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# If you are good you can have a cookie: How memories of childhood food rules link to adult eating behaviors<sup>☆</sup>

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## Abstract

*Objective:* The aim of this study was to determine whether memories of parental rules about food during childhood are linked to adult eating behaviors. *Method:* An adult community sample ( $N=122$ ) (56% female, 44% male) with a mean age of 44.6 years completed self-report measures of weight and dieting history, current eating patterns, and recollection of different types of rules about food from their parents. Three types of food rules were assessed: (a) rules which restrict intake of certain foods, (b) rules which encourage food intake, and (c) rules where food is used to reward or punish behavior. *Results:* Binge eating and dietary restraint in adulthood are significantly related to participants' recollection of their parents using food to control their behavior in childhood. These results held true regardless of body mass index (BMI), ethnicity, age, or childhood weight status. *Discussion:* This study suggests that some childhood food rules may have a long-lasting impact on eating behaviors. Further research on the impact of using food to reward and punish children's behavior is needed to inform recommendations to parents regarding the use of food for behavioral control.

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*Keywords:* Childhood food rules; Adult eating behaviors; Eating patterns; Binge eating; Dietary restraint

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## 1. Introduction

Parents play an important role in the development of children's food habits and preferences. Many parents attempt to influence their children's food intake with rules about

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which foods may be eaten and at what times. Some rules may restrict access to foods (e.g., You are not allowed to eat junk food), while others encourage eating (e.g., You must eat everything on your plate), or are designed to elicit desired behavior (e.g., You will get an ice cream if you finish your homework early). The impact of these rules on future eating behavior has important implications for parents who are striving to help their children develop healthy eating behaviors.

Only two studies have begun to address the impact of parental food rules. Most recently, [MacBrayer, Smith, McCarthy, Demos, and Simmons \(2001\)](#) tested the relationship between eating disorder symptoms and a range of family food-related experiences among adolescents. Their family food experiences measure included several items that specifically addressed family rules about eating. A positive relationship was found between reported bulimic symptoms and having family food rules where food is used to reward success and good behavior. This suggests a link between growing up with food used as a reward for good behavior and a later preoccupation with food and increased risk of binge eating.

Another study examined childhood memories about food and whether certain childhood eating behaviors were related to dieting status among obese and average weight adults ([Brink, Ferguson, & Sharma, 1999](#)). Participants in this study were asked about their weight history, family experiences with food, and childhood memories about food. Food rules were not directly assessed, but participants' recall of food rules was noted and included in content analyses. Obese individuals provided substantially more comments about food rules than any other weight group, and the most commonly cited food rule was to "clean your plate at each meal." Women recalled more food rules than men, and unsuccessful dieters remembered more rules than successful dieters ([Brink et al., 1999](#)). These data suggest that childhood food rules to eat beyond the point of fullness may influence the likelihood of overeating as an adult.

There are also a number of laboratory studies by [Birch and Fisher \(2000\)](#) and [Fisher and Birch \(1999a\)](#) that assess the impact of parental attempts to control children's eating behavior. Specifically, these researchers have found that children whose parents try most to restrict their access to unhealthy snack foods are subsequently more likely to eat those foods when they are available ([Birch & Fisher, 2000](#); [Fisher & Birch, 1999a](#)). Similarly, they have found that restricting children's access to palatable foods in a laboratory setting increased children's desire and intake of those foods ([Fisher & Birch, 1999b](#)). The authors interpret these findings as support for the hypothesis that parents who attempt to restrict unhealthy foods may paradoxically be increasing the desirability and later selection of these foods by their children. In other words, children who are restricted from eating certain desirable foods (like sweets or high-fat snacks) may "rebound" by eating too much of these foods when they have a chance to do so outside of their parent's awareness.

While these studies provide preliminary evidence of the influence of parental food rules in general, none of them distinguish among different types of rules, or specific relationships between types of rules and specific eating problems. The purpose of the present study is to retrospectively measure "food rules" that adults recall from their childhood and to examine the relationship between different types of food rules and

current eating behaviors. Three types of food rules are assessed: (a) rules that *restrict* the intake of certain foods (e.g., you are not allowed to eat junk food); (b) rules that *encourage* the intake of certain foods (e.g., clean your plate at each meal); and (c) rules that use food to *control* behavior (e.g., your favorite foods were withheld from you as punishment for bad behavior). The current eating behaviors assessed were dietary restraint and binge eating. We hypothesized that participants who grew up with more food rules in general would be more likely to engage in maladaptive eating behaviors as adults.

