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Learning to overeat: maternal use of restrictive feeding practices promotes girls' eating in the absence of hunger²

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Abstract

Background—Experimental findings causally link restrictive child-feeding practices to overeating in children. However, longitudinal data are needed to determine the extent to which restrictive feeding practices promote overeating.

Objectives—Our objectives were to determine whether restrictive feeding practices foster girls' eating in the absence of hunger (EAH) and whether girls' weight status moderates the effects of restrictive feeding practices.

Design—Longitudinal data were used to create a study design featuring 2 maternal restriction factors (low and high), 2 weight-status factors (nonoverweight and overweight), and 3 time factors (ages 5, 7, and 9 y).

Results—Mean EAH increased significantly ($P < 0.0001$) from 5 to 9 y of age. Higher levels of restriction at 5 y of age predicted higher EAH at 7 y of age ($P < 0.001$) and at 9 y of age ($P < 0.01$). Girls who were already overweight at 5 y of age and who received higher levels of restriction had the highest EAH scores at 9 y of age ($P < 0.05$) and the greatest increases in EAH from 5 to 9 y of age ($P < 0.01$).

Conclusions—The developmental increase in EAH from 5 to 9 y of age may be especially problematic in obesigenic environments. These longitudinal data provide evidence that maternal restriction can promote overeating. Girls who are already overweight at 5 y of age may be genetically predisposed to be especially responsive to environmental cues. These findings are not expected to be generalized to boys or to other racial and ethnic groups.

Keywords

Eating in the absence of hunger; overeating; restrictive feeding practices; girls

INTRODUCTION

Parents use a variety of practices to achieve day-to-day goals involving when, what, and how much children eat. Some practices, although successful in their immediate effects on children's

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eating, may have unintended consequences for children's food selection, preferences, and the behavioral control of food intake. For example, the current obesigenic food environment is characterized by large amounts of inexpensive, readily available, palatable, energy-dense foods (1). In response to this environment, parents may attempt to limit children's consumption of "junk" or "unhealthy" foods by keeping foods out of reach or by placing constraints on when and how much food may be consumed. Experimental studies have shown, however, that restrictive feeding practices increase children's preferences for restricted foods (2), heighten responsiveness to the presence of palatable foods, and promote overeating when restricted foods are freely available (3).

Although children can self-regulate energy intake by responding to internal signals about the energy content of the foods that they consume (4), they are also susceptible to environmental cues such as portion size (5) and the presence of palatable foods (6). Of particular concern, given our current obesigenic eating environment, is whether restrictive feeding practices may inadvertently teach children to ignore their own hunger and fullness when placed in eating environments where palatable, previously restricted foods are readily available. To date, the association between restrictive child-feeding practices and the behavioral controls of eating has been largely limited to cross-sectional studies of middle-class white children; the findings are particularly clear for young girls. Highly restrictive feeding practices are associated with eating in the absence of hunger (EAH, 7), negative self-evaluations (8), restrained eating (9), and overweight among young girls (7,10). These eating behaviors are similar to those that are overrepresented among overweight adults, which include external and emotional overeating and symptoms of binge eating disorder (11).

Although experimental research documents that restriction promotes children's intake in a laboratory setting (3,12), whether parental restriction is observed as a cause or as the effect of girls' overeating and overweight within a family context has not been established. Current research on child development indicates that parenting both influences children and is elicited in response to children's characteristics (3,12). The present study used a protocol designed to provide an index of individual differences in responsiveness to food cues in the environment by measuring children's EAH. The main objective of the analyses was to determine whether restrictions that mothers place on their daughters' eating at 5 y of age promotes the daughters' overeating in the absence of hunger from 5 to 9 y of age and to assess whether girls' weight status moderates the effects of restriction.

