

Short Communication

Mothers' self-reported grocery shopping behaviours with their 2- to 7-year-old children: relationship between feeding practices and mothers' willingness to purchase child-requested nutrient-poor, marketed foods, and fruits and vegetables

Kathryn Lively¹, Oluborode Babawale², David M Thompson², Amanda S Morris³, Jennifer L Harris⁴, Susan B Sisson¹, Marshall K Cheney⁵ and Karina R Lora^{6,*}

¹Department of Nutritional Sciences, University of Oklahoma Health Sciences Center, Oklahoma City, OK, USA: ²Department of Biostatistics and Epidemiology, University of Oklahoma Health Sciences Center, Oklahoma City, OK, USA: ³Human Development and Family Science, Oklahoma State University, Tulsa, OK, USA: ⁴Rudd Center for Food Policy and Obesity, Hartford, CT, USA: ⁵Department of Health and Exercise Science, Norman, OK, USA: ⁶Center for Public Health and Health Policy, University of Connecticut Health, 195 Farmington Avenue, Suite 2100, Farmington, CT 06032, USA

Final revision received 24 October 2016; Submitted 30 May 2017; Accepted 12 July 2017; First published online 7 September 2017

Abstract

Objective: To assess relationships between mothers' feeding practices (food as a reward, food for emotion regulation, modelling of healthy eating) and mothers' willingness to purchase child-marketed foods and fruits/vegetables (F&V) requested by their children during grocery co-shopping.

Design: Cross-sectional. Mothers completed an online survey that included questions about feeding practices and willingness (i.e. intentions) to purchase child-requested foods during grocery co-shopping. Feeding practices scores were dichotomized at the median. Foods were grouped as nutrient-poor or nutrient-dense (F&V) based on national nutrition guidelines. Regression models compared mothers with above-the-median *v.* at-or-below-the-median feeding practices scores on their willingness to purchase child-requested food groupings, adjusting for demographic covariates.

Setting: Participants completed an online survey generated at a public university in the USA.

Subjects: Mothers (*n* 318) of 2- to 7-year-old children.

Results: Mothers who scored above-the-median on using food as a reward were more willing to purchase nutrient-poor foods ($\beta=0.60$, $P<0.0001$), mothers who scored above-the-median on use of food for emotion regulation were more willing to purchase nutrient-poor foods ($\beta=0.29$, $P<0.0031$) and mothers who scored above-the-median on modelling of healthy eating were more willing to purchase nutrient-dense foods ($\beta=0.22$, $P<0.001$) than were mothers with at-or-below-the-median scores, adjusting for demographic covariates.

Conclusions: Mothers who reported using food to control children's behaviour were more willing to purchase child-requested, nutrient-poor foods. Parental feeding practices may facilitate or limit children's foods requested in grocery stores. Parent-child food consumer behaviours should be investigated as a route that may contribute to children's eating patterns.

Keywords
Feeding practices
Food purchase
Grocery shopping
Children
Influence

Parenting behaviours that respond to children's food requests at the grocery store may provide important information for the development of nutrition programmes to

promote children's healthy eating habits. Child participation in family food shopping facilitates their food consumer socialization experiences and introduces them to the retail

food environment^(1,2). Parents, peers and the media are the main consumer socialization agents of children⁽³⁾. Children aged 2–7 years make more food purchase requests than do older children^(4,5). This characteristic, coupled with the amount of time children spend with their caregivers in grocery stores^(6,7), creates an opportunity for caregivers to model healthy food selection⁽⁸⁾.

Pester power, 'a child's attempt to exert control over a purchase situation as a simple battle of wills (between children and parents)⁽⁹⁾, is one of the most successful strategies children use to influence parent purchases⁽⁹⁾. Usually, children request unhealthy, highly marketed foods (i.e. prepared meals, sweets), not healthy options, such as fruits and vegetables (F&V)⁽¹⁰⁾. Marketing nutrient-poor foods to children influences obesity-related dietary behaviours^(11,12).

Parental feeding practices influence children's health outcomes (i.e. food intake, weight)^(13–17). Use of food as a reward⁽¹⁸⁾ and food for emotion regulation⁽¹⁹⁾ may cause children to rely on external cues, hinder their ability to self-regulate food intake⁽²⁰⁾, and have been inconsistently associated with child weight^(21,22). Food to control behaviour is commonly used with children of various ages and in different settings (i.e. home, school)^(23–27). Modelling of healthy eating, in which parents purposely demonstrate eating behaviours and food choices to encourage similar behaviours⁽²⁸⁾, is positively associated with children's intake of healthy foods^(29,30). Except for two studies that reported associations of parental dimensions of feeding styles with children's influence on beverage purchases⁽³¹⁾ or parenting styles in relation to the healthfulness of parent-child food choices in grocery stores⁽³²⁾, most research into parental food socialization behaviours has been conducted in the home.