## 2. Method

### 2.1. Participants

Participants were 122 adults (56% female, 44% male) aged 19–85 years, with a mean age of 46.06 years. The sample was 93% Caucasian (with 2.4% Hispanic, 1.6% Asian, 1.6% participants of other ethnicity).

### 2.2. Measures

#### 2.2.1. Demographic questions

This measure assessed age, gender, ethnicity, height, and weight. Height and weight measurements were collected to calculate each participant's BMI.

#### 2.2.2. Food rules

Participants used a Likert scale, ranging from 1 (*never*) to 5 (*always*), to indicate how often they heard particular food rules at home when they were children. There were 21 different items in this measure to provide participants with a range of possible food rules that they may have recalled. Food rule items fell into one of three categories: (a) restriction rules, (b) encouraging rules, and (c) control rules. Restriction rules included 8 rule items related to the restriction of certain foods, such as “you are not allowed to eat junk food.” The alpha reliability for this subscale of items was .75. Encouraging rules included 9 rules that parents use to promote or encourage the intake of foods, such as “if you put it on your plate, you have to eat it.” The alpha reliability for these items was .85. Control rules included 4 items where parents used food to reward or punish behavior, such as “you were rewarded for good behavior or accomplishments with sweets or favorite foods.” The alpha reliability for these items was .69.

#### 2.2.3. Restraint scale (Herman & Polivy, 1980)

The restraint scale is a 10-item self-report measure which identifies individuals with excessive concerns about their weight and who try to control weight with dieting. This measure also assesses weight fluctuations, chronic dieting, and related attitudes toward eating. The alpha reliability for this scale in the present sample was .77.

#### 2.2.4. Binge eating behaviors

Seven items were included to assess symptoms of binge eating disorder according to the criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). This was not a diagnostic measure, but items assessed symptomatic behaviors common to Binge Eating Disorder, such as engaging in binge eating, eating in secret, eating large amounts of food when not hungry and until uncomfortably full, and feeling out of control while eating. These items were included to assess if certain food rule experiences were related to binge-eating behaviors and dietary restraint. The alpha reliability for these items was .89.

#### 2.2.5. Weight history

Fourteen items were included in the survey to assess participants' past weight history, parental concern with their weight as a child, participants' present satisfaction with their weight and body shape, and parental dieting and weight history. Items were presented in forced-choice format where 4 items required yes/no responses regarding parental concern about weight and parents' dieting status, and 10 items required participants to indicate their own weight and parental weight history using "underweight," "average," or "overweight" response choices. The final 2 items which assessed present satisfaction with body weight and shape used a Likert scale ranging from 1 (*very satisfied*) to 4 (*very dissatisfied*).

### 2.3. Procedure

Surveys were administered at two public venues during the month of July 2001. Participants were approached at community-wide public events in a central Connecticut city, and were invited to voluntarily complete a four-page survey about eating habits. Participants were assured that their responses would remain anonymous, and that they could take as much time as needed to answer the questions. Completion of surveys took approximately 10–15 minutes. After surveys were returned to the experimenters, participants were debriefed and were given a small reward to thank them for their participation. Approximately 15% of individuals approached refused to participate. Four of the 126 surveys were excluded from analysis due missing data.

## 3. Results

The average BMI of the total sample was 24.88 (S.D.=4.01), and ranged from 17.5 to 37.9. The average BMI for females was 23.48 (S.D.=3.54) and for males was 26.57 (S.D.=3.89). To examine potential gender differences with respect to BMI, age, the primary variables of dietary restraint, binge eating, and each of the food rule subscales, ANOVAs were computed. No significant gender differences emerged on any of the variables, except for BMI,  $F(1,113)=19.65$ ,  $P<.001$ ) which was higher for males than females. It should be noted that mean restraint scores found for females ( $M=12.85$ ,

S.D.=5.54) and males ( $M=12.25$ , S.D.=5.70) are similar to those reported elsewhere (Klem, Klesges, Bene, & Mellon, 1990), although the mean for females may be slightly lower compared to previous research conducted in college populations (Allison, Kalinsky, & Gorman, 1992).