SUBJECTS AND METHODS

Subjects

Participants were from central Pennsylvania and were part of a longitudinal study of the health and development of young girls. At entry into the study, the participants consisted of 197 girls with a mean (\pm SD) age of 5.4 ± 0.4 y and their parents. Of those participants, 192 girls and their parents were reassessed 2 y later when the girls had a mean age of 7.3 ± 0.3 y. A third assessment, which consisted of 182 families, was performed 2 y later, ie, 4 y after the initial assessment, when the girls had a mean age of 9.34 ± 0.3 y. The eligibility criteria for girls' participation at the time of recruitment were as follows: living with both biological parents, the absence of severe food allergies or chronic medical problems affecting food intake, and the absence of dietary restrictions involving animal products. Families were not recruited on the basis of weight status or concern about weight. This study was conducted in accord with the Helsinki Declaration of 1975, as revised in 1983. All procedures were approved by The Pennsylvania State University Institutional Review Board, and the mothers provided written informed consent for their own and their daughters' participation before data collection.

Families were recruited for participation in the study with the use of flyers and newspaper advertisements. In addition, families with age-eligible female children within a 5-county radius received mailings and follow-up phone calls (Metromail Inc, Chicago). On average, the parents were in their mid-30s at the time of recruitment (mothers' mean age: 35 ± 5 y; fathers' mean age: 37 ± 5 y). Ninety-seven percent of the fathers and 63% of the mothers were employed when the girls were 5 y old; the employment percentages increased to 99% and 76%, respectively, when the girls were 7 y old and remained at 99% for the fathers and increased to 78% for the mothers when the girls were 9 y old. When the girls were 5 y old, approximately equal numbers of families reported incomes in the following ranges: \$20 000–\$35 000, \$35 000–\$50 000, and $> \$50 000$. The percentage of families reporting incomes $> \$50 000$ increased to 47% when the girls were 7 y old and then to 57% when the girls were 9 y old. The parents were well educated; the mothers' mean amount of education was 15 ± 2 y (range: 12–20 y), and the fathers' mean amount of education was 15 ± 3 y (range: 12–20 y). Parents were, on average, slightly overweight at the first measurement, with a mean body mass index (BMI; in kg/m^2) of 25.6 ± 5.3 for the mothers and 28.1 ± 4.5 for the fathers. Weight status increased slightly from time 1 to time 2, with mean BMI values at time 2 of 26.9 ± 6.2 for the mothers and 28.4 ± 4.3 for the fathers. There was also a slight increase from time 2 to time 3, with mean BMI values increasing to 27.5 ± 6.3 and 28.9 ± 4.4 for the mothers and the fathers, respectively.

Measures

Eating in the absence of hunger: free-access protocol—To minimize the influence of hunger on intake in the free-access session, each girl participated in a standard ad libitum lunch before the free-access session with 3–6 other girls of the same age. Each girl was provided with generous portions of food at lunch, and portion sizes were increased for some items as the girls increased in age. The portion sizes, including changes with age where applicable, were as follows: bread (56 g), sandwich meat (4 slices at 5 y of age and 6 slices at 7 and 9 y of age), carrots (20 g), applesauce [120 mL (4 oz)], cheese (1 slice at 5 y of age and 2 slices at 7 and 9 y of age; 21 g/slice), cookies (2 medium, 16 g each), and milk [300 mL (10 oz)]. In addition, a subjective measure of hunger was obtained from each girl immediately after lunch with the use of 3 figures depicting “hungry,” “half-full,” and “full.” Girls who ate little before the free-access snack session or who indicated that they were “hungry” after lunch were not included in the analyses.

Immediately after lunch, during the free-access session, the girls' preferences for the snack foods (data not shown) were assessed. Each girl was asked to rate small (2-bite) samples of the following 10 sweet and savory snack foods varying in fat, energy content, and sensory properties: popcorn (15 g), potato chips (58 g), pretzels (39 g), nuts (44 g), fig bars (51 g), chocolate chip cookies (66 g), fruit-chew candy (66 g), chocolate bars (66 g), ice cream (168 g), and frozen yogurt (168 g). Next, the girl was shown various toys and containers holding generous, preweighed portions of the same 10 snack foods. The girl was instructed that she could play with the toys or eat any of the foods while the experimenter did some work in the adjacent room. The experimenter then left the room for 10 min. When the experimenter returned, the girl was interviewed about whether her parents let her have the foods provided and how she felt about her eating during the session. To determine energy intake for each child, each of the food items that were served was weighed before and after the session. Manufacturers' data were used in conjunction with gram-consumption data to calculate each child's total energy intake during the 10-min EAH period.

