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Parents' restrictive feeding practices are associated with young girls' negative self-evaluation of eating

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Abstract

Objective—This study was conducted to determine whether parents' restriction of young girls' access to palatable foods promotes the consumption of those foods while evoking negative self-evaluation.

Design—Girls' intake of 10 snack foods was measured immediately following a standard lunch, in a setting with free access to palatable snack foods. Girls' self-evaluation about their eating was assessed following the free access snack session. In addition, reports of parental restriction were obtained from mothers, fathers, and girls.

Participants—Participants were 197 girls aged 4.6 to 6.4 years and their parents.

Statistical analysis—Structural equation modeling was used to test models describing relationships between parents' restriction and girls' eating.

Results—Following the standard lunch, girls' snack food intake during the 10-minute free access session ranged from 0 to 436 kcal, with a mean of 123±7 kcal. Approximately half of the girls reported negative self-evaluation about eating 1 or more of the 10 foods provided. The revised path model indicated that parents' restriction predicted both girls' snack food intake and girls' negative self-evaluation of eating. Girls' negative self-evaluation of eating was not associated with the amount of food that they consumed when not hungry, but was linked to their perceptions of being restricted from those foods.

Applications/conclusions—These findings indicate that restricting young girls' access to palatable foods may promote the intake of restricted foods and may also generate negative feelings about eating restricted foods.

Parents' feeding decisions affect the types of foods made available to children as well as the extent to which children have control over what and how much they consume (1). Converging evidence indicates that highly controlling approaches to child feeding may have unintended effects on children's food preferences and control of food intake (2–5). Costanzo and Woody (6) assert that controlling child-feeding practices limit children's opportunities to exercise self-control, impeding the development of self-regulation. Research by Johnson and Birch (5) provide support for this theory: High levels of parental control were negatively associated with preschool aged children's ability to regulate energy intake, which in turn was positively related to children's adiposity. More recent work has evaluated controlling feeding practices that are particularly restrictive. Fisher and Birch (4) found that girls' eating when exposed to palatable foods in the absence of hunger was related to mothers' restriction of girls' access to those foods. In a subsequent experimental study, Fisher and Birch (3) examined causality in this relationship, demonstrating that restricting access to a palatable food increases children's

behavioral response to that food and promotes its selection and intake. These observations suggest that children's ability to exercise behavioral control over their food intake is decreased by factors that draw children's attention to a food while restricting their access to it. Thus, restricting access may promote the type of eating behavior that parents explicitly intend to avoid in their use of restriction.

Parental restriction may modify children's eating patterns, but little is known about whether restrictive feeding practices affect the way children learn to evaluate their own eating behavior. Among adults, self-imposed dietary restrictions are thought to have negative consequences for psychological well-being, lowering physical self-appraisal and self-esteem (7,8). Similarly, parents' use of restriction may have negative psychological effects on children by conveying behavioral expectations to limit the intake of highly palatable foods while making those foods even more attractive. As a result, children who experience restriction may come to perceive restricted foods as being highly attractive and may learn to associate the consumption of restricted foods with parents' disapproval.

The purpose of this study was to examine the hypothesis that parents' restriction of young girls' access to palatable foods promotes the consumption of those foods while evoking negative self-evaluation. The hypothesized model links parents' reports of restricting their daughters' access to foods to girls' intake of those foods in the absence of hunger as well as to girls' perceptions of eating too much and girls' negative feelings about their eating.

METHODS

Subjects

Data were taken cross-sectionally from the first wave of a 5-year longitudinal project on the regulation of food intake across middle childhood in girls. Participants were 197 5-year old girls (range 4.6 to 6.4 years) and their parents. Eligibility criteria for girls' participation included 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 recruited for participation in a large study of young girls' growth and health. Families with age-eligible female children with a 5-county radius received mailings and follow-up telephone calls (Metromail Inc, Chicago Ill). On average, parents were in their mid 30s (mothers 35.4 ± 0.3 years; fathers 37.4 ± 0.38 years). Most fathers (97%) and almost two-thirds of mothers (63%) were currently employed, reporting mean of 45 hours and 20 hours per week, respectively. Twenty-nine percent of reported family incomes were below \$35,000, 35% between \$35,000 and \$50,000 and 36% above \$50,000. Parents were well-educated; the mean years of education was 15 ± 2 y (12–20) for mothers and 15 ± 3 y (12–20) for fathers. Parents were, on average, overweight, with mean body mass index scores (weight (kg)/height (m²)) of 25.8 ± 0.39 for mothers, and 28.0 ± 0.31 for fathers. Girls' mean weight-for-height scores were at the 62nd (± 26) percentile indicating that, in general, girls were 12% above the median for age- and gender-specific weight-for-height reference data (9).

