

## A 10-Year Longitudinal Study of Body Weight, Dieting, and Eating Disorder Symptoms

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This article describes a 10-year longitudinal study of eating attitudes and behaviors. A sample of 509 women and 206 men completed a detailed survey in 1982 while they were in college. The authors contacted participants 10 years later and administered a 2nd questionnaire to assess stability and change in eating behaviors that occurred during the transition to early adulthood. Women in the study had substantial declines in disordered eating behavior as well as increased body satisfaction. However, body dissatisfaction and desires to lose weight remained at relatively high levels. Men, who rarely dieted or had eating problems in college, were prone to weight gain following college, and many of them reported increased dieting or disordered eating. The authors conclude that disordered eating generally tends to decline during the transition to early adulthood. However, body dissatisfaction remains a problem for a substantial segment of the adult population.

Although disordered and chaotic eating behaviors are common among young women, relatively little is known about the natural course or progression of these eating problems over time. A substantial number of young girls begin dieting before adolescence, and by the time they are in high school many of them have become chronic dieters (Heatherton & Polivy, 1992; Rosen & Gross, 1987). Moreover, many young women engage in a variety of disordered eating behaviors, such as binge eating or purging (Leon, Fulkerson, Perry & Cudeck, 1993). Likewise, eating disorders are especially prevalent during adolescence and early adulthood, with the most common onset reported to occur around age 18 (Thelen, Mann, Pruitt, & Smith, 1987). Thus,

by late adolescence many young women experience a variety of eating disturbances. However, few studies have examined whether these eating problems remain stable over long periods of time or whether they abate as individuals mature into adulthood. Although a number of risk factors for eating disorders have been identified, the factors that promote or sustain abnormal eating are poorly understood. This article describes a 10-year longitudinal study of eating behavior and eating disorder symptoms. The goal of this research was to examine the stability of these behaviors during the transition to adulthood.

A few recent studies have begun to examine the long-term outcome of having a clinical eating disorder. In general it appears that eating disorders fluctuate over time, with individuals sometimes meeting clinical criteria and other times falling short of a clinical diagnosis (Fairburn & Beglin, 1990). Relapse is quite common in individuals treated for eating disorders, although some evidence indicates that the prognosis is better for bulimia nervosa than for anorexia nervosa (Herzog et al., 1993). Studies that have followed patients for the longest periods have tended to find that eating disorder symptoms often abate over time. For instance, Collings and King (1994) followed 50 people with bulimia for 10 years following pharmacological treatment. They found that 52% recovered completely, whereas 39% continued to experience some symptoms and 9% remained bulimic. Similarly, Norring and Sohlberg (1993) found that although relapse was common, 77% of their bulimic sample did not meet criteria for an eating disorder 6 years after treatment. Johnson-Sabine, Reiss, and Dayson (1992) found that nearly half of their bulimic sample was judged to have a good behavioral outcome after 5 years (with nearly one third showing a complete recovery

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This work was supported in part by the Radcliffe College Research Fund, the Boston Obesity Nutrition Research Center Grant DK 42600, and the Burke Fund of Dartmouth College. We thank the Henry Murray Center of Radcliffe College for providing access to the data from the 1982 sample and the Alumni Office of Harvard University for supplying current addresses for the participants. Thanks go to Graham Colditz, Patricia Nichols, Anne Colby, Isis Settles, Viveca Aghassi, and Jay Hull for their assistance with this project.

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ery). Thus, these long-term results suggest that a substantial number of patients seem to get better within 5 years. Note that all of the participants in these studies received treatment for their eating disorders. To date there have been no long-term studies examining the natural history of eating disorders.

Although much of the research has focused on clinical eating disorders, which affect 1–5% of young women and less than 1% of men (American Psychiatric Association, 1994; Fairburn & Beglin, 1990), there exists a wide spectrum of disordered eating that falls short of clinical diagnosis. For instance, one recent study found that close to 30% of college women and just about 10% of college men reported current or past problem binge eating (Heatherton, Nichols, Mahamedi, & Keel, 1995). Moreover, body dissatisfaction and chronic dieting are extremely common among young women, and many of them experience at least some degree of disordered eating (Heatherton & Baumeister, 1991; Polivy & Herman, 1987; Striegel-Moore, Silberstein, & Rodin, 1986). Many researchers have called for longitudinal studies on the natural course of eating problems among those who do not have full-blown eating disorders (see Leon, Fulkerson, Perry, & Early-Zald, 1995). In their review of the epidemiological literature, Fairburn and Beglin (1990) concluded “it is time for a shift in emphasis away from prevalence per se toward studies of the nature, course, and etiology of the full spectrum of disturbance that exists in the community” (p. 407).