Weight status—The girls' height and weight were measured in triplicate at each age by a trained research assistant, and the girls' BMI was calculated from the height and weight measures. Because BMI during childhood is age and sex specific, BMI percentiles were

calculated by using recent growth charts from the Centers for Disease Control and Prevention (13).

Mothers' child-feeding practices—The mothers' child-feeding practices and their perception of their daughter's risk for overweight were assessed at each age by using the Child Feeding Questionnaire (14). The questionnaire's restriction subscale, which assesses the extent to which mothers control how much, when, and what girls eat, was the primary child-feeding measure used in these analyses. Two other aspects of control in feeding were assessed to evaluate the extent to which girls who received high levels of restriction differed in other aspects of control in child feeding. These 2 aspects were monitoring, which assesses the extent to which mothers keep track of what their daughters eat, and pressure to eat, or mothers' tendency to pressure girls to eat more food, particularly at meal times. In addition, the following 2 aspects of maternal perceptions of the child were assessed: perceived child's weight, or mothers' perceptions of their daughter's weight history, and concern about child's weight, which assesses mothers' concern about their daughter's risk of becoming overweight. Previous analyses of this sample provided evidence of acceptable internal consistency and criterion validity for the Child Feeding Questionnaire subscales included in this analysis (14).

Background characteristics—Several background characteristics were examined in this study as potential confounding variables for the associations between weight status, maternal restriction, and girls' EAH. These characteristics were family income (< \$20 000, \$20 000–35 000, \$35 000–50 000, > \$50 000), mothers' years of education, and mothers' BMI, which was based on 3 measures of the mothers' height and weight when the girls were 5 y old.

Statistical analysis

Data for 140 girls were used in the analyses outlined below. Only girls with complete data were considered for the analyses ($n = 182$). Of the 182 girls who participated from 5 to 9 y of age, data for 29 girls at 5 y of age were excluded, data for 6 girls at 7 y of age were excluded, and data for 7 girls at 9 y of age were excluded. These data were excluded for the following reasons: interviewer ratings indicated general behavioral difficulties throughout the interview day; interviewer ratings indicated that the girl did not seem comfortable or understand instructions during the 10-min period in which she was told she could play or eat; the girl ate less than a total of 1680 kJ (400 kcal) at breakfast, a midmorning snack, and the lunch preceding the free-access session; or the girl indicated that she was hungry before the free-access session. Thus, excluding all subjects with either missing data at a given age or excluded data, 140 subjects with complete EAH data were retained. The 140 girls who were included in the analyses did not differ significantly from the excluded girls in terms of family income ($F = 0.82$, $P = 0.37$), mean maternal restriction ($F = 0.16$, $P = 0.70$), or mean BMI across the 5-y period ($F = 0.92$, $P = 0.34$).

In this study, we were primarily interested in how maternal restriction at 5 y of age affected girls' subsequent intake regulation, or EAH, from 5 to 9 y of age. We were also interested in whether the effects of restriction differed significantly between girls who were overweight and those who were not overweight at entry into the study. Therefore, we used a 2×2 factorial design based on maternal reports of restriction and girls' weight status at 5 y of age, which resulted in the following 4 groups: girls who were overweight and exposed to high restriction, girls who were overweight and exposed to low restriction, girls who were not overweight and were exposed to high restriction, and girls who were not overweight and were exposed to low restriction.

Median splits were used to categorize girls as receiving either low or high levels of maternal restriction in feeding at 5 y of age. The girls' BMI percentile scores were used to categorize

the girls as being nonoverweight or overweight. At 5 y of age, only 28 of the 140 girls were at or above the overweight cutoffs from the Centers for Disease Control and Prevention (ie, \geq 85th BMI percentile), and only 8 of those girls fell into the overweight, low restriction group. Therefore, a less restrictive cutoff of the 75th BMI percentile was used to ensure that the numbers of girls in the 4 groups were more equal (ie, approximately the same number of girls in each of the 4 groups).