Measures

Parents' reports of restricting their daughters' access to snack foods—Parents' reports of restricting access to palatable foods was measured using an instrument designed to assess the extent to which 10 snack foods used in the free access procedure were typically restricted from the child (4). Ten questions were asked about restricting each of the experimental foods, examining if parents limit the time of day when the food is allowed, get upset if the child obtained the food without asking, monitor the child's consumption of the food, generally limit the amount consumed, allow second helpings, generally limit opportunities to consume the food, provide the food relative to how often the child asks for it,

keep the food out of reach, limit how often the food is in the home, and limit the type of eating occasions at which the food is provided. Responses were measured using Likert-type scales. Responses for each food were summed to create a total score for each question asked. The internal consistency for these 10 questions about restriction, as measured by Chronbach's α , was 0.81. The 10 questions about restriction were standardized and weighted using principal components analysis to create a total score for the instrument. Principal components analysis was also used to create a parental composite score, representing both mothers' and fathers' reports of restriction. The parental composite score was expressed as a standard score with high scores indicating high levels of parental restriction. Previous research has shown that mothers' reports of restriction using this instrument were positively associated with their preschool aged daughters' intake of snack foods in the absence of hunger (4).

Girls' reports of parents' restriction—Questions regarding girls' perceptions of parents' restriction were developed for this research. For each of the 10 snack foods provided, girls were asked, "Do Mommy or Daddy let you have ___?" If the child answered yes, she was asked, "Is that an anytime food, a snack food, a dessert food, or a special-time food?" The response was recorded and coded as follows: 4=no, 3=only special time, 2=special time and dessert, 1=special time, dessert, and snack, 0=anytime. Responses for this question were averaged across foods, so that the each girl's total score represented the mean response for this question across 10 foods, with higher scores indicating more restriction.

Girls' reports of eating too much—Questions regarding girls' perceptions of eating too much were developed for this research. For each of the 10 snack foods provided, girls were asked, "How much did you eat of the ___? Did you eat too much, just the right amount or not enough?" Items were coded as follows: 0=not enough or just the right amount, and 1=too much. Responses for this question were summed across foods, where the total score represented the number of foods about which the girl reported eating too much.

Girls' reports of negative feelings about eating—Questions regarding girls' negative feelings about eating were developed for this research. Girls' reports of negative feelings about eating 10 snack foods when not hungry were measured using 2 questions. First, the interviewer read 5 short vignettes describing emotional experience of sadness, happiness, feeling just okay, guilt, and shame. Next, for each of the 10 snack foods provided, girls were asked: "How did you feel about eating _____? Sad, happy, just okay, guilty, or shameful?" Response options were coded as follows: 0=happy or just okay and 1=sad, guilty, or shameful. Responses for this question, were summed across the 10 foods such that each girls' total score represented the number of foods for which the child reported negative affect in eating. In addition, each child was asked a general question about each of her parents: "How would you feel if Dad (Mom) found out what you ate today? Sad, happy, just okay, guilty or shameful?" Responses were collapsed to broadly distinguish between negatively valenced emotions and those that were positive or neutral, with the following coding: 0=happy or just okay and 1=sad, guilty, or shameful.

Snack foods—Girls' energy intake of 10 palatable snack foods was measured using weighed intake data. Generous portions of 10 sweet and savory snack foods varying in fat, energy content, and sensory properties were presented to children: 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). Manufacturers' information was used to convert gram weight consumption into energy intakes.