In spite of theoretical interest in the topic, there has been little empirical examination of the natural course or history of the full range of eating disturbances. Leon et al. (1995) categorized adolescents into one of four disordered eating risk categories and found an impressive degree of stability over 2 years, with most respondents staying in the same risk category (47% for girls and 45% for boys) or moving up or down the risk hierarchy by only one group (27% for girls and 40% for boys). Drewnowski, Yee, Kurth, and Krahn (1994) reported on a 6-month longitudinal study of 557 college women. They classified respondents into one of five categories (nondieters, casual dieters, intensive dieters, dieters at risk, and bulimic) and found that there was a great deal of shifting from one category to another over 6 months, although usually the shifts were to an adjacent category. However, this study followed participants for only a very short period, and it is possible that classifications would be more stable over longer periods. Accordingly, the primary goal of the current study was to examine stability and change in a wide spectrum of eating behaviors over a reasonably long period.

### Dieting and Long-Term Weight Change

Dieting is a notoriously ineffective means of achieving weight loss. Some 95% of those who lose weight will regain the weight within a few years, and many will gain more weight than they originally lost (National Institutes of Health Technology Assessment Conference Panel, 1993). Moreover, many of those who diet are not overweight, and therefore it seems unlikely that they will achieve substantial weight loss.<sup>1</sup> Indeed, one study found that average-weight chronic dieters did not lose any weight over a 6-month period (Heatherton, Polivy, & Herman, 1991), and a recent study found that even overweight chronic

dieters did not lose weight over a 30-month period (Klesges, Klem, Epkins, & Klesges, 1991). Note that in the Klesges et al. study there was a tendency for all participants to gain weight over time, and in this respect there were no differences between dieters and nondieters. Thus, the data indicate that most diets are doomed to fail (Garner & Wooley, 1991). One goal of the current study was to assess the long-term effects of dieting behavior on body weight.

### The Transition to Adulthood

This study examines eating behaviors during the transition from college to young adulthood. Anecdotal, clinical, biographical, and empirical evidence suggests that this is a period of major life change (Caspi, 1993; Costa & McCrae, 1994; Heatherton & Weinberger, 1994; Helson & Stewart, 1994; Levinson, Darrow, Klein, Levinson, & McKee, 1978; McCrae & Costa, 1990; Vaillant, 1977). During this period individuals begin to settle down, get married, have children, and establish careers, and they usually develop a strong and coherent sense of identity. To the extent that changes in role status (e.g., from student to professional) reflect simultaneous change in life goals, it might be expected that the importance of physical appearance diminishes as people approach their thirties (when other goals become more important). Moreover, this transitional period is marked by growing autonomy from parents and peers, and therefore any influence that they have over physical appearance standards should also tend to diminish. It is also common for individuals to enter long-term, committed relationships during their mid to late twenties (Erikson, 1968). To the extent that relationship partners are supportive and nurturing, they may encourage increased self-acceptance. Hence, the various tasks and challenges associated with making the transition to adulthood might assuage the widespread preoccupation with physical appearance and thereby lessen the motivation for constant dieting. From this perspective one might expect eating disturbances and eating disorders to be less common among adults than among adolescents or college students, and indeed a variety of evidence indicates that this is true (Bushnell, Wells, Hornblow, Oakley-Browne, & Joyce, 1990; Fairburn & Beglin, 1990).

A relatively low rate of eating disorders among adults (older than college students) may reflect developmental processes (as suggested above), but it may also reflect cohort changes in abnormal eating patterns. That is, individuals who passed through adolescence during the 1960s and early 1970s (when eating disorders were relatively uncommon) may hold very different attitudes about body weight and physical appearance than those who were adolescents during the late 1970s and 1980s (when eating disorders were much more prevalent, see Heatherton et al., 1995). Thus, the extant literature does not allow an assessment of cohort effects, which have been shown to be extremely important in understanding behavioral and personality change over the life course (Caspi, 1993; Elder & Caspi, 1992).

<sup>1</sup> Although it is possible that some individuals diet to avoid weight gain (rather than to lose weight), the majority of women who diet report wanting to lose at least 10 lbs (Heatherton et al., 1995). Thus, although average-weight women may want to lose less weight than overweight women, weight loss is still the primary motive for their dieting efforts.

To the extent that the sociocultural milieu affects individual attitudes about physical appearance and the desirability of being thin, growing up during an apex of pressures to be thin may instill values and beliefs about body weight that last a lifetime.

### Current Study

This research follows a cohort who were teenagers in the late 1970s and early 1980s, a period when dieting, eating disturbances, and eating disorders were highly prevalent (Halmi, Falk, & Schwartz, 1981). The current sample had participated in a study of eating behavior while they were college students, and findings from that study indicated that the prevalence of eating problems and eating disorder symptoms was similar to that reported for other college campuses at that period of time (Zuckerman, Colby, Ware, & Lazerson, 1986). We contacted participants 10 years after their original participation and examined their current eating habits and eating-related attitudes in some depth. We expected eating problems (such as chronic dieting) to diminish during the transition to adulthood.

### Method

#### Participants

Participants in this study ( $N = 715$ ) had been college students (freshmen or seniors) at a selective northeastern college in 1982. This sample comprised 509 women and 206 men, ranging in age from 27 to 55, ( $M = 30.0$ ,  $SD = 2.0$ ). This group was 80% White, 6% Black, 8% Asian, and 4% Hispanic (1% other).