Descriptive analyses showed that 31% of women and 22% of men were currently dieting. Seventy-eight percent of women and 57% of men reported having dieted in the past, and 22% of women and 43% of men had never dieted. With respect to childhood weight of participants, only 16% of women and 24% of men reported being overweight as a child. Sixty-two percent of females and 53% of males reported having an average childhood weight, and 21% of females and 23% of males indicated being underweight as a child. With respect to body satisfaction, 49% of females and 39% of males were somewhat or very dissatisfied with their weight, and 48% of females and 45% of males were somewhat or very dissatisfied with their body shape.

### 3.1. Preliminary food rule analyses

Analyses of food rule items showed no gender differences with respect to which food rules were recalled or who most commonly endorsed food rules. The five most frequent food rules recalled included “clean your plate at each meal,” “you must eat your vegetables at dinner,” “you cannot have dessert until you finish your meal,” “you have to at least try or taste new foods,” and “don’t take more than you can eat.” The most frequently recalled person to endorse food rules was the mother (75%), followed by the father (20%), grandmother (2%), and other (3%). Table 1 provides means for food rule items and the percentage of participants who recalled each item sometimes, often, or always.

### 3.2. How childhood food rules relate to current eating behaviors

The relationship between endorsement of food rules and current eating behaviors was assessed using Pearson bivariate correlation coefficients. As might be expected, dietary restraint, binge eating, and the three food rule categories were significantly intercorrelated, with  $r$  values (two-tailed,  $P < .01$ ) ranging from .25 to .67. Fisher’s  $r$  to  $z$  transformations were used to test for gender effects and found that there were no gender differences on any of the correlations on the primary variables, except between restriction food rules and control food rules, which were more highly correlated for males ( $z = -2.65$ ,  $P < .01$ ) than for females.

As we were primarily interested in examining the association between food rules and specific eating behaviors, separate forward regression analyses were performed using three different outcome variables: participants’ total scores on the binge scale (binge eating), total scores on the restraint scale (dietary restraint), and BMI. We tested for the predictive value of: gender, age, ethnicity, childhood weight status, control food rules, restriction food rules, and encouraging food rules on these outcome variables. The first regression model for the total sample with binge eating as a dependant variable was significant, adjusted  $R^2 = .27$ ,  $F(1,104) = 39.23$ ,  $P < .0001$ , where individuals who recalled more frequent control food rules were more likely to engage in binge eating during adulthood ( $\beta = .52$ ). The overall regression

Table 1

Food rule items presented in descending order of mean scores and with percentage of participants who recalled each rule sometimes, often, or always

Food rule	Mean	S.D.	%
Clean your plate at each meal	3.76	1.25	82
You must eat your vegetables at dinner	3.71	1.45	84
You have to at least try or taste new foods	3.69	1.21	73
You cannot have dessert until you finish your dinner	3.57	1.37	75
Don't take more than you can eat	3.36	1.26	73
If you put it on your plate, you have to eat it	3.31	1.36	72
You must sit at the table until you are finished your meal	3.28	1.43	70
Do not eat or snack between meals	2.85	1.13	59
If you pay for it, you have to eat it	2.71	1.32	54
Sweets are bad for you	2.40	1.15	45
Eating sweets will make you fat	2.39	1.33	44
You cannot eat sweets	2.19	1.05	38
You were given your favorite foods to make you feel better when you were upset	2.10	1.21	32
You are not allowed to eat junkfood	2.03	1.05	31
You must eat (a certain food) at least once a week	2.03	1.42	19
You were rewarded for good behavior or accomplishments with sweets or favorite foods	2.01	1.12	33
You can only have sweets on special occasions	1.93	1.22	25
You must limit your intake of high-fat foods	1.85	1.11	26
You cannot eat after a certain hour of the day	1.78	1.09	19
If you misbehaved, one punishment was not getting dessert or going to bed without supper	1.63	1.01	21
Your favorite foods were withheld from you as punishment for bad behavior	1.51	0.83	12

Food rule items were rated by participants from 1 (*never*) to 5 (*always*).