Procedure

Lunch before free access session—Girls consumed self-selected standard ad-libitum lunch at a table with 3 to 4 other girls of the same age. Each child was provided generous portions of bread (2 slices), sandwich meat (4 slices), carrots (20 g), applesauce (4 oz), cheese (1 slice), cookies (2 medium), and milk (8 oz). Several adults were present to ensure that foods were not shared among girls, that dropped food was recorded and replaced, and that food-related discussion was avoided.

Free access snack food session—The experimental protocol to measure girls' snack food intake following lunch is presented in Figure 1. Each girl was interviewed individually. To minimize the influence of hunger on snack food intake, an assessment of girls' fullness was performed using 3 figures depicting "hungry", "half-full", and "full." Girls who indicated they were still hungry after lunch were not included in the analyses. Next, a preference assessment of the 10 snack foods was performed using figures depicting "yummy", "yucky", and "just okay" faces (shown in Figure 1) to ensure that each child had an opportunity to taste the snack foods (10). Following the preference assessment, the child was shown various toys that were available for a play session. Containers holding generous portions of the snack foods described above were also made available. The child was told 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 minutes. When the experimenter returned, the child was interviewed about whether her parents let her have the foods provided, how much she thought she ate, and how she felt about her eating.

Information provided by parents was obtained during 2-hour interviews in which parents completed questionnaires on numerous aspects of family life, parenting, and their own eating.

Statistical Analysis

A total of 158 cases were included in data analysis, with 39 cases excluded for the following reasons: interviewer ratings indicated general behavioral difficulties throughout the interview day; interviewer ratings indicated that the child did not seem comfortable or did not understand instructions during the 10-minute period in which the child was told she could play or eat; the child ate less than a total of 400 kcal at breakfast, a midmorning snack, and the lunch preceding the snack food session; and interviewer ratings indicated that the child did not understand the questions asked following the snack food session.

Descriptive statistics were generated on parents' reports of restricting access to snack foods, children's intake of snack foods, and children's evaluation of their own eating. Structural equation modeling using LISREL (version 8.0, January 1999, Scientific Software International, Chicago, Ill) was used to test the hypothesis that parental restriction promotes consumption of restricted foods as well as negative self-evaluation of eating. Structural equation modeling uses regression techniques to test relationships among variables of interest while taking into account other relationships in the model (11). All variables were treated as observed variables with the exception of girls' negative emotions about eating the snack foods; the negative emotion variables was treated as a latent construct within the model by separately measuring the loadings for each of 2 questions about negative emotion as part of the model fitting procedure.

Indicators of Model Fit

Following the advice of Byrne (12), we have focused on 4 indexes that assess how well the model describes the data: the χ^2 test, the Non-Normed Fit Index (NNFI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). The χ^2 test indicates how well the model "fits" the data, with small, nonsignificant χ^2 values indicating

small discrepancy between the structure of the observed data and the hypothesized model. The NNFI and CFI indexes compare the hypothesized model to a “null” or worst-fitting model, taking into account model complexity, and indicate a well-fitting model with values >0.90 , approaching an upper bound of 1. The RMSEA reflects how close the model fit approximates a reasonably fitted model, and indicates good model fit with values <0.05 .

RESULTS

Girls' energy intake at the lunch before the free access snack session was 403 ± 116 kcal, representing approximately 22% of their Recommended Dietary Allowance (RDA) for energy (1,800 kcal/day)(13). The Table shows girls' consumption of each of the 10 snack foods provided during the 10-minute period in order of ascending intake. Chocolate bars, fruit-chew candies, potato chips, and ice-cream were consumed in greatest amounts. Girls' total snack food intake in the 10-minute free access period ranged from 0 to 436 kcal, with a mean of 123 ± 7 kcal. Thus, girls' intake of snack foods in the absence of hunger constituted approximately 7% of the RDA for energy. The Table also gives girls' preferences for and reports of negative evaluation about each food. Even though girls consumed the 10 foods in differing amounts, with few exceptions girls' preferences for and reports of negative evaluation in eating were fairly similar across all foods. In general, a majority of girls' rated the foods as having a “yummy” taste. For any given food, between 11% and 23% of girls reported eating too much and negative emotion about eating. Roughly half of the girls, however, reported eating “too much” (50%) and feeling bad about eating (44%) at least 1 or more of the snack foods. Further, approximately one-third of girls reported that they would feel bad if their mother (30%) or father (37%) found out about what they had eaten. Parents' standardized scores for restriction were 0.1 ± 0.3 (range = -9.4 to 7.2). Girls' perceived restriction regarding the 10 snack foods was, on average, 2.1 ± 0.1 (range = 0 to 4), corresponding to the perception that the snack foods were for “special times” or “dessert.”