Examining parental feeding practices that may be associated with parents' purchases of highly marketed, nutrient-poor foods or low-marketed, nutrient-dense foods that children request when they co-shop together may be a route to explore understudied factors that influence children's eating behaviours. The present study's purpose was to assess the relationships of mothers' use of food for emotion regulation, food as a reward and modelling of healthy eating with mothers' self-reported willingness (i.e. intentions) to purchase nutrient-poor marketed foods and nutrient-dense foods (F&V) requested by their 2- to 7-year-old children during grocery co-shopping. We assessed differences between mothers with above-the-median *v.* at-or-below-the-median scores of self-reported feeding practices regarding frequency of willingness to purchase child-requested foods.

Methods

Study design and setting

Data for the current cross-sectional study were collected through an online survey administered using Qualtrics™.

Participants were mothers of 2- to 7-year-old children (*n* 318). The University of Oklahoma Health Sciences Center Institutional Review Board approved the protocol.

Procedure and measures

The online survey included questions about mother and child demographics, family characteristics, feeding practices and mothers' willingness to purchase child-requested foods during grocery co-shopping. Willingness is 'an individual's openness to opportunity, that is, his or her willingness to perform a certain behaviour in situations that are conducive to the behaviour'⁽³³⁾. Willingness is an alternative form of behavioural intentions^(34,35), tends to be highly correlated with intentions^(33,36) and has effectively predicted health behaviours^(37,38). Additionally, participants reported the frequency their child (i) went grocery shopping and (ii) made a food request during a grocery shopping trip in the past 30 d.

Mothers' feeding practices

Emotion regulation, food as a reward and modelling of healthy eating were assessed using the Comprehensive Feeding Practices Questionnaire⁽³⁹⁾. Response options were structured in a 5-point Likert-type scale, as follows: food for emotion regulation from 'never' to 'always'; and food as a reward and modelling from 'disagree' to 'agree'. Composite scores for each of the three feeding practices were computed by averaging their item values.

Frequency of mothers' willingness to purchase child-requested foods

Mothers responded to the hypothetical scenario: 'If your 2- to 7-year-old child would ask you to buy these foods when grocery shopping together, how often do you buy them?' Response options to the question were structured on a 5-point Likert scale with word anchors from 'never' (=1) to 'always' (=5). Mothers provided responses to a list of twenty-four items. Pictorial examples for each food item were provided. Foods were then categorized into nutrient-dense (e.g. F&V) and nutrient-poor (e.g. carbonated beverages) based on nutrient information provided by the manufacturer's Nutrition Facts label (see online supplementary material, Supplemental Table 1).

Data analyses

For each of the three feeding practices (use of food as a reward, use of food for emotion regulation, modelling of healthy eating), participants were separately categorized according to that practice's median composite score. Groups (those with scores above-the-median and those with scores at-or-below-the-median) were compared on the frequency with which they described their willingness to purchase food items requested by a child. Between-group comparisons were assessed first using non-parametric permutation tests and then in multivariable

regression models. Multivariable models adjusted for potential confounders (mother's age, employment status, education, child's age, household income, frequency of family dinners) that were identified using Kruskal–Wallis or Pearson's correlation tests. Coefficients from the final regression models, which included only covariates that were significantly associated with feeding practices ($P < 0.05$), represent adjusted between-group differences in the mean frequency of willingness to purchase a particular food. All analyses were performed using the statistical software package SAS version 9.4.

Detailed information on the methodology is presented in the online supplementary material, Supplemental File 1.

Results

Table 1 displays demographic characteristics and frequency of children's grocery shopping with mother and food requests during grocery shopping. Overall means (SD) of reported feeding practices were: food as a reward, 2.80 (1.18); food for emotion regulation, 1.65 (0.57); and modelling of healthy eating, 4.27 (0.71). Unadjusted comparisons of mothers' willingness to purchase nutrient-dense and nutrient-poor foods above-the-median and at-or-below-the-median use of the three feeding practices are provided in the online supplementary material, Supplemental Table 2.