#### Procedure

In the spring of 1982, researchers affiliated with the Henry Murray Center of Radcliffe College sent out a survey to a randomly selected sample of 800 women and 400 men from a selective northeastern college, half of whom were freshmen and half of whom were seniors. The response rate was 78% for women ( $N = 625$ ) and 69% for men ( $N = 276$ ). The questionnaire included demographic background information, items assessing height and weight, and items assessing general eating patterns (such as meal frequency). Respondents were also asked about dieting history, body weight and shape concerns, and abnormal eating behaviors (bingeing, vomiting, laxative and diuretic use, and fasting). Respondents also indicated whether they had engaged in these behaviors in the past (but not now) or whether the behaviors were ongoing. Those who reported current regular binge eating were asked to specify the frequency of their binges, as well as how much control they had over the binges and how troubled or worried they were by the binges. Respondents were also asked about the type of food that they consumed during a typical binge. Finally, participants completed 26 items from the Eating Disorder Inventory (EDI; Garner, Olmsted, & Polivy, 1983). These items are the principal items for five of the EDI subscales (Drive for Thinness, Bulimia, Maturity Fears, Perfectionism, and Interpersonal Distrust). Results from this study indicated that the prevalence of eating disorders in this sample was very similar to those reported in other studies of college students (Zuckerman et al., 1986).

During the spring of 1992 we attempted to identify and follow up all the participants from the first study ( $N = 901$ ). We received responses from 515 (82%) women and 209 (76%) men. Of those who did not respond, 4 had died (2 men and 2 women) and the remainder were either untraceable or did not respond to the survey (we mailed two follow-up surveys in order to maximize participation). Three of those who responded returned blank forms and therefore were excluded. Moreover,

6 participants were excluded because the information in their 1992 questionnaire did not correspond with the information in the 1982 questionnaire, leading us to believe that the follow-up data were not from the initial respondent. The final sample consisted of 509 women and 206 men.

The 1992 survey was based closely on the 1982 survey (in order to make direct comparisons we asked the questions in the same manner). In addition to the questions that were asked in the 1982 survey, we also asked about marital status, education, career, income, exercise history, and children. Moreover, we asked participants to recall their weights and dieting histories while they had been in college.<sup>2</sup>

#### Classifications

Body mass index (BMI; calculated as weight in kilograms divided by height in meters squared) was calculated for each participant. They were also classified as underweight, average weight, overweight, or obese on the basis of standards adapted from the National Health and Nutrition Examination Survey (NHANES; Kuczmarski, 1992; Kuczmarski, Flegal, Campbell, & Johnson, 1994). Men scoring under 20.7 and women scoring under 20.0 were considered underweight. BMI cutoffs for overweight were 27.8 for men and 27.3 for women, and BMI cutoffs for obesity were 31.1 for men and 32.3 for women.

All participants were classified into one of five groups for both 1982 and 1992: nondieters, dieters, problem dieters, subclinical eating disorder, and eating disorder. Classifications were made by raters unaware of year of participation. We used *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., revised; *DSM-III-R*; American Psychiatric Association, 1987) criteria for bulimia nervosa to classify participants into the *eating disorder* category, and these participants had to report (a) regularly binge eating twice or more per week as well as regular purging (typically vomiting or fasting); (b) feeling out of control during a binge (4 or 5 on a 5-point scale); (c) being extremely worried about their binge eating (4 or 5 on a 5-point scale); (d) being in the top 25th percentile of the EDI measures of drive for thinness and bulimia; (e) regular dieting; and (f) dissatisfaction with their current appearance and desire to lose weight. The latter measures helped identify a preoccupation with dieting and physical appearance. Participants classified as having *subclinical eating disorders* were those who reported regularly binge eating (at least once a week) but who did not meet one or more of the criteria for an eating disorder. Most often these individuals reported binge eating only once per week or did not report regular use of purgatives. These participants had to report at least moderate worry about their binge eating and report being somewhat out of control during a binge. *Problem dieters* were those who reported sometimes or often dieting, who scored above the median on EDI measures of drive for thinness and bulimia, and who reported some symptoms of an eating disorder (most commonly bingeing). However, these participants reported feeling moderately in control during a binge and did not report being overly concerned about their binge eating. *Dieters* were those who reported sometimes or often dieting, who also reported body dissatisfaction, but who reported minor or no eating disorder symptoms. *Nondieters* were those who reported rarely or never dieting and who reported no symptoms of eating disorders. We followed the conservative strategy of moving participants to a less disordered category if there were any questions about classification.