model using restraint as a dependant variable was also significant, adjusted  $R^2=.30$ ,  $F(4,95)=11.79$ ,  $P<.0001$ . Variables that were significantly associated to dietary restraint included childhood weight status ( $\beta=.28$ ,  $P<.0001$ ), control food rules ( $\beta=.27$ ,  $P<.0001$ ), BMI ( $\beta=.28$ ,  $P<.0001$ ), and gender ( $\beta=.19$ ,  $P<.0001$ ). Here, individuals who recalled more frequent control rules, who had a higher BMI, and who were female were more likely to be engaging in dietary restraint in adulthood. Finally, the regression model with BMI as a dependant variable was significant, adjusted  $R^2=.28$ ,  $F(3,95)=13.71$ ,  $P<.0001$ . However, BMI in adulthood was not significantly related to any food rules, and was instead associated with gender ( $\beta=.40$ ,  $P<.0001$ ), restraint ( $\beta=.33$ ,  $P<.0001$ ), and age ( $\beta=.19$ ,  $P<.0001$ ). Specifically, individuals were more likely to have a higher BMI if they were older, female, and engaged in more dietary restraint.

Following the regression analyses for the total sample, the relationship between dieting status of participants and the primary variables was examined, which was conducted by splitting the sample into current and noncurrent dieters. There were 33 current dieters in the sample who were compared to noncurrent dieters ( $n=88$ ) using regression analyses. [Table 2](#)

Table 2  
Regression analyses of predictors for restraint, binge eating, and BMI in current and noncurrent dieters

Sample	Predictor variable	$\beta$	Adj. $R^2$	$\Delta R^2$	$\Delta F$
<i>Restraint</i>					
Current dieters ( $n = 33$ )	Control rules	.29 <sup>a</sup>	.07	–	4.11 *
Noncurrent dieters ( $n = 88$ )	BMI	.39	.16	–	14.77***
	Control rules	.30	.26	.10	13.38***
	Child weight	.28	.31	.05	11.67***
	Gender	.28	.37	.06	11.53***
<i>Binge eating</i>					
Current dieters ( $n = 33$ )	Control rules	.45	.17	–	6.57**
Noncurrent dieters ( $n = 88$ )	Control rules	.41	.27	–	29.85***
	Restrict rules	.24	.31	.04	18.96***
<i>BMI</i>					
Current dieters ( $n = 33$ )	Gender	– .41	.14	–	5.21 *
Noncurrent dieters ( $n = 88$ )	Gender	– .43	.14	–	13.94**
	Age	.28	.21	.07	11.23**

<sup>a</sup> All reported variables had  $t$  values significant at  $P < .05$  or better unless otherwise noted.

\*  $P < .05$ .

\*\*  $P < .01$ .

\*\*\*  $P < .0001$ .

presents the regression analysis for current versus noncurrent dieters. After controlling for the predictor variables, control food rules was the only variable that significantly predicted binge eating and restraint outcome variables among current dieters. For noncurrent dieters, binge eating was predicted by both control and restriction food rules. Dietary restraint in this subsample was predicted by BMI, control rules, childhood weight status, and gender, mirroring the same regression results for this dependant variable as in the total sample. As in the previous regression analysis, BMI was significantly related to gender among both current and noncurrent dieters, as well as age among noncurrent dieters.

In a third regression analysis, the sample of noncurrent dieters ( $n = 88$ ) was further divided into participants who were not currently dieting but who had dieted in the past; “ever” dieted ( $n = 50$ ), and individuals who had never dieted ( $n = 38$ ). These groups were compared to determine whether differences might exist on outcome variables using a sample of nondieters. Regression results are summarized in Table 3. For both samples of participants who had ever and never dieted, control rules was significantly related to binge eating, and restriction rules were related to binge eating among “ever” dieters. For the “ever-dieted” sample, control rules also predicted dietary restraint, and for “never dieters,” restriction rules alone predicted dietary restraint. Among both of these subsamples, gender was again significantly related to BMI. Age was additionally related to BMI among those who had ever dieted, whereas restraint was significantly related to BMI among never dieters.

