Eating Disorder Inventory-for Children (EDI-C;

Garner, Olmsted, & Polivy, 1983); Adolescent Coping Orientation for Problem Experiences (A-cope; Patterson & McCubbin, 1991); I Think I Am (Self-esteem questionnaire; Ouvinen-Birgerstam, 1985); Perception of Teasing Scale (POTS; Thompson, Cattarin, Fowler, & Fisher, 1995); and the Figure Rating Scale (Maus, Pudel, & Westenhöfer, 1987).

Statistical Methods

The Cochran Q-test for overall differences and the McNemar change test (McNemar, 1969) were employed to explore within-group changes over time in the different age groups. *t* Tests were used to investigate differences between dieters and nondieters with respect to ChEAT scores in the Main Cohort Year 1 (1995) and in the Societal Cohort (1999). Chi-square analysis was employed to explore differences in dieting frequency and the wish to be thinner and the number of girls scoring ≥ 15 on the ChEAT (high-risk group) between the Main Cohort and the Societal Cohort. *t* Tests were employed to investigate differences in eating attitudes (ChEAT scores) between girls dropping out and those remaining in the study (Main Cohort Year 1).

RESULTS

Attrition

Comparisons were made between girls who participated in the Year 1 (1995) assessment only and those who participated in all assessments. There were no significant differences with regard to ChEAT scores in any of the age groups. This suggests that presented results are representative at least of those girls who accepted participation in Year 1 (1995).

Wishes to be Thinner and Dieting Attempts

Main Cohort

There were significant overall increases over time with respect to the number of girls expressing a current wish to be thinner for all age groups except the 7-year-olds (9-year-olds: $Q = 9.8$, $df = 2$, $p < .01$; 11-year-olds: $Q = 13.4$, $df = 2$, $p < .01$; 13-year-olds: $Q = 19.3$, $df = 2$, $p < .0001$; 15-year-olds: $Q = 6.9$, $df = 2$, $p < .05$; Figure 1). For these four age groups, the McNemar Change test revealed significant increases between Years 1 (1995) and 3 (1997) (ages 9–11: $p < .05$; 11–13: $p < .01$; 13–15: $p < .01$; 15–17: $p < .01$). Among the 13-year-olds, there was also an increase between Years 1 (1995) and 2 (1996) (13–14: $p < .01$). Further, significant increases were evident for the 9, 11, and 15-year-olds between Years 2 (1996) and 3 (1997) (ages 10–11: $p < .01$; 12–13: $p < .05$; 16–17: $p < .01$).

Nine-year-old girls Year 1 (1995) did not differ significantly from 9-year-olds Year 3 (1997; $\chi^2 = 3.52$, $df = 1$, n.s.). Neither were there any such differences in the remaining age groups (11, 13, and 15 years: 11-year-olds, $\chi^2 = 1.37$, $df = 1$, n.s.; 13-year-olds, $\chi^2 = .31$, $df = 1$, n.s.; 15-year-olds, $\chi^2 = .89$, $df = 1$, n.s.). Thus, the experience of participating in the study for 2 years did not influence scores significantly. In sum, these results indicate an increasing trend in the wish to be thinner between the ages of 9 and 17, especially in the 10–14-year-old age range.