### Results

Preliminary analyses were conducted to examine potential differences between those who responded to the survey and

<sup>2</sup> Reliabilities for recall of college weight were  $r(692) = .95$ ;  $r(489) = .92$  for women and  $r(201) = .89$  for men. This issue is considered in greater detail (for women) in Field, Colditz, Herzog, and Heatherton (1996).

those who did not. Although the participation rate was greater for women (82%) than for men (76%),  $\chi^2(1, N = 901) = 6.1, p < .02$ , there were no other demographic differences that predicted participation. In terms of dieting and eating disorder symptoms, the responders were generally more concerned about body weight and more likely to have some sort of eating problem while they were in college. Specifically, the participation rates for frequent dieters (85%) were higher than for those who reported never dieting (75%),  $\chi^2(1, N = 901) = 12.6, p < .01$ . This pattern was significant only for women. Similarly, the participation rates for dieters, problem dieters, subclinical eating disordered, and eating disordered (range from 82 to 88%) were higher than for those with no symptoms of eating problems (74%),  $\chi^2(1, N = 901) = 17.9, p < .01$ . Thus, nondieting participants without any eating difficulties were somewhat less inclined to participate in the follow-up survey.<sup>3</sup>

### Physical Changes

**Height.** As might be expected, height did not change for either men or women between 1982 and 1992 (*ns*). Average height was 70.8 in. (179.8 cm, *SD* = 6.68) for men and 65.3 in. (165.8 cm, *SD* = 7.1) for women in both 1982 and 1992. Moreover, there was a great deal of relative stability in self-reports of height,  $r(713) = .98, p < .0001$ .

**Weight.** A two-way analysis of variance (ANOVA) using repeated measures on body weight revealed an interaction between sex and weight change over the 10 years of the study,  $F(1, 706) = 36.8, p < .0001$ . Overall, there was a main effect such that both men and women gained weight over the 10 years,  $F(1, 706) = 142.9, p < .0001$ . On average, women were 4 lbs (1.81 kg) heavier in 1992 ( $M = 132.4, SD = 22.8$ ) than in 1982 ( $M = 128.1, SD = 17.5$ ),  $t(502) = 6.88, p < .0001$ . Men, however, gained a lot more weight than did women—nearly 12 lbs (5.44 kg) between 1982 ( $M = 161.8, SD = 22.7$ ) and 1992 ( $M = 173.3, SD = 24.2$ ),  $t(204) = 11.3, p < .0001$ . However, rank orderings for body weight were quite reliable,  $r(501) = .79$ , for women and,  $r(203) = .81$ , for men.

Participants were divided into one of three groups: those who lost 10 or more pounds, those who gained 10 or more pounds, and those who stayed the same. A much larger proportion of men gained weight (55%) than did women (28%).  $\chi^2(2, N = 708) = 48.6, p < .0001$ , whereas relatively few men (5%) or women (11%) lost weight. The majority of men gained at least 10 lbs, and indeed this group had a mean weight gain of 21.1 lbs (*SD* = 14.4, range = 10–88 lbs).

An exploratory stepwise regression analysis was conducted to examine the best predictors of weight gain. All eating habit, dieting, body satisfaction, eating disorder symptom, and eating attitude variables from 1982 were used to predict change in BMI over the 10 years. For women, the best predictors of weight gain were the discrepancy between 1982 weight and highest past reported weight (i.e., the most that participants in 1982 reported that they had ever previously weighed),  $\beta = .07, t(492) = 4.8, p < .0001$ , and 1982 Drive for Thinness scores from the EDI,  $\beta = -.06, t(492) = 3.8, p < .0001$ . Together these variables accounted for 6% of the variance in BMI change,  $F(2, 492) = 16.0, p < .0001$ . Thus, weight gain for women was associated with a past history of weighing more and being

less concerned about being thin in 1982. For men, the best predictors of weight gain were 1982 body weight,  $\beta = -.03, t(200) = 4.0, p < .0001$ , and 1982 Drive for Thinness scores,  $\beta = .09, t(200) = 2.7, p < .001$ . Together these variables accounted for 9% of the variance in BMI change,  $F(2, 200) = 9.9, p < .0001$ . Thus, for men weight gain was associated with lower body weight and greater concern about being thin.

Although our participants gained weight, they are, on average, quite thin as a group. Recent studies have found that 20–35% of American adults are overweight or obese (Kuczmarski et al., 1994). Our participants were students at a prestigious university where even moderate overweight is quite rare. Indeed, as may be seen in Table 1, less than 2% of students were overweight in 1982, and nearly one third of the women were underweight by population standards. In 1992, even after weight gain, fewer than 10% of the participants were overweight or obese. Nonetheless, this group shows a similar trend in weight gain as has been observed in more representative samples of American adults (Williamson, Kahn, Remington, & Anda, 1990).

### Body Satisfaction and Dieting

Although very few of our participants were actually overweight while in college (compared to representative samples), many of them, and especially women, believed themselves overweight and wished to lose at least 10 lbs. In 1982, more women viewed themselves as overweight or very overweight than average weight or underweight, and only 1 woman in over 500 viewed herself as very underweight (see Table 1). Indeed, the vast majority of women reported wanting to lose weight, and very few reported wanting to gain weight. Ten years later, these women were much less likely to report themselves as overweight,  $\chi^2(16, N = 504) = 189.3, p < .0001$ , and also less likely to report wanting to lose weight,  $\chi^2(4, N = 508) = 97.1, p < .0001$ . As may be seen in Table 1, the number of women who reported themselves as overweight dropped in half between 1982 and 1992 and the modal woman in 1992 described herself as average weight. Of those women who viewed themselves as overweight in 1982, more than half (55%) viewed themselves as average weight in 1992, suggesting that either they had lost weight or that their standards for judging overweight had changed (and given the weight findings, the latter appears to be the better explanation).