Evaluating the ‘Fit’ of the Hypothesized Model to the Data

Fit statistics were generated to determine whether the hypothesized model provided a good fit to the observed data. The χ^2 value for this model was nonsignificant, indicating that the model tested provided a good overall representation of the reproduced covariance matrix. Values for NNFI (0.92), the CFI (0.95), and RMSEA (0.06), also indicated a good fit. Each of the paths for the initial model were significant except for the path between girls' snack food intake and their perceptions of eating too much. As a result, the initial model was revised by removing this path. The nonsignificant χ^2 value for the revised model indicated that the model provided a good fit to the data. In addition, the NNFI (0.94) and CFI (0.96) and RMSEA (0.05) fit test values improved slightly, indicating that deletion of the path from the initial model improved the model fit.

Describing the Final Model

Figure 2 shows the revised model's standardized path coefficients, which can be interpreted like standardized regression coefficients. All coefficients in the revised model were statistically significant, indicating that each path provided a meaningful contribution in the model. The revised model indicates that girls' negative evaluation was not directly related to how much they actually ate of the snack foods, but was more a reflection of their perceptions of not being allowed to have those foods. In this model, parents' restriction was positively related to girls' consumption of restricted foods and girls' perceptions of being restricted. Girls' perceptions of eating “too much” of snack foods, however, were not related to amount of snack foods consumed, but rather to their perceptions of whether their parents let them have the snack foods provided. Finally, the number of snack foods that girls reported feeling bad about was positively associated with the number of foods of which the child perceived she was eating “too much.”

DISCUSSION

The objective of this research was to evaluate whether parents' reports of restriction were related to young girls' intake of restricted foods and girls' self-evaluation about eating those foods. The findings of this study provide support for this hypothesis, showing that parents' reports of restricting young girls' access to palatable foods were positively associated with girls' consumption of restricted foods in the absence of hunger when given the opportunity to freely choose what and how much to eat of those foods.

Previous research suggests that restricting access to palatable foods may actually promote consumption of restricted foods (3,4). This research also provides some evidence that girls as young as age 5 years negatively evaluate their own eating and that these negative evaluations are associated with the child's perceptions of being restricted from foods. In this study, girls' perceptions of overeating and negative feelings about their snack food intake were more closely related to parents' reports of restriction and girls' perceptions of restriction than to the amount of restricted foods that they consumed. Previous work indicates that restriction draws children's attention to restricted foods (3). At the same time, however, the results of this study indicate that parents' restriction may convey expectations to their daughters about limiting the intake of restricted foods. As a result, restricting girls' access to foods may not only increase girls' desire to obtain and consume those foods, but may set them up for negative self-evaluation as they find their behavior at odds with parental expectations.

Costanzo and Woody (6) contend that parental control in the feeding domain undermines children's ability to develop self-control over eating. Restrictive feeding practices may have adverse effects on children's development of self-control in eating by promoting the intake of restricted foods and by negatively coloring children's views of their own ability to control food intake. This perspective is consistent with observations that children as young as age 2 have the ability to compare their behavior to parental expectations and to evaluate their behavior accordingly (14,15). Because young children tend to interpret their behavior according to its "goodness" or "badness" (16), restrictive feeding practices may convey meaning to children about what constitutes "good" and "bad" eating behavior and/or foods. In a study of 457 fourth-grade children, 15% reported feeling guilt about eating foods that might "make one fat" very often and 37.7% reported feeling guilt sometimes (17). The findings of this study suggest that these negative feelings about eating "bad" foods or eating too much food have developmental origins, in part, from parental expectations to restrict food intake.