To identify potential covariates for the relation between maternal restriction and girls' EAH, differences between the 4 groups in background characteristics (family income, mothers' years of education, and mothers' BMI) were examined by using analysis of variance. In addition, the association between each background characteristic and the dependent variable of interest (ie, EAH) was examined by using correlation analysis. In instances in which significant differences in the background characteristic were identified for the independent variable (ie, the restriction–weight-status groups) and the dependent variable (ie, EAH), the background variable was entered as a covariate in the analyses outlined below.

Initial analyses examined differences in maternal child-feeding practices at 5 y of age, including monitoring and pressure, and in reaction to overweight in children by using analysis of variance featuring 2 restriction categories (low and high) and 2 weight-status categories (nonoverweight and overweight). A 2 (weight status) \times 2 (restriction) \times 3 (time) repeated-measures analysis of variance was then used to examine the following: 1) changes in the girls' mean EAH scores from 5 to 9 y of age; 2) differences in the girls' EAH at each age as a function of maternal restriction, girls' weight status, and the interaction between restriction and weight status; and 3) changes in the girls' EAH from 5 to 9 y of age as a function of restriction, weight status, and the interaction between restriction and weight status. All analyses were performed with the use of SAS (version 8.2; SAS Institute Inc, Cary, NC), and $P < 0.05$ was used to indicate significant effects.

RESULTS

Of the 140 girls who had complete data at 5, 7, and 9 y of age, 41 were categorized as nonoverweight with low levels of maternal restriction at 5 y of age, 45 were nonoverweight with high restriction at 5 y of age, 25 were overweight with low restriction at 5 y of age, and 29 were overweight with high restriction at 5 y of age. With the use of reference data from 2000 from the Centers for Disease Control and Prevention, mean (\pm SD) BMI percentile scores for the nonoverweight and overweight groups were 46 ± 2 and 86 ± 1 , respectively. On a scale of 1 to 5, mean maternal restriction scores at 5 y of age in the low-restriction and high-restriction groups were 2.2 ± 0.1 and 3.7 ± 0.0 , respectively.

Maternal perceptions of child's weight status and maternal aspects of control in child feeding at 5 y of age according to child's weight status and level of maternal restriction in feeding at 5 y of age are shown in Table 1. For perception of child's weight, there were significant main effects of weight status ($P < 0.0001$) and restriction ($P < 0.05$). The mothers with overweight daughters and the mothers reporting high levels of restriction perceived their daughters as being more overweight than did the mothers with nonoverweight daughters or the mothers reporting low levels of restriction. For concern about child's overweight, there were main effects of weight status ($P < 0.001$) and restriction ($P < 0.05$), but these effects were modified by a significant interaction ($P < 0.01$). Post hoc follow-up analyses indicated that the mothers who had overweight daughters and reported high levels of restriction reported significantly higher concern about child's overweight than did the other 3 groups. For monitoring of child's eating, there was a significant main effect of restriction ($P < 0.01$). The mothers who reported high levels of restriction also reported high levels of monitoring. Finally, for pressure to eat in feeding, there was a significant main effect of weight status ($P < 0.01$). The mothers of

nonoverweight daughters pressured their daughters to eat more than did the mothers of overweight daughters.

The EAH scores of the girls in the 4 groups at 5, 7, and 9 y of age are shown in Figure 1. A time-related increase in the girls' EAH over the 5-y period was observed ($P < 0.0001$). The mean energy intakes from snack foods consumed during the free-access periods at 5, 7, and 9 y of age were 523 ± 32 kJ (125 ± 8 kcal), 728 ± 39 kJ (174 ± 9 kcal), and 944 ± 48 kJ (225 ± 11 kcal), respectively, which constituted 6.9%, 8.7%, and 11.2%, respectively, of the age- and sex-specific recommended daily energy intakes. At 5 y of age, there were no significant effects of weight status or restriction on the girls' EAH. At 7 y of age, there was a significant main effect of restriction ($P < 0.01$). The girls who were exposed to high levels of maternal restriction had higher EAH scores than did the girls who were exposed to low levels of restriction. At 9 y of age, there was also a main effect of restriction ($P < 0.01$), but it was modified by an interaction between weight status and restriction ($P < 0.05$). Overweight girls exposed to higher levels of restriction had the highest EAH scores. For the girls' EAH scores from 5 to 9 y of age, there was a significant time \times restriction interaction ($P < 0.05$). This effect, however, was modified by a time \times weight status \times restriction interaction ($P < 0.01$). Post hoc follow-up analyses indicated that girls who were overweight and who were exposed to high levels of maternal restriction showed the greatest increases in EAH across time.