A different picture emerges for men. As may be seen in Table 1, the vast majority of men in 1982 viewed themselves as average weight or slightly underweight, and the men were roughly equally divided in their desires to gain weight, lose weight, or stay the same. Given the weight gain noted above, it is not surprising that significantly more men saw themselves as overweight in 1992 than did in 1982,  $\chi^2(12, N = 204) = 249.5, p < .0001$ , and significantly more men wanted to lose weight than gain weight in 1992,  $\chi^2(4, N = 202) = 67.8, p < .0001$ . Men who wanted to lose weight in 1982 continued to want to lose weight in 1992 (81%). Interestingly, 47% of the men who were

<sup>3</sup> Note that other studies have found that severity of eating problems predicts decreased likelihood of research participation (e.g., Fairburn, Jones, Peveler, Hope, & O'Connor, 1993).

Table 1  
Changes in Overall Weight and Dieting Behavior for Men and Women: 1982 to 1992

Measure	Women				Men			
	1982		1992		1982		1992	
	n	%	n	%	n	%	n	%
Weight group <sup>a</sup>								
Underweight	158	31.2	145	28.7	43	21.0	11	5.3
Average	342	67.5	328	65.0	157	76.6	174	84.5
Overweight	5	1.0	21	4.2	5	2.4	17	8.3
Obese	2	0.4	11	2.2	0	0.0	4	1.9
Self-categorization <sup>a</sup>								
Very underweight	1	0.2	2	0.4	1	0.5	0	0.0
Underweight	11	2.2	39	7.7	27	13.2	12	5.8
Average	230	45.5	317	62.5	148	72.2	142	69.3
Overweight	248	49.0	129	25.4	28	13.7	50	24.4
Very overweight	16	3.2	20	3.9	1	0.5	1	0.5
Desire to <sup>a</sup>								
Lose weight	417	82.1	346	67.9	75	37.1	114	55.4
Stay same	75	14.8	151	29.7	81	40.1	66	32.0
Gain weight	16	3.2	12	2.4	46	22.8	26	12.6

<sup>a</sup> Significant difference for women and for men (using chi-square analysis).

happy with their weight in 1982, and 28% of the men who wanted to gain weight in 1982, subsequently wanted to lose weight in 1992.

In terms of dieting behavior, the majority of women in 1982 reported dieting at least sometimes or often (see the marginals reported in brackets in Table 2). Ten years later, there was a strong trend for less frequent dieting,  $\chi^2(9, N = 502) = 84.3$ ,  $p < .0001$ , and constant dieting dropped in half. As may also be seen in Table 2, of those who were sometimes dieting in 1982, more than half reported never or rarely dieting in 1992, and of those who were always dieting in 1982, almost half reported never or rarely dieting in 1992. Thus, whereas 18% of women became more intense dieters between 1982 and 1992, 37% remained at the same level and 45% decreased their dieting intensity. In contrast, men were much more likely to stay at the

same level of dieting intensity (61%) or increase dieting (31%),  $\chi^2(2, N = 202) = 86.3$ ,  $p < .0001$ . Of course, given that the baseline prevalence of dieting among men was low in 1982, it is not completely surprising that dieting frequency increased or remained the same. As may be seen in Table 2, fewer than 1 in 4 men reported any dieting in 1982, but by 1992 nearly half reported dieting,  $\chi^2(9, N = 205) = 67.0$ ,  $p < .0001$ . Thus, compared to 1982, men in 1992 reported weighing more, wanting more to lose weight, and were also more likely to be on a diet. Unfortunately, the nature of these data do not allow us to assess whether the weight gain preceded or followed efforts at dieting, although common sense might suggest that the weight gain occurred first.

#### Eating Disorder Attitudes and Symptoms

A major goal of the study was to examine changes in eating disorder attitudes and symptoms in the 10 years following college. Eating disorder attitudes were obtained through scores on a modified version of the EDI (Garner et al., 1983), and eating disorder symptoms were obtained through a symptom checklist (that asked for occurrence and frequency of a variety of disordered behaviors). Subsidiary items were used to assess the intensity and problematic nature of these symptoms.

*Attitudes.* Two-factor (sex and time of survey) repeated measures ANOVAs were used to assess changes for each of the EDI subfactors (bulimia, drive for thinness, perfectionism, interpersonal distrust, and maturity fears). As may be seen in Table 3, attitudes related to eating behavior changed substantially for men and women. For instance, there was an overall decrease in bulimic attitudes,  $F(1, 696) = 260.3$ ,  $p < .0001$ , although the effect was stronger for women,  $t(496) = 15.9$ ,  $p < .0001$ , than for men,  $t(200) = 3.92$ ,  $p < .0001$ , interaction  $F(1, 696) = 46.35$ ,  $p < .0001$ .

