

Short Communication

Implementation of parental feeding practices: does parenting style matter?

Allison Kiefner-Burmeister^{1,2,*}, Debra Hoffmann¹, Samantha Zbur¹ and Dara Musher-Eizenman¹

¹Psychology Department, Bowling Green State University, Bowling Green, OH, USA; ²Psychology Department, University of Findlay, 200 Howard Street, Findlay, OH 48540, USA

Submitted 18 August 2015; Final revision received 24 January 2016; Accepted 15 February 2016; First published online 15 March 2016

Abstract

Objectives: To combat childhood obesity, researchers have focused on parental feeding practices that promote child health. The current study investigated how parenting style relates to twelve parental feeding practices.

Design: Data on parenting style and parental feeding practices were obtained for a correlational study from users of Amazon's Mechanical Turk, an online survey system.

Setting: USA.

Subjects: Mothers of children aged 7–11 years (n 193).

Results: Parenting style related differentially to eleven out of the twelve measured practices. Authoritative mothers displayed more feeding practices that promote child health and fewer practices that impede child health. Authoritarian and permissive mothers displayed more unhealthy practices than authoritative mothers, but differed from each other on the practices they employed.

Conclusions: Parenting style may relate to more aspects of feeding than previously realized. The inclusion of numerous healthy feeding practices along with unhealthy practices in the current study provides suggestions for the application of healthy feeding behaviours. Instruction on feeding behaviours and parenting style should be a focus of future educational programmes.

Keywords
Parenting style
Parental feeding practices
Comprehensive Feeding Practices
Questionnaire
Food parenting

Childhood obesity is a major public health issue⁽¹⁾. Children who are overweight suffer from both psychological and physical ailments, including lowered self-esteem, social exclusion, skeletal pain, sleep apnoea, heart problems and diabetes^(2–6). The causes of childhood obesity are multifaceted⁽⁷⁾. A great deal of research has looked at both specific feeding practices and general parenting style and their relationship with children's eating behaviours and weight status^(8–11). Investigations have examined these two aspects of the family environment together^(12–14), but none have looked at parenting style in relation to a wide range of parental feeding practices.

Parenting style encompasses the values, beliefs and practices of parents that are communicated to the child^(15–17). Although parenting style is not specific to the domain of feeding, it relates to children's eating and weight. For example, children with authoritative parents have healthier eating behaviours and attitudes^(8,18–21), are more physically active⁽²²⁾ and have lower BMI^(21,23,24),

whereas children with authoritarian parents have unhealthier eating behaviours⁽²⁵⁾ and higher BMI^(10,23). Parents also influence children's eating behaviours and weight outcomes through specific feeding practices. For example, controlling or instrumental feeding practices (e.g. pressure to eat, restriction of certain foods, using food as a reward) promote overeating and poor dietary habits^(11,26–30) and interfere with children's ability to self-regulate energy intake⁽³¹⁾.

Few studies have examined how parenting style relates to specific feeding practices and most have studied only restriction, pressure to eat and monitoring⁽³²⁾. Hughes and colleagues measured these three feeding practices and parenting style, and found that authoritarian parents placed more pressure on children to eat than less demanding parents and were more likely to use food restriction⁽¹²⁾. Also, authoritative parents were more likely to use monitoring, a feeding practice generally associated with positive outcomes⁽¹²⁾. Hubbs-Tait and colleagues

*Corresponding author: Email kiefner-burmeister@findlay.edu

measured parenting style and six feeding practices with findings also in favour of authoritative style⁽¹⁴⁾. These studies focused on children of preschool age; how feeding practices relate to parenting styles for older children is under-studied⁽³³⁾.

Although findings suggest that parenting style relates to specific feeding practices, the practices investigated have been limited, focusing on restriction, pressure to eat and monitoring. Thus, the current study sought to expand on existing findings by examining the relationship of parenting style to parental feeding practices as measured by the Comprehensive Feeding Practices Questionnaire (CFPQ)⁽³⁴⁾. Based on previous research, we hypothesized that more flexible parenting styles would relate to healthier practices and that more laissez-faire and rigid parenting styles would relate to less healthy practices.