DISCUSSION

Research has shown links between parents' feeding practices and children's eating and weight status, but causality has remained at issue; experimental research indicates that restriction can cause overeating and is associated with overweight among children (3,12), but other findings indicate that overweight girls tend to elicit more restrictive feeding practices by mothers. The findings of this study provide new longitudinal evidence that restrictive feeding practices can promote overeating in response to the presence of palatable foods among young girls during middle childhood, perhaps increasing their risk for subsequent problems with eating and energy balance. Regardless of the level of maternal restriction, the girls' EAH increased from 5 to 9 y of age in both absolute and relative terms and constituted an increasing percentage of the age- and sex-specific recommended energy intake. This developmental trend, which is consistent with a heightened responsiveness to the presence of food, is consistent with other findings indicating that as children develop, eating becomes increasingly responsive to environmental cues, including portion size (5). This trend may be especially problematic in our current environment, which is characterized by the ready accessibility and availability of inexpensive, palatable foods. The girls whose mothers reported using higher levels of restriction when their daughters were 5 y old ate more in the absence of hunger at 7 and 9 y of age than did those whose mothers used lower levels of restriction. Furthermore, the girls' overweight was not a necessary precondition for the imposition of maternal restriction, and restriction increased the girls' EAH over time for both overweight and nonoverweight girls.

Five-year-old girls who were already overweight and who were subject to higher levels of restriction showed the greatest overeating at 9 y of age. This group also showed the largest increases in overeating from 5 to 9 y of age. These findings, which show that the effects of early restrictive feeding practices were greatest among the girls who were already overweight by 5 y of age, may reflect a gene-by-environment interaction, with the child's genetic predisposition for overweight status moderating the effect of maternal restriction. It is possible that girls who are already overweight by 5 y of age may also be genetically predisposed to be highly responsive to environmental factors, including both maternal restrictive feeding practices and the presence of palatable food. This pattern is consistent with recent epidemiologic data charting population increases in weight status, which show that the most overweight persons may be the most susceptible to obesigenic environments (1,15). During a

time period in which the eating environment has been characterized as increasingly obesigenic, the greatest increases in weight status are at the upper end of the weight-status distribution.

The results of the present study corroborate previous experimental findings (3,7,8,10) showing that feeding practices can foster individual differences in children's eating within the family context, which indicates that parenting influences child outcomes. In particular, these findings provide the first longitudinal evidence indicating that maternal use of restrictive feeding practices promotes daughters' EAH. With respect to possible effects of the child on parenting, the mothers of overweight girls in the present study were more concerned about their daughters' weight and eating and were less likely to pressure their daughters to eat. Paths of influence in parent-child interactions flow in both directions, and these bidirectional paths of influence create feedback cycles in which both maternal feeding styles and the child's overeating and weight status persist across time, leading to higher levels of restriction and greater degrees of overweight (10).

Among adults, dietary disinhibition and binge eating are characterized by consuming relatively large amounts of food in the absence of hunger, and both can be elicited by self-restrictions on eating. Although we know little about the causes of these eating problems, the present research indicates that EAH, a critical feature of both disinhibited eating and binge eating, is apparent among girls during middle childhood (9,16) and is fostered by maternal restriction. In a retrospective study of overweight female binge eaters (17), some women reported that dieting preceded the onset of binge eating, but others indicated that bingeing preceded the initiation of dieting. The present findings, which show that girls' overeating in the absence of hunger is promoted by higher levels of maternal restriction, raise the possibility that maternal restriction of girls' intake might serve as one trigger for initial overeating or binge eating episodes, which in turn, may initiate self-imposed restrictive dieting attempts.