As might be expected from the dieting data, a repeated mea-

Table 2  
Changes in Dieting Status for Men and Women: 1982 to 1992

1982 dieting status	Percentage reported dieting status in 1992			
	Never	Rarely	Sometimes	Often
Women	(32.5)	(29.9)	(27.0)	(10.6)
Never (25.1)	56.3	26.2	13.5	3.9
Rarely (15.1)	43.4	31.6	19.7	5.3
Sometimes (37.1)	20.4	35.5	34.4	9.7
Often (22.7)	18.4	23.7	35.1	22.8
Men	(52.2)	(23.4)	(18.5)	(5.9)
Never (75.6)	63.9	20.6	10.9	4.5
Rarely (9.8)	30.0	40.0	25.0	5.0
Sometimes (13.2)	7.4	29.6	55.6	7.4
Often (1.4)	0.0	0.0	33.3	66.6

Note. Numbers in parentheses refer to overall percentage selecting specific category in that year (i.e., 25.1% of women reported never dieting in 1982, whereas 32.5% reported never dieting in 1992).

Table 3  
Changes in Modified Eating Disorder Inventory Subscale Scores for Women and Men: 1982 to 1992

Subscale	Women		Men	
	1982	1992	1982	1992
Bulimia				
<i>M</i>	14.3	11.0****	10.4	9.6****
<i>SD</i>	5.1	4.3	3.4	3.2
Drive for Thinness				
<i>M</i>	16.1	12.6****	8.9	9.6**
<i>SD</i>	6.4	5.6	4.3	4.6
Perfectionism				
<i>M</i>	23.0	24.1***	22.9	23.6*
<i>SD</i>	5.4	5.2	5.0	5.0
Maturity Fears				
<i>M</i>	10.3	9.7**	10.4	10.1
<i>SD</i>	3.1	3.4	2.9	3.4
Interpersonal Distrust				
<i>M</i>	12.3	11.8	13.2	13.3
<i>SD</i>	4.0	3.6	4.0	3.9

Note. Significance tests refer to within-sex contrasts.  
\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . \*\*\*\*  $p < .0001$ .

sures ANOVA on drive for thinness scores resulted in an interaction between sex and year of survey,  $F(1, 697) = 79.25$ ,  $p < .0001$ . Although women showed a strong decline in drive for thinness,  $t(495) = 12.80$ ,  $p < .0001$ , men showed a moderate increase in drive for thinness,  $t(202) = 2.25$ ,  $p < .01$ .

In terms of the EDI scales that did not directly assess eating attitudes, there was an overall increase in perfectionism,  $F(1, 697) = 26.04$ ,  $p < .0001$ , and an overall decrease in maturity fears,  $F(1, 690) = 12.17$ ,  $p < .0005$ , although sex did not interact with year of survey on either measure. Finally, there were no significant changes in self-reports of interpersonal distrust. Thus, the major changes on the EDI scales were in those items related to eating attitudes.

**Symptoms and classification.** Respondents were asked to indicate whether they currently engaged in a list of disordered eating behaviors. As may be seen in Table 4, women engaged in fewer disordered eating behaviors in 1992 than they did in 1982. Specifically, women reported declines in binge eating,

$t(490) = 6.8$ ,  $p < .0001$ ; fasting,  $t(459) = 5.2$ ,  $p < .0001$ ; and laxative use,  $t(476) = 1.95$ ,  $p < .05$ . Women also reported nonsignificant declines in diet pill use,  $t(465) = 1.8$ ,  $p < .10$ ; diuretics,  $t(473) = 1.4$ ,  $p > .10$ ; and vomiting,  $t < 1$ . Note that very few men reported eating disorder symptoms in either 1982 or 1992, and although the percentage reporting binge eating dropped, this decline was not significant,  $t(190) = 1.4$ ,  $p > .10$ .

As may be seen in Table 5, the percentage of women classified as having any sort of eating problem (problem dieter, subclinical, or clinical) dropped from more than 40% to just over 15%,  $\chi^2(16, N = 509) = 115.80$ ,  $p < .0001$ . Thus, the modal woman (46%) moved to a lower eating category, whereas 41% stayed in the same category and 14% moved to a more disordered category. Very few men reported any form of eating problem, and 72% stayed in the same eating category for both 1982 and 1992, with the remainder evenly split between moving to a less severe eating category (13%) or to a more severe eating category (16%). Note that most men who increased in eating category went from being nondieters to being dieters (see Table 5).

**Relation between changes in eating behaviors and attitudes.** One goal of the current study was to examine how changes in eating disorder risk factors (e.g., dieting, body image, and body weight) were related to changes in disordered eating attitudes and behaviors. Change scores (1982–1992) were calculated for dieting behavior, body dissatisfaction, body weight, EDI Drive for Thinness, EDI Bulimia, and eating disorder classification, and the correlations between these variables are shown in Table 6 (separately for men and women). Note that all of the variables were significantly correlated for women ( $p < .0001$ ), whereas all but the relation between changes in EDI Bulimia and changes in body weight were significant for men ( $ps < .05$ –.0001).