Because the regression analyses showed a significant relationship among control rules, binge eating, and dietary restraint, but not between control food rules and BMI, a median split

Table 3  
Regression analyses of predictors for restraint, binge eating, and BMI in “never” vs. “ever” dieters

Sample	Predictor variable	$\beta$	Adj. $R^2$	$\Delta R^2$	$\Delta F$
<i>Restraint</i>					
Ever dieted ( $n=50$ )	Control rules	.43 <sup>a</sup>	.16	–	8.63 *
Never dieted ( $n=38$ )	Restrict rules	.47	.19	–	8.67 *
<i>Binge eating</i>					
Ever dieted ( $n=50$ )	Control rules	.36	.24	–	14.12**
	Restrict rules	.32	.30	.06	9.97***
Never dieted ( $n=38$ )	Control rules	.57	.30	–	15.60***
<i>BMI</i>					
Ever dieted ( $n=50$ )	Gender	–.55	.27	–	14.70**
	Age	.28	.33	.06	10.24**
Never dieted ( $n=38$ )	Gender	–.54	.27	–	12.76 *
	Restraint	.42	.43	.16	13.21***

<sup>a</sup> All reported variables had  $t$  values significant at  $P < .05$  or better unless otherwise noted.

\*  $P < .01$ .

\*\*  $P < .001$ .

\*\*\*  $P < .0001$ .

was performed on the control rules variable which divided the sample into participants who scored high (those who had more frequent endorsement of control rules) and those who scored low (less frequent endorsement of control rules). Fifty-three percent of the sample scored low on control rules, and 47% were high scorers. A one-way ANOVA was then computed to test the impact of this variable on BMI. This yielded a significant effect  $F(1, 112) = 4.32$ ,  $P < .05$ , indicating that individuals who scored high on control rules had a higher BMI than those who scored low on control rules.

#### 4. Discussion

The present findings indicate that adults who remember their parents using food to control their behavior through reward or punishment, have higher rates of binge-eating and dietary restraint. This relationship occurred regardless of dieting status. Interestingly, control rules are recalled less frequently than other food rules, yet they appear to play an important role in problematic eating behaviors. These results are similar to findings by Brink et al. (1999) who reported that dieters recalled food being used as a reward or punishment.

The control rules in this study included two messages. First, food was used as a reward for desired behavior and withheld as a punishment for bad behavior. Second, food was used to make the child feel better when upset. If parents teach children that they can earn dessert by behaving themselves, these children may grow into adults who get home after a challenging day at work where they “behaved themselves” and feel like binge eating on sweets. Similarly, if children who fall down and hurt themselves are immediately offered an ice



cream cone to “make it feel better,” they too may grow up to view food as a way to self-soothe after both physical and emotional injuries.

Endorsement of control rules was also significantly related to dietary restraint in each of the regression analyses. The particular mechanism by which control rules impact dietary restraint is not clear, but one possible explanation for its role is within the cognitive-behavioral view of the etiology of eating pathology, which highlights the importance of the diet-binge cycle where excessive dietary restraint is a precursor for binge-eating (Fairburn & Wilson, 1993). According to this perspective, an individual avoids eating certain types of foods in an attempt to alter physical shape or weight. However, when a “normal” portion of the same forbidden foods is unavoidably consumed in future situations as a result of deprivation, the individual attributes this event as having “blown the diet” and justification for eating more food and/or binge-eating. Following the binge episode, the individual recommits to the diet more stringently to compensate for the diet “failure,” in which food becomes withheld as punishment for the “bad” binge-eating behavior. The diet-binge cycle becomes perpetuated further with each binge and subsequent attempts at restriction of food. Thus, while the present results of this study show that control rules are most highly related to binge-eating, it is possible that these food rules could contribute to the overall likelihood that an individual will engage in the diet-binge cycle.

It is worthwhile to consider the reasons why control rules are particularly salient in the present findings. Parents may use food rewards or punishments to influence children’s behavior because it is effective. Parenting books encourage the use of food to reinforce desired behavior of children, and psychologists recommend giving food to children to create behavioral change during challenging transitions, such as toilet training (Schaefer & DiGeronimo, 1997). Media advertisements frequently promote the use of food to make children feel better and imply that parents can show love to their children by feeding them sweets. Research has demonstrated that offering dessert as a reward is an effective method of encouraging children to eat novel foods (Hendy, 1999), and that children’s preferences for certain foods increase when the same foods are used as rewards (Newman & Taylor, 1992).