Whether chronic restriction can affect young girls' developing attitudes towards their eating and self-image is unknown. Because weight issues and eating problems are more prevalent in girls and women, parents may be particularly restrictive about their daughters' eating (18). Some evidence supports the view that young girls might be highly sensitive to parental expectations about limiting consumption of restricted foods. Young girls tend to take greater responsibility for task failure than do boys, and may possess a stronger desire to meet external standards than boys (19). Additionally, women may be more shame-prone than men (20). More research is needed to address whether girls who receive chronic parental restriction are at risk for making globally negative evaluations about their eating and about themselves.

Currently only 1% of children aged 2 to 19 years meet all guidelines specified by the Food Guide Pyramid

Whether girls who receive parental restriction are more likely to internalize values on restrained eating is also unclear. This question is of particular interest given that dieting has become normative among young females (8,21). One recent study indicates that restrictive child-feeding practices may contribute to the development of restrained eating among young girls. Hill and colleagues (22) observed that school-aged girls who perceived higher levels of parental

restriction in eating tended to report higher levels of dietary restraint. Longitudinal work is needed to investigate whether effects of parental restriction on girls' self-evaluation of eating include an increased risk of restrained eating and dieting.

APPLICATIONS

- Currently only 1% of children aged 2 to 19 years meet all guidelines specified by the Food Guide Pyramid (24). Restricting young girls' access to foods high in fat and sugar may appeal to parents as a straightforward approach to promoting eating patterns consistent with current dietary recommendations.
- The results of this study provide evidence that restrictive feeding practices may serve to promote young girls' intake of restricted foods and negative feelings about eating those foods. These findings suggest that efforts aimed at fostering healthful patterns of eating among children should not restrict children's intake from palatable energy-dense foods, but rather provide variety and moderation in children's eating.
- Child feeding guidance should provide parents and caregivers with skills to create a flexible, yet structured eating environment in which children are encouraged to make reasonable decisions about what and how much to eat.

References

1. Birch, LL.; Fisher, JO.; Grimm-Thomas, K. The development of children's eating habits. In: Meiselman, HL.; MacFie, HJH., editors. Food Choice, Acceptance and Consumption. London, England: Blackie Academic and Professional; 1996. p. 161-206.
2. Birch LL, Fisher JO. Development of eating behaviors among children and adolescents. *Pediatrics* 1998;101(suppl):S539-S549.
3. Fisher JO, Birch LL. Restricting access to a palatable food affects children's behavioral response, food selection, and intake. *Am J Clin Nutr* 1999;69:1264-1272. [PubMed: 10357749]
4. Fisher JO, Birch LL. Restricting access to foods and children's eating. *Appetite* 1999;32:405-419. [PubMed: 10336797]
5. Johnson SL, Birch LL. Parents' and children's adiposity and eating style. *Pediatrics* 1994;94:653-661. [PubMed: 7936891]
6. Costanzo PR, Woody EZ. Domain-specific parenting styles and their impact on the child's development of particular deviance: the example of obesity proneness. *J Soc Clin Psych* 1985;3:425-445.
7. Brownell KD, Rodin J. The dieting maelstrom: is it possible and advisable to lose weight? *Am Psychol* 1994;49:781-791. [PubMed: 7978665]
8. National Institutes of Health Consensus Statement. Methods for voluntary weight loss and control. *Nutrition* 1996;12:663-671. [PubMed: 8936488]
9. Hamill VV, Drizd TA, Johnson CL, Reed RB, Roche AF, Moore WM. Physical growth: National Center for Health Statistics percentiles. *Am J Clin Nutr* 1979;32:607-629. [PubMed: 420153]
10. Birch LL. Dimensions of preschool children's food preferences. *J Nutr Educ* 1979;11:77-80.
11. Cutting TM, Fisher JO, Grimm-Thomas K, Birch LL. Like mother, like daughter: familial patterns of overweight are mediated by mothers' dietary disinhibition. *Am J Clin Nutr* 1999;69:608-613. [PubMed: 10197561]
12. Byrne, BM. Structural Equation Modeling with LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications, and Programming. Mahwah, NJ: Erlbaum; 1998.
13. Recommended Dietary Allowances. 10. Washington, DC: National Academy Press; 1989.
14. Stipek, D. The development of pride and shame in toddlers. In: Tangney, JP.; Fisher, KW., editors. Self-Conscious Emotions: Shame, Guilt, Embarrassment, and Pride. New York, NY: Guilford Press; 1995. p. 237-252.
15. Lewis, M. The emergence of human emotions. In: Lewis, ML.; Haviland, JM., editors. Handbook of Emotions. New York, NY: Guilford Press; 1993. p. 223-245.