## Discussion

The results of our longitudinal study demonstrate that for our sample of women, body dissatisfaction, chronic dieting, and eating disorder symptoms generally diminished in the 10 years following college. Rates of apparent eating disorders dropped by more than half, and the prevalence of binge eating and purging declined substantially. These findings are similar to studies of long-term outcome for those who have clinical eating disorders

Table 4  
Eating Disorder Symptoms for Men and Women: 1982 and 1992

Disordered behavior	Women				Men			
	1982		1992		1982		1992	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Binge eating <sup>a</sup>	132	26.9	59	12.0	27	14.1	19	9.9
Diuretics	6	1.3	2	0.4	1	0.5	0	0.0
Diet pills	13	2.8	6	1.3	2	1.0	0	0.0
Laxatives <sup>a</sup>	10	2.1	3	0.6	0	0.0	0	0.0
Fasting <sup>a</sup>	79	17.2	30	6.5	12	6.3	13	6.8
Vomiting	9	1.9	6	1.3	0	0.0	1	0.5

<sup>a</sup> Significant difference for women.

Table 5  
*Changes in Eating Disorder Classification for Men and Women: 1982 to 1992*

1982 category	Percentage reported in 1992				
	Nondieter	Dieter	Problem dieter	Subclinical	Clinical
Women	(55.8)	(28.3)	(7.1)	(5.9)	(2.9)
Nondieter (33.4)	77.6	17.6	1.8	1.8	1.2
Dieter (26.3)	50.8	37.3	7.5	4.5	0.0
Problem dieter (22.0)	44.6	33.0	9.8	9.8	2.7
Subclinical (11.0)	44.6	32.1	8.9	10.7	3.6
Clinical (7.3)	24.3	24.3	18.9	10.8	21.6
Men	(72.8)	(18.4)	(4.4)	(2.4)	(1.9)
Nondieter (77.2)	82.4	12.0	3.1	1.3	1.3
Dieter (10.7)	31.8	63.6	4.5	0.0	0.0
Problem dieter (7.2)	46.7	26.7	6.7	6.7	13.3
Subclinical (3.4)	42.9	14.3	14.3	28.6	0.0
Clinical (1.5)	66.7	0.0	33.3	0.0	0.0

Note. Number in parentheses refer to overall percentage classified into a specific category in that year (i.e., 7% of women were classified as having an eating disorder in 1982, compared with 3% in 1992).

(Collings & King, 1994; Norring & Sohlberg, 1993). This pattern suggests that maturing into adulthood and getting away from the enormous social influences that emphasize thinness (such as being on a college campus) help most of the women escape from chronic dieting and abnormal eating. These results also imply that, for some women, disordered eating behaviors may be part of a temporary phase. Indeed, some of our participants included personal letters that commented on how dieting became much less important to them when they gained some distance—both geographically and emotionally—from the college experience.

A substantial number of women, however, continued to have eating problems 10 years after college. Thus, the results of the current study have elements that are both encouraging and discouraging. Although very few of the women who were satisfied with their body weight or shape in college went on to develop serious eating problems, many of those who were dissatisfied with their bodies continued dieting and engaging in disor-

dered eating during the 10 years after college. Indeed, more than one in five of the women who met clinical criteria for an eating disorder in college also met criteria for an eating disorder 10 years later.

Although there was a general reduction in eating problems for women, a very different picture emerged for the men in our sample. In the 10 years following college, more than half of the men gained at least 10 lbs, and body weight concerns, desires to lose weight, and dieting behavior increased accordingly. These increases in desire to lose weight and dieting were associated with increased eating-disordered attitudes and behaviors (although, overall, binge eating showed a modest decline for men). Although these data do not allow for a complete determination of the sequence of these events, common sense suggests that weight gain preceded dieting and that dieting preceded eating problems. Although it is possible that eating problems preceded dieting for the men in our sample, that scenario strikes us as unlikely. Undoubtedly many of the men who gained weight were overeaters, but their overeating episodes probably did not include the psychological mindset of the binge eater (i.e., feeling out of control during the binge and being extremely worried about the binge eating behavior). It is important to distinguish between simple overeating and binge eating; although they both might be unhealthy and contribute to weight gain, simple overeating lacks the psychological distress that accompanies binge eating.

There are a number of possible explanations for the weight gain among men (e.g., increased alcohol intake, decreased exercise, increased consumption of fattening foods, change in metabolic rate), although we do not have the data in the current study to identify the relative importance of these various explanations. The different weight change patterns for men and women provide at least one plausible explanation for why men gained more weight than women. Women are socialized from a young age to watch their weight; men are not given the same message. Perhaps the women put more effort into maintaining their weight, whereas the men did not realize that as they moved to more sedentary lifestyles (associated with having a full-time

Table 6  
*Relation Between Changes in Eating Attitudes and Behaviors: 1982 to 1992*

Change	1	2	3	4	5	6
1. $\Delta$ Dieting	—	.36	.26	.57	.40	.57
2. $\Delta$ Body dis.	.23	—	.57	.39	.40	.33
3. $\Delta$ Weight	.25	.38	—	.25	.31	.24
4. $\Delta$ EI-DT	.48	.29	.14*	—	.62	.54
5. $\Delta$ EI-B	.19	.25	.11†	.49	—	.63
6. $\Delta$ Eating dis.	.51	.16*	.16*	.47	.37	—

Note. Numbers above the diagonal are for women, and numbers below diagonal are for men. All correlations for women are  $p < .0001$ . All correlations for men are  $p < .001$ , except where noted.  $\Delta$ Dieting = change in frequency of dieting;  $\Delta$ Body dis. = change in body dissatisfaction;  $\Delta$ Weight = change in body weight;  $\Delta$ EI-DT = change in eating disorder inventory drive for thinness;  $\Delta$ EI-B = change in EDI Bulimia;  $\Delta$ Eating dis. = change in eating disorder classification.