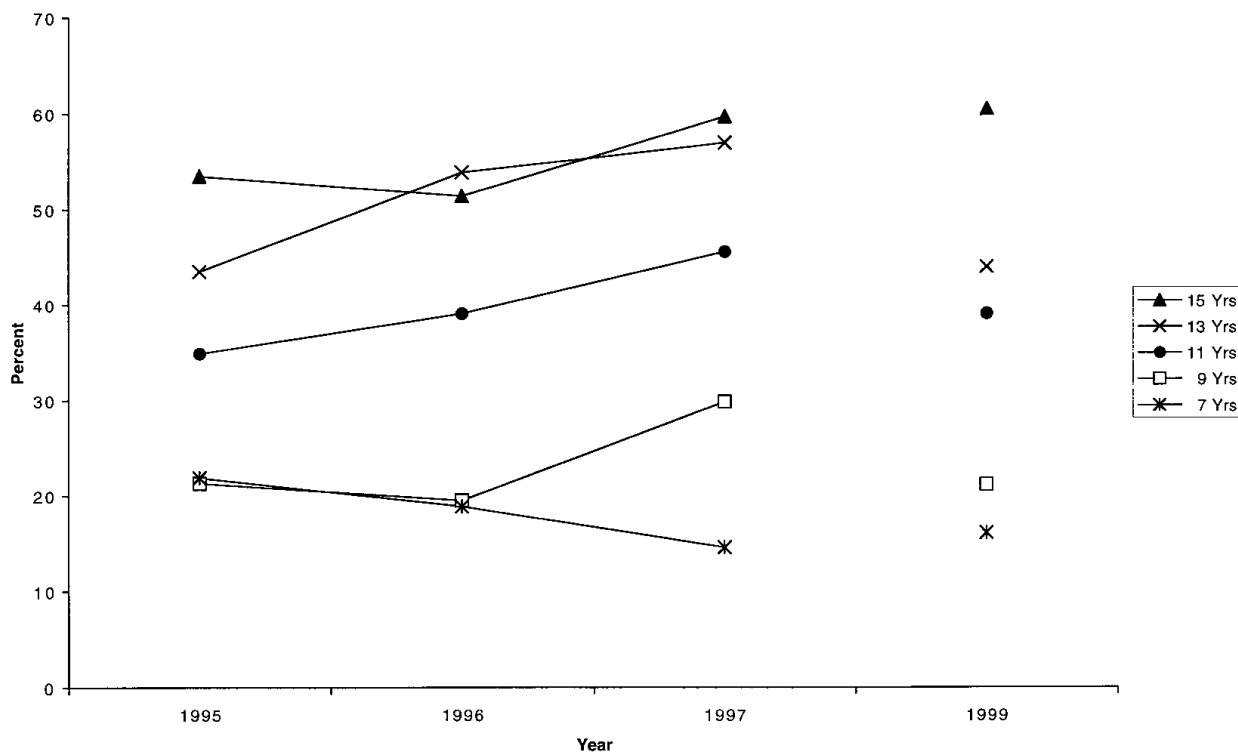


Figure 1 Percent girls stating a current wish to be thinner (CT) in the Main Cohort (1995–1997) and the Societal Cohort (1999).

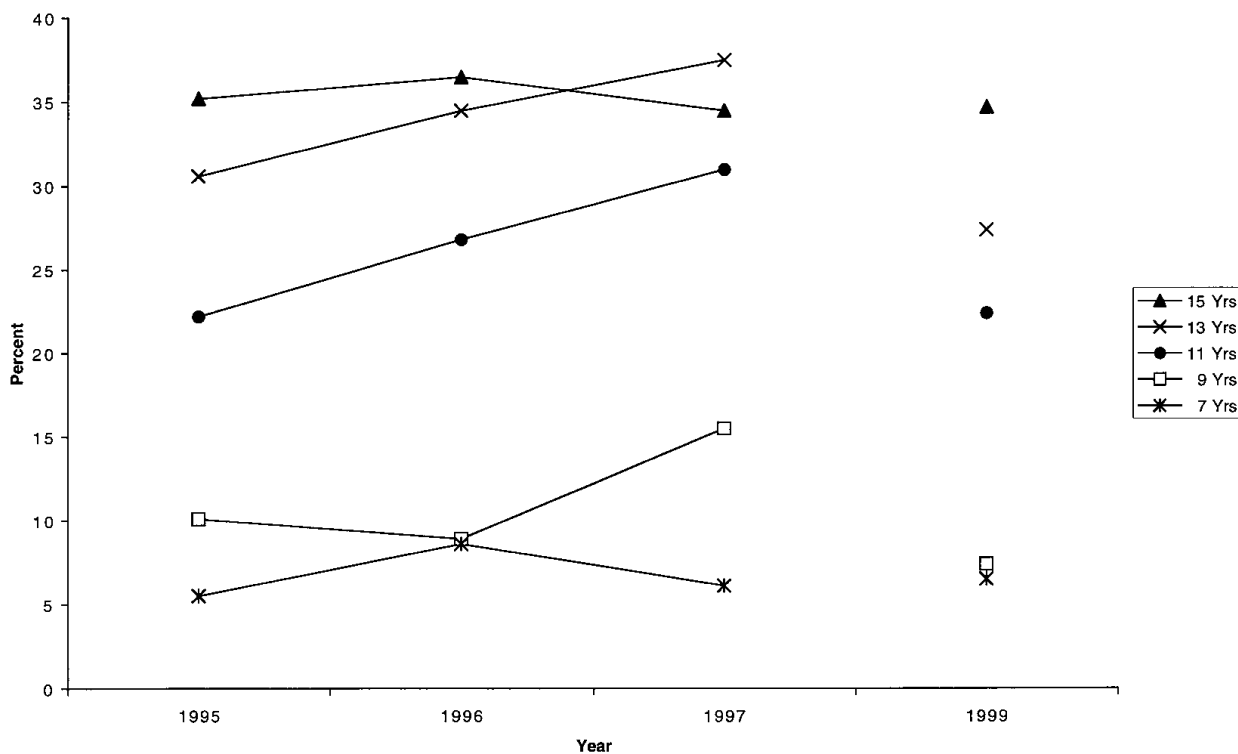


Figure 2 Percent girls reporting current dieting (CD) in the Main Cohort (1995–1997) and the Societal Cohort (1999).