A limitation of the present study is that our sample was exclusively non-Hispanic white and included girls only. We selected this sample because, by adolescence, a high prevalence of overweight; high rates of maladaptive eating behaviors, including binge eating; weight concerns; body dissatisfaction; and high rates of chronic use of unhealthy weight-control practices are endemic among non-Hispanic white girls. However, because our findings were obtained in a sample of exclusively non-Hispanic white families with girls, we cannot generalize these findings to other racial, ethnic, or income groups or to boys. In this instance, because parenting is so culturally specific, there is good reason to predict that our findings would not generalize to other groups. Parenting practices reflect, in part, parents' responses to perceived environmental threats to goals for their children (18), and although a few parental goals for children are universal (eg, child health), other goals differ by ethnicity, race, income, education, and child sex. Furthermore, parents may differ in their beliefs about the environmental conditions that either threaten or promote the attainment of particular parenting goals.

For parents of non-Hispanic white girls, physical attractiveness is an important goal for daughters (19,20). Especially among this group, overweight is stigmatized, and thinness, as a dimension of physical attractiveness, is especially highly valued (21). Restrictive feeding strategies are used to protect daughters from the obesigenic environment's threat to their thinness and attractiveness. In contrast, among Hispanics and African Americans, both of whom have a particularly high prevalence of overweight and obesity during childhood, thinness is not a goal, and childhood overweight is not typically viewed as a problem or a threat to parental goals but as a sign of success in meeting parental goals. The accelerated growth and higher weight status of overweight children is viewed positively, as evidence that the child is eating well, growing well, and attaining the goal of good health (22,23). We would not expect restrictive feeding practices to be used by parents who are interpreting children's overweight

status positively. These contrasting parental evaluations of childhood overweight among racial, ethnic, and income groups highlight the need for qualitative and quantitative research in these groups to address links between cultural beliefs and parental goals and beliefs regarding children's eating and weight status and to determine how parenting practices influence or are influenced by children's weight status.

An increasingly obesigenic environment has been implicated in the dramatic increases in the prevalence of overweight and obesity among both children and adults of all racial and ethnic groups (1,24). For young children, parents play a central role in determining the extent to which the child's eating environment is obesigenic and may play a central role in determining the child's susceptibility to environmental factors. In the present study, increases in EAH were noted for all the groups across middle childhood, and these increases in overeating were greater among the girls who received high levels of restriction at 5 y of age than among those who received low levels of restriction. The girls who were already overweight by 5 y of age appeared to be especially susceptible to the effects of maternal restriction, perhaps reflecting a genetic predisposition for a heightened responsiveness to various environmental factors as controls of food intake.

Although the present research shows that mothers' attempts to restrict daughters' eating can have negative effects on the girls' development of food-intake controls, this is only one avenue of parental influence over what, when, and how much children eat. Parents also select the foods and the size of food portions that are offered to children; structure the timing, frequency, and social contexts of eating (ie, determining whether family members eat in front of the TV or together at the table); set an example through their own eating behavior; and directly guide children's eating via feeding practices. Effective prevention programs must address these multiple avenues of parental influence while being sensitive to differences among racial, ethnic, and socioeconomic groups. The findings of the present study provide additional support for the view that prevention of childhood overweight must begin in early childhood and include anticipatory guidance on parent-child interactions in feeding. Our findings, which indicate that restriction is counterproductive and not an effective approach to limiting girls' food intake, emphasize the importance of providing guidance to parents on alternative methods of setting limits for children in the feeding context that allow the development of adequate self-control mechanisms. Primary prevention programs should promote parenting skills that help children learn to like healthy food choices, to consume appropriate portion sizes, and to be responsive to hunger and satiety cues as determinants of when and how much they eat. Because our findings indicate that restrictive feeding practices tend to make girls more vulnerable to obesigenic environments, programs to promote healthy eating and weight status among this group should provide parents with alternatives to restrictive approaches to feeding.