16. Burhans KK, Dweck CS. Helplessness in early childhood: the role of contingent worth. *Child Dev* 1995;66:1719–1738. [PubMed: 8556895]
17. Gustafson-Larson AM, Terry RD. Weight-related behaviors and concerns of fourth-grade children. *J Am Diet Assoc* 1992;92:818–822. [PubMed: 1624650]
18. Costanzo PR, Woody EZ. Parental perspectives on the obesity in children: the importance of sex differences. *J Soc Clin Psychol* 1984;2:305–313.
19. Pomerantz EM, Ruble DN. The role of maternal control in the development of sex differences in child self-evaluative factors. *Child Dev* 1998;69:458–478. [PubMed: 9586219]
20. Barrett, KC. A functionalist approach to shame and guilt. In: Tangney, JP.; Fisher, KW., editors. *Self-Conscious Emotions: Shame, Guilt, Embarrassment, and Pride*. New York, NY: Guilford Press; 1995. p. 25-63.
21. Strauss RS. Self-reported weight status and dieting in a cross-sectional sample of young adolescents: National Health and Nutrition Examination Survey III. *Arch Pediatr Adolesc Med* 1999;153:741–747. [PubMed: 10401809]
22. Edmunds H, Hill AJ. Dieting and the family context of eating in young adolescent children. *Int J Eat Disord* 1999;25:435–440. [PubMed: 10202654]
23. Munoz KA, Krebs-Smith SM, Ballard-Barbash R, Cleveland LE. Food intakes of US children and adolescents compared with recommendations. *Pediatrics* 1997;100:323–329. [PubMed: 9282700]
24. Food Guide Pyramid. A Guide to Daily Food Choices. Washington, DC: US Dept of Agriculture, Human Nutrition Services; 1990. Home and Garden Bulletin No. 252

FIG 1. Experimental protocol to measure girls' intake of snack foods following a standard lunch

^aGirls' fullness was assessed before the free-access snack intake period using figures that depict "hungry", "half-full", and "full."

^bTo ensure that each girl tasted the 10 experimental snack foods before the free-access snack intake period, a preference procedure was performed using figures depicting "yummy", "just okay", and "yucky".

FIG 2. Path coefficients for a model evaluating the relationships between parents' child-feeding practices and daughters' eating (N=158). The path coefficients are identical for the initial and revised models, with the exception that the path between girls' actual snack food intake and girls' reports of having eaten "too much" snack food was not estimated in the revised model

^aValue is statistically different from 0; critical value ≥ 1.98 .

Table
Girls' intake, preferences, and negative evaluation about eating the 10 snack foods provided during a 10-minute free-access session following a standard lunch (N=158)

Food	Intake (kcal)		Reported food has "yummy" taste ^a	Reported eating too much	Reported negative emotion about eating
	Mean ± Standard error	Range			
Pretzels	2±0	0-26	62	15	17
Popcorn	2±0	0-25	63	17	17
Fig bars	3±1	0-112	36	13	16
Frozen yogurt	4±1	0-137	60	12	17
Nuts	6±1	0-85	43	13	23
Chocolate chip cookie	7±2	0-211	70	18	14
Ice cream	12±3	0-213	78	11	18
Potato chips	16±2	0-119	64	14	16
Fruit-chew candy	24±3	0-168	78	18	14
Chocolate bars	47±5	0-335	76	16	16
Total intake	123±7	0-436	—	—	—

^aData from rank-order preference procedure performed before the free access intake session.