Table 2. Eating attitudes (ChEAT scores) among the different age groups in the Main Cohort 1995 and the Societal Cohort 1999

Age Group	Main Cohort 1995			Societal Cohort 1999		
	n	M (SD)	ChEAT Score \geq 15(%)	n	M (SD)	ChEAT Score \geq 15(%)
7 Years	175	3.25 (5.56)	7.4	227	2.66 (4.33)	2.2**
9 Years	170	2.17 (3.68)	2.4	298	2.19 (3.70)	2.0
11 Years	218	3.05 (4.87)	4.1	251	4.35* (6.21)	6.0
13 Years	234	4.48 (7.14)	5.1	460	4.83 (7.36)	8.5
15 Years	150	6.19 (7.89)	13.3	399	6.02 (7.96)	13.0

* *t* test, $p < 0.5$. ** Chi-square analysis $p < 0.5$.

Note: ChEAT = Children's Eating Attitudes Test.

The number of current dieters increased with increasing age among the 9 and 11-year-olds only. For the 9-year-olds, significant increases were evident between Years 1 and 3 ($Q = 7.1$, $df = 2$, $p < .05$; age 9–11: $p < .05$) and between Years 2 and 3 (age 10–11: $p < .05$; Figure 2). For the 11-year-olds, there was a significant increase between Years 1 and 3 only ($Q = 8.0$, $df = 2$, $p < .05$; age 11–13: $p < .05$). There were no significant differences between 9, 11, and 13-year-old girls Year 1 (1995) and those who turned 9, 11, and 13 years old Year 3 (1997; 9-year-olds: $\chi^2 = 1.74$, $df > = 1$, n.s.; 11-year-olds: $\chi^2 = 2.11$, $df = 1$, n.s.; 13-year-olds: $\chi^2 = .04$, $df = 1$, n.s.). Thus, significant increases in dieting attempts seem to occur mainly between the ages of 9 and 13, although there was a 7% (nonsignificant) increase between 13 and 15 years among the 13-year-olds Year 1.

Comparisons were also made between the Main Cohort (1995) and the Societal Cohort (1999) with respect to the wish to be thinner (Figure 1) and current dieting (Figure 2). There was no significant overall difference regarding the wish to be thinner (Main Cohort Year 1: 37.7% [478 of 1,269]; Societal Cohort Year 5: 39.5% [681 of 1,726]). Among the 7-year-olds, significantly more girls in the Main Cohort (23.7% [52 of 219]) stated that they had a current wish to be thinner compared with the Societal Cohort (16.1% [38 of 236]; $\chi^2 = 4.18$, $df = 1$, $p < .05$). This is likely to reflect unreliable reporting in this age group, documented in a previous study (Halvarsson et al., 2000). There were no significant differences for the remaining age groups.

There was no significant overall difference between 1995 and 1999 regarding current dieting behavior (Main Cohort Year 1: 22.5% [284 of 1,262]; Societal Cohort Year 5: 22.2% [379 of 1,708]), nor were there any differences in any of the age groups.

Eating Attitudes

Table 2 presents ChEAT scores for each age group in the Main Cohort 1995 and the Societal Cohort Year 1999. The only significant difference between the two cohorts was that 11-year-olds in the Societal Cohort had more disturbed eating attitudes than the 11-year-olds in the Main Cohort ($t = 2.5$, $df = 467$, $p < .05$). With that exception, the ChEAT scores were approximately the same within age groups for both cohorts. Chi-square analysis were computed to explore differences between 1995 and 1999 with regard to the number of girls scoring ≥ 15 on the ChEAT (high-risk group). The only significant difference ($\chi^2 = 5.5$, $df = 1$, $p < .05$) was a 4.6% reduction among the 7-year-olds in 1999 compared with 1995. There were no other significant differences between 1995 and 1999 in any of the other age groups in this respect.

DISCUSSION

The present study examined changes in the wish to be thinner and weight loss attempts in a longitudinally monitored sample (Main Cohort) and an age-matched cross-sectional sample (Societal Cohort) of Swedish girls aged 7–15 years. An increasing proportion of girls stated a wish to be thinner between 9 and 14 years, and a similar pattern was evident for weight loss attempts. These results partly support our hypothesis that wishes to be thinner and dieting attempts would increase with increased age. The results indicate no differences in the wish to be thinner or self-reported dieting between 7–15-year old girls in 1995 and an age-matched cohort in 1999, with the exception of a reduction of the wish to be thinner in 7-year-olds between 1995 and 1999. However, there is no evidence of a trend in Swedish society toward a more intense drive for thinness or more dieting in these age groups (11-year-olds being an exception) at least not between 1995 and 1999.