However, while food may work to reinforce behavior in the short term, it is possible that using food in this manner may play a role in establishing children’s preferences for unhealthy foods, and may simultaneously communicate mixed messages to children about the role that food should play in their lives. Parents may encourage their children to eat healthy foods, but at the same time, reward good behavior with unhealthy foods. This teaches children that some foods that are good for you but the foods that are bad for you can be earned by being good. It is easy to see how children could become confused. Clearly, more research is needed to determine whether and how control rules exert effects on eating behaviors.

An unexpected finding in the present study was that control rules did not significantly contribute to the variance of BMI in any of the regression analyses, despite the consistent results that these food rules were related to both binge eating and dietary restraint. We considered the possibility that control rules may be a more meaningful construct as a categorical variable, which could then be used to help determine whether individuals who endorse more frequent control rules are at a potentially higher risk for being overweight than those who report these food rules less frequently. This hypothesis was confirmed once a

median split was performed on the control rules variable, which showed a significant difference in BMI between individuals who scored high versus low on control rules. This finding suggests that control rules could play a role in contributing to body weight. Future research with larger samples and a wider range of eating pathology is needed to help clarify the existence and strength of this relationship.

There are several limitations to this study. First, the findings of this study are based on retrospective self-report data, and it is not possible to determine how food rules contributed to the development of problematic eating behaviors in adulthood. Studies that examine food rules reported by children and their parents are needed. Second, it is possible that the monomethod nature of the data in this study resulted in shared method variance that could have inflated the obtained correlations. Third, the sample of dieters was primarily female, making it more difficult to compare gender. In addition, the manner in which participants were recruited does not rule out potential sampling bias, as characteristics of these individuals who were present at community-wide events could have influenced the results in unknown ways.

The present study did not examine food rules among eating disordered or clinically obese samples. This is an important next step for future research. The potential differences in food rule experiences among obese people and those with eating disorders could be informative for understanding maladaptive eating behaviors and for prevention by targeting parents of children who already have risks for developing an eating disorder or becoming obese.

With respect to the assessment of food rules, additional research is needed to specifically examine control rules to more clearly determine whether there are different outcomes for eating behaviors if food is used as a reward or punishment for behavior. In the present study, food that was used as a reward for good behavior and as a punishment for undesirable behavior were both related to problematic eating in adulthood. However, the small number of items that were used to assess this and the limited knowledge that is available about how food rules impact behavior necessitate more work in this area. It may be useful to separate rewarding versus punishing aspects of food rules in future assessment for these purposes.

We do not know the long-term impact of food rules on eating habits, and many questions remain. A primary hypothesis generated from the present study is that using food to control behavior, either as a reward or punishment, may have an impact on maladaptive eating behaviors in adulthood. Other empirical questions also need to be addressed. Are children who eat only healthy foods at home more likely to continue to eat healthily when they become adults or instead seek unhealthy foods that were deprived at home? Do reward and punishment food rules differentially affect the likelihood of binge-eating and dietary restraint? Do food rules impact eating behaviors differently in childhood than adulthood? There is a need to test whether control rules are primarily linked with unhealthy eating during childhood, if restrictive rules increase restraint of unhealthy foods and promote healthier eating in adulthood, and if adults who recall certain food rules from childhood endorse similar or different rules with their own children.

It is likely that most parents want to encourage healthy eating habits for their children. While parents are responsible for their child's eating patterns, the rising rates of obesity and the existence of eating disorders can create confusion as to what are the appropriate actions

for parents to take. On one hand, research suggests that withholding foods from children can lead to their increased desire and intake of those same foods (Fisher & Birch, 1999a, 1999b), but at the same time many parents are worried about obesity and may consequentially restrict access to unhealthy foods. Thus, despite concerns that depriving children of certain foods can lead to problematic eating, parents may feel that they have to control their children's food intake to ensure that they do not overeat unhealthy foods. The present findings of this study suggest a new direction for research that may be useful in examining the most effective parental strategies of feeding children. With a goal of future research to find positive ways for parents to encourage healthy eating and restrict unhealthy foods in their children, our findings indicate the importance of addressing rules about food and the ways in which food can be used as a powerful tool to control behavior.

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