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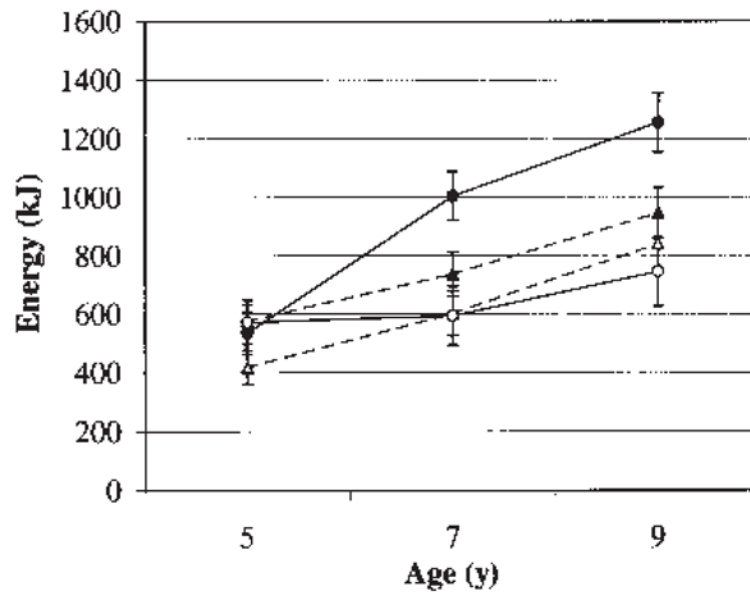


FIGURE 1.

Mean (\pm SEM) energy consumed during periods of eating in the absence of hunger (EAH) by girls at 5, 7, and 9 y of age according to membership in 1 of the 4 following groups categorized by child's weight status and maternal restriction in child feeding: normal weight and low restriction (Δ ; $n = 41$), normal weight and high restriction (\blacktriangle ; $n = 45$), overweight and low restriction (\circ ; $n = 25$), and overweight and high restriction (\bullet ; $n = 29$). Changes over time in energy consumed (ie, EAH score) and differences in EAH scores between the groups were assessed by using $2 \times 2 \times 3$ repeated-measures ANOVA. There were no significant effects at 5 y of age. At 7 y of age, there was a significant main effect of restriction ($P < 0.0002$). At 9 y of age, there was a significant main effect of restriction ($P < 0.0018$), which was modified by a significant interaction between weight status and restriction ($P < 0.053$). There was also a significant time effect ($P < 0.00001$) and a significant time \times weight status \times restriction interaction ($P < 0.007$).

TABLE 1

Maternal perceptions of child's weight status and maternal aspects of control in child feeding at 5 y of age according to child's weight status and level of maternal restriction in feeding at 5 y of age¹

	Nonoverweight		Overweight	
	Low restriction (n = 41)	High restriction (n = 45)	Low restriction (n = 25)	High restriction (n = 29)
Perception of child's weight ^{2,3}	2.6 ± 0.1	2.8 ± 0.1	3.0 ± 0.1	3.1 ± 0.1
Concern about child's overweight ²⁻⁴	2.0 ± 0.2	1.9 ± 0.2	2.2 ± 0.2	3.1 ± 0.1
Monitoring of child's eating ³	3.4 ± 0.1	3.9 ± 0.1	3.5 ± 0.2	4.1 ± 0.2
Pressure to eat in feeding ²	2.2 ± 0.1	2.6 ± 0.1	1.9 ± 0.1	1.9 ± 0.1

¹ Values are the mean (± SD) item response on the Child Feeding Questionnaire: higher scores indicate higher values of the construct. The high and low restriction groups were classified on the basis of a median split. Nonoverweight and overweight were classified on the basis of the 75th BMI percentile.

² Significant main effect of weight status, $P < 0.05$ (2×2 ANOVA).

³ Significant main effect of restriction, $P < 0.05$ (2×2 ANOVA).

⁴ Significant interaction between weight status and restriction, $P < 0.05$ (2×2 ANOVA).