Comparisons were performed to investigate the possible effects of participation in earlier assessments (Years 1 and 2) on replies at the Year-3 assessment. There were no significant differences in the wish to be thinner between girls who turned 9, 11, 13, or 15 years old at the third assessment and those who were 9, 11, 13, or 15 at the first assessment. The same pattern was evident with regard to dieting; girls who turned 9, 11, or 13 at the third assessment (1997) and those who were 9, 11, or 13 at the first assessment (1995) reported dieting to the same extent. Thus, the experience of participation had no impact in these respects.

The number of girls expressing a wish to be thinner increased significantly with age in all age groups except the 7-year-olds (Main Cohort). Thus, there was an increasing trend in the wish to be thinner over time and with increasing age between the ages 9 and 17, especially in the 10–14-year-old age range. Further, significant increases in dieting attempts seem to occur mainly between the ages of 9 and 13. We reported a higher incidence of dieting (21%) among 7-year-olds in a previous study (Halvarsson et al., 2000). The frequency of dieting behavior reported by the 7-year-olds was about the same in 1995 (5.5%; Main Cohort) and 1999 (6.5%; Societal Cohort). The higher incidence of dieting reported earlier (Halvarsson et al., 2000) may be attributed to the fact that participants were asked the question, *Have you ever tried to lose weight?*, and not, *Are you trying to lose weight today?*, which was used in the present study. Because the formulation, “*ever tried*”, covers a longer time period, reported figures should logically be higher. However, this presupposes that the 7-year-olds in the earlier study (Halvarsson et al., 2000) had attempted dieting at an even younger age. No studies seem to have been performed to study girls younger than 7 years, which is why this notion remains to be validated. The similarity between reports of dieting in 1995 and 1999 indicates that the assessment of current dieting is more reliable than retrospective reports in this age group.

The number of 7-year-olds reporting a wish to be thinner in Year 1 (1995) approximates the number reported by Edlund, Halvarsson, and Sjöden (1996; 21.9% vs. 28%). However, a significantly higher number of 7-year-olds in the Main Cohort (1995) reported a wish to be thinner than did 7-year-olds in the Societal Cohort (1999). This is likely to reflect unreliable reporting in this age group, which has been reported earlier (Halvarsson et al., 2000).

Contrary to our assumption, the data collected in 1999 (Societal Cohort) showed no higher frequencies of dieting, the wish to be thinner, or more disturbed eating attitudes than in 1995 (Main Cohort). However, there was one exception; the 11-year-olds achieved

a higher mean ChEAT score in the 1999 sample than in the 1995 sample. This particular age is in many respects a sensitive developmental period, especially in view of the fact that two thirds of adolescent girls with psychiatric disorders have been reported to experience their onset before the age of 10 (Graham & Rutter, 1985). The elementary and middle school years is also a period in which risk behaviors (e.g., dieting) seem to increase (Shisslak et al., 1998). It is not unlikely that if there was an increase of the pressure to be thin between 1995 and 1999, this would be reflected among the 11-year-olds rather than among the remaining age groups. The only significant difference between the cohorts with regard to the number of girls scoring ≥ 15 on the ChEAT (high-risk group) was a significant 4.6% reduction among the 7-year-olds between 1995 and 1999. There were no other significant differences between 1995 and 1999 in this respect.

The present study employed an accelerated multicohort design comparing different age groups over time. The main advantage of this design is the simultaneous assessment of a number of groups. These groups vary in age when included, which enables the study of developmental processes (Kazdin, 1998). Another advantage is the fact that a longer time span can be studied in a way that requires less time than if a single age group is followed during an extended period of time. A further strength of the present study lies in its sample size and the multiple observations. Multiple observations lend the ability to compare the same individual at different points of time, which enables within-person analyses of individual change (Farrington, 1991). The samples in the present study were recruited by stratified random selection and consisted of 1,000–1,700 girls. This relatively large sample size and the recruitment procedure suggest a limited threat to external validity in this study. However, a limitation is the relatively large number of nonparticipants. It is likely that the large proportion of nonparticipants reflects hesitation to make a commitment to a 7-year longitudinal study. A cross-sectional study with a single point of assessment would presumably have resulted in a larger proportion of participants. In order to shed some light on the possible influence of the drop-outs, 3-year participants (Main Cohort 1995–1997) and girls participating in Year 1 only were compared with respect to eating attitudes. There were no significant differences with regard to eating attitudes in any of the age groups.

Future studies should emphasize the identification of specific risk and protective factors (Shisslak et al., 1998) that can be effectively modified (Phelps, Johnston, & Augustyniak, 1999). Further, research should focus on distinguishing which precursors are the strongest predictors for development of dieting and eating disturbances and how these variables interact (Phelps et al., 1999).

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