\* $p < .05$ . † Nonsignificant.

job) they would gain weight if they did not decrease their caloric intake or stay active. Unfortunately, the data do not appear to support such a scenario. The only significant predictors of increased weight gain, for men, were lower body weight and heightened desires to be thin. This suggests that the men who gained weight were actually more concerned about being thin than the men who did not gain weight. However, it is important to note that the predictors of weight gain in our study explained only a modest amount of variance (less than 10%), and therefore it is premature to draw any specific conclusions about why men in our study gained weight.

It is also interesting to note that the overall trend for weight gain is similar to that found for members of this age group in the general population (Kuczmarski et al., 1994; Williamson et al., 1990). Thus, even though research has demonstrated that the growth in obesity is related to socioeconomic status (Kuczmarski, 1992), there does appear to be a general trend that crosses social strata.

### *Why Did Eating Difficulties Decrease for Women?*

We have argued that eating problems diminish in the 10 years following college—at least for women—primarily because of maturational processes and changes in role status. It is also possible, however, that our findings reflect a more general societal trend. Heatherton et al. (1995) compared eating behavior on college campuses for students in 1982 and 1992 and found that eating disorder symptoms, dieting, and body dissatisfaction declined during that decade. For instance, in 1982, approximately 7% met clinical criteria for an eating disorder and 26% reported some form of binge eating. In contrast, rates of clinical eating disorders for students at the same college in 1992 were just over 5% and binge eating was reported by 19%. Thus, although eating disorders remain a serious and widespread problem on college campuses, it is possible that the findings in the current study reflect a general decline in the prevalence of disordered eating behaviors. However, the decline in disordered eating was greater in the current sample than in our cross-sectional study, suggesting that there is an age-related decline in disordered eating.

Heatherton et al. (1995) proposed a number of possible reasons for this decline in disordered eating behavior. For instance, information about eating disorders has been widely disseminated in the media. There have been public health advertisements, international “no diet” days, television “movies of the week,” numerous talk shows on anorexia nervosa and bulimia, as well as noted celebrity sufferers (e.g., Princess Diana) and even celebrity deaths (e.g., Karen Carpenter). This increased media focus on eating disorders may have increased awareness of the potential consequences of fasting, bingeing, and purging. There has also been an increasing emphasis on healthful eating and regular exercise, and nutritionists have tended to emphasize low-fat rather than low-calorie diets. Thus, sociocultural messages about the importance of thinness, long blamed for cultivating eating disorders, may have changed between the early 1980s and the 1990s.

Another possible explanation for the decline in self-reports of eating problems is that participants may be more reluctant to report eating problems in 1992 than they were in 1982.

Women who are approaching their thirties may be embarrassed to admit that they are experiencing problems typically associated with adolescence. Moreover, *dieting* has become a dirty word, mainly because of the failures typically associated with conventional dieting, and therefore our participants may have reframed their *dieting* to refer to *lifestyle modifications*, in which one diets to be healthy rather than to be thin (although all of the behaviors and consequences are the same). Finally, it is also possible that women in the 1990s may have a better understanding of the behaviors and terminology of eating disorders. For instance, there may be better agreement on what is meant by binge eating, and fewer women may feel that their occasional bouts of overeating are pathological. Thus, there may be a growing sophistication in how people refer to eating difficulties. However, given that participants reported consistent declines in all behaviors and attitudes related to body weight issues, including those that are more objective and easy to define (i.e., diet pill use, vomiting, answers to EDI items), we believe that our findings represent a genuine decrease in disordered eating in the 10 years following college.

This study is also limited by its reliance on self-reports, which have been criticized because they are prone to self-presentational bias (Fairburn & Beglin, 1990). We were limited by the methods and items used in the 1982 study, and we needed to follow those methods as closely as possible to ensure that any differences were not due to changes in item definition or method used to assess symptoms. Although clinical interview methods may have been preferable to self-reports, they were not possible in the current study. To our knowledge this is the first study that follows a large sample of participants during the transition from late adolescence to early adulthood. Therefore, we believe that our results may provide valuable information about eating problems during the transition to adulthood that might be confirmed by future interview studies.

### *Conclusions*

Our study demonstrates that eating difficulties appear to lessen, especially for women, in the decade following graduation from college. These results suggest that at least some degree of disordered eating may be normative for college women, and that it is also normative for these problems to diminish after graduation. However, body dissatisfaction and chronic dieting remain a problem for a substantial number of women. For men, the decade after college is typically a period of weight gain, accompanied by increased dieting and, for some, the development of disordered eating. Understanding the mechanisms by which maturational processes influence the maintenance or change in eating attitudes and behaviors is an important goal for future research.

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Received October 30, 1995

Revision received May 2, 1996

Accepted May 21, 1996 ■