In the adjusted analysis (Table 2), mothers with above-the-median use of food as a reward were less willing to purchase child-requested, nutrient-dense foods (β (mean between-group difference) = -0.20 , $P = 0.005$) than mothers with scores at-or-below-the-median for use of food as a reward, but more willing to purchase child-requested, nutrient-poor foods ($\beta = 0.60$, $P < 0.0001$). Further, mothers with above-the-median use of food for emotion regulation were more willing to purchase nutrient-poor foods requested by the child ($\beta = 0.29$, $P = 0.0031$) than mothers scoring at-or-below-the-median use for emotion regulation. Mothers with above-the-median modelling of healthy eating scores were more willing to purchase child-requested, nutrient-dense foods ($\beta = 0.22$, $P = 0.001$) than mothers scoring at-or-below-the-median for modelling, but less willing to purchase child-requested, nutrient-poor foods ($\beta = -0.36$, $P < 0.0001$).

Discussion

Mothers scoring above-the-median on use food as a reward and food for emotion regulation were more willing to purchase child-requested, nutrient-poor, marketed foods than mothers with at-or-below-the-median scores for these feeding behaviours. Above-the-median use of modelling healthy eating habits was positively associated

Table 1 Characteristics of the sample of mothers, and their 2- to 7-year-old children, who completed an online survey generated at a public university in the USA (n 318)

	Mean or n	SD or %
Mothers		
Age (years), mean and SD	32.6	6.7
Race/ethnicity*, n and %		
African American	13	4
Caucasian	264	83
Hispanic/Latino	7	2
Native American	12	4
Other or mixed race	21	7
Education, n and %		
High school or less	15	5
Some college or more	303	95
Employment, n and %		
Employed full-time	207	65
Employed part-time	48	15
Unemployed	63	20
Annual household income†, n and %		
<\$US 20 000	8	3
\$US 20 000–34 999	41	13
\$US 35 000–49 999	57	18
>\$US 50 000	210	66
Relationship status, n and %		
Single	24	7
Married/partnered	263	83
Divorced, separated, widowed	31	10
Frequency of family dinners, n and %		
≤3 d/week	29	9
4–6 d/week	154	48
7 d/week	135	43
Children		
Age (years), mean and SD	4.1	1.6
Gender, n and %		
Male	162	51
Female	156	49
Frequency child went grocery shopping with the mother, n and %		
Once per month	41	13
Two–three times per month	140	44
Once per week	102	32
More than once per week	35	11
Frequency child made a food request during grocery shopping in past 30 d, n and %		
None	0	0
1–2 times	210	66
3–4 times	80	25
5–6 times	15	5
7 times	13	4

*Information not reported for one participant.

†Information not reported for two participants.

with mothers' willingness to purchase nutrient-dense foods and negatively associated with willingness to purchase nutrient-poor foods in response to children's requests.

The grocery store is considered a stressful shopping environment for a parent and a child⁽⁴⁰⁾. While parents may seek to shop quickly and efficiently, children may focus on taking part in the shopping activity by trying to influence food purchases⁽⁹⁾. The instant gratification that characterizes young children's behaviours makes it difficult for them to resist a stimulus; if their requests are ignored or denied, they may respond by whining, screaming or crying⁽⁴¹⁾. Although mothers did not report

Table 2 Associations of mothers' feeding practices with frequency of mothers' willingness to purchase foods requested by the child during grocery store trips among of the sample of mothers of 2- to 7-year-old children (*n* 318)

Mothers' feeding practices	Nutrient-dense foods*		Nutrient-poor foods†	
	β (estimate of between-group mean difference)‡	SE of difference	β (estimate of between-group mean difference)‡	SE of difference
Use of food as a reward	-0.20	0.07	0.60	0.08
<i>P</i> value§	0.005		<0.0001	
Use of food for emotion regulation	-0.10	0.07	0.29	0.09
<i>P</i> value§	0.203		0.0031	
Modelling of healthy eating	0.22	0.07	-0.36	0.09
<i>P</i> value§	0.001		<0.0001	

*Includes fresh fruit and fresh/frozen vegetables.

†Includes carbonated beverages, baked goods, juice drinks and non-carbonated beverages, high-sugar breakfast cereals, snack foods, prepared foods and meals, and high-sugar, high-fat dairy products.

‡A positive between-group difference estimate denotes a higher frequency of food purchase among mothers with high feeding practice scores (above-the-median) than among mothers with low scores (at-or-below-the-median).

§Models were individually adjusted for variables determined to be potential cofounders. Depending on the model, these variables included child's age, frequency of family dinners, household income, employment status and/or highest education completed.

on strategies their children employed to request food purchases, nagging or 'just asking' strategies, especially for nutrient-dense, marketed foods, have been reported in children of similar ages^(4,8,10).

In the present study, children may have been more successful at influencing purchases of the foods that were used to control their behaviour. Mothers scoring above-the-median on use of food as a reward and food for emotion regulation were more willing to purchase child-requested, nutrient-poor marketed foods than mothers with at-or-below-the-median scores. Parenting traits exhibited by mothers at home may also occur when making food purchase decisions. Maternal use of food to control children's behaviour has previously been associated with the development of obesogenic eating behaviour, such as overeating and eating in the absence of hunger, in children⁽²¹⁾. To date, parents' use of these feeding practices has been mostly examined at home. The present study makes a contribution by reporting parenting food behaviours occurring in environments where food selection for the home takes place. Conversely, scores above-the-median in modelling of healthy eating habits were positively associated with mothers' willingness to purchase child-requested nutrient-dense foods. Parents' modelling of healthy eating has been positively associated with children's F&V consumption^(14,29), and inversely associated with children's fatty snack intake⁽⁴²⁾, dietary fat intake and lower weight⁽⁴³⁾. Mothers who intentionally model healthy dietary behaviours for their children may view the grocery store as an opportunity to talk about healthy foods and model purchasing of nutrient-dense foods (e.g. F&V) more frequently and nutrient-poor foods less frequently.

The role of children as influencers of parental food purchase decisions has gained attention⁽⁴⁴⁾. Helping parents better understand how their children influence what they purchase and then how those purchases may be used to reward children could assist families in modifying unhealthy family feeding practices and ultimately prevent

child obesity. Although the study sample was mostly high socio-economic status, findings highlight potential areas for investigation of parent-child co-shopping behaviours that may also occur among low-income families. This could increase our understanding of how the economic limitations these families face may affect caregivers' willingness to purchase foods their children request.

Study strengths include the assessment of reported maternal feeding practices at the grocery store when co-shopping with their children and the large sample size used for analyses. Limitations of the study include the potential for social desirability bias in responding to the survey questions. One of the recruitment strategies included advertising the study on the Department of Nutritional Sciences' Facebook page. Thus, some participants might have been more motivated to provide nutrition information than others. The sample was mostly White, high socio-economic status; maternal feeding behaviours differ by income level of the family^(45,46). Findings cannot be generalized to other populations. Mothers' choices of which child to report on may have influenced their responses. Frozen fruit was not included in the food categories. Participation was not restricted to living in Oklahoma; other geographical locations in which mothers resided might have influenced mother-child purchase behaviours. Mothers' feeding practice scores for use of food for emotion regulation and modelling did not vary much. This homogeneity prevented a more definite picture of the outcomes of the child purchase requests with mothers with high or low scores of these practices. Actual behaviours were not assessed. Instead, mothers were asked to report their willingness to perform a behaviour in response to a hypothetical scenario. However, the question format is in agreement with how willingness behaviours are assessed in that participants were given a description of a hypothetical situation to which they willingly responded⁽³⁶⁾. Willingness has effectively predicted various health behaviours^(37,38).

Conclusion

In conclusion, mothers' use of food to control children's behaviours was positively associated with mothers' willingness to purchase child-requested, nutrient-poor foods. Mothers with above-the-median modelling of healthy eating scores were more willing to purchase child-requested nutrient-dense foods than were mothers with at-or-below-the-median scores. Parents' food socialization practices related to children's influence over food purchases should be investigated in grocery stores to elucidate factors that may contribute to children's unhealthy eating behaviours. The role of young children in purchase outcomes opens new possibilities for health promotion. Allowing children to actively participate in healthy food (i.e. F&V) selection while engaging with their parents in healthy food purchase modelling⁽⁸⁾ may influence availability of foods in the home and, thus, consumption.

Acknowledgements

Acknowledgements: The authors thank the participants of the study and Kathy Kyler for editing the manuscript. *Financial support:* This work was supported by the Department of Nutritional Sciences at the University of Oklahoma Health Sciences Center and the National Institute of General Medical Sciences of the National Institutes of Health (under award number U54GM104938). The funders had no role in the design, analysis or writing of this article. *Conflicts of interest:* The authors declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article. *Authorship:* K.L. was responsible for management of data collection, literature review and manuscript writing. O.B. was responsible for statistical analysis and interpretation. D.M.T. contributed to overseeing statistical analysis and provided statistical advice. A.S.M., J.L.H., S.B.S. and M.K.C. contributed to study design and critically revised the manuscript. K.R.L. conceptualized the research, led the study design, critically revised the manuscript and has final responsibility for the study. *Ethics of human subject participation:* This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving human subjects/patients were approved by the University of Oklahoma Health Sciences Center Institutional Review Board. Written informed consent was obtained from all participants.

Supplementary material

To view supplementary material for this article, please visit <https://doi.org/10.1017/S1368980017002142>

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