Methods

Participants

One hundred and ninety-three mothers (mean age 34.3 (SD 6.81) years) were recruited online via Amazon's Mechanical Turk (MTurk). Research finds that MTurk users more closely match US demographics with regard to sex, race, age and education than other Internet and university samples, and the data obtained through this recruitment method are at least as reliable as those from more traditional recruitment methods^(35,36). The majority of participants were Caucasian (76%) and had an undergraduate degree (37%) or some college (35%). Forty-three per cent were employed full- or part-time, and 36% were homemakers or unemployed. Approximately 3% of the mothers were underweight (BMI <18.5 kg/m²), 48% were normal weight (BMI between 18.5 and 24.9 kg/m²) and 49% were overweight or obese (BMI > 25.0 kg/m²). Approximately 8% of the children were underweight, 46% were normal weight and 42% were overweight or obese. Child ages were 7 years (*n* 51), 8 years (*n* 44), 9 years (*n* 42), 10 years (*n* 32) and 11 years (*n* 24). Inclusion criteria included: (i) at least one child (aged 7–11 years); (ii) a two-parent household (to control for feeding differences in single-parent households); (iii) English fluency; (iv) US citizenship; and (v) an MTurk rating of successful previous survey completion of 95% or higher. Participants received a total of \$US 0.75 for their participation in the study.

Procedure

A post on MTurk described the purpose of the study, eligibility requirements and the reward for participation. Individuals who wished to participate were directed to an external website to complete the survey. Participants agreed to an informed consent and completed a screening questionnaire about the inclusion criteria. The study was conducted according to the guidelines laid down in the

Declaration of Helsinki and all procedures involving human subjects were approved by the Institutional Review Board of Bowling Green State University.

Measures

Parenting styles

The Parental Authority Questionnaire (PAQ)⁽³⁷⁾ assessed the three parental authority types proposed by Baumrind: permissive, authoritarian and authoritative⁽¹⁷⁾. It contains thirty items. The items were reworded to measure mothers' reports of their own parenting style⁽³⁸⁾. Mothers responded to each item using a five-point scale (1 = 'strongly disagree', 2 = 'disagree', 3 = 'neutral', 4 = 'agree', 5 = 'strongly agree'). The PAQ has adequate discriminant and criterion-related validity^(19,39). In the current study the measures also had adequate reliability (Authoritative $\alpha=0.82$, Permissive $\alpha=0.83$, Authoritarian $\alpha=0.85$).

Parental feeding practices

The CFPQ⁽³⁷⁾ assessed twelve aspects of parental feeding behaviour (see Table 1). Mothers indicated the frequency with which they engaged in each behaviour using a five-point scale ('never' to 'always' and 'disagree' to 'agree'). The CFPQ has adequate validity and reliability⁽⁴⁰⁾.

Demographic questionnaire

Participants completed questions about their age, race/ethnicity, level of education, employment status, income, height and weight, as well as their child's age, height and weight. All variables were self- or parent report.

Statistical analyses

ANOVA and *post hoc* analyses were run to examine if and how key study variables differed between demographic groups. Consistent differences in key study variables between demographic groups were controlled for in subsequent analyses. To investigate the main study questions, participants were grouped by parenting style according to standardized scores. For example, participants whose authoritarian style Z-score was highest were categorized as authoritarian. A MANOVA was then used to examine how these parenting style groups differed on the twelve feeding practices, with *post hoc* analyses to identify specific differences. Data were analysed using the statistical software package IBM SPSS Statistics Version 22, with $P<0.05$ taken as the criterion for significance.

Results

Demographic differences

Feeding practices differed ($P<0.05$) based on maternal race/ethnicity, weight status, employment groups and child weight status. *Post hoc* analyses with pairwise comparisons

Table 1 Mean differences among parenting style groups on feeding practices in an online survey of mothers of children aged 7–11 years (*n* 193), USA

	Authoritative		Authoritarian		Permissive		<i>F</i>	<i>P</i>
	Mean	SD	Mean	SD	Mean	SD		
Child control	2.61 ^{a,b}	0.67	2.47 ^a	0.67	2.78 ^b	0.66	3.75	<0.05
Emotional regulation	1.42 ^a	0.57	1.67 ^a	0.83	2.19 ^b	0.84	16.03	<0.001
Variety	4.81 ^a	0.36	4.45 ^b	0.53	4.12 ^c	0.75	20.82	<0.001
Environment	4.28 ^a	0.71	3.83 ^b	0.80	3.67 ^b	0.79	9.97	<0.001
Food as reward	2.06 ^a	1.06	2.51 ^b	1.05	2.66 ^b	1.02	5.49	<0.01
Involvement	4.15 ^a	0.75	3.74 ^b	0.86	3.75 ^b	0.88	4.86	<0.01
Monitoring	4.24 ^a	0.67	4.15 ^a	0.81	3.77 ^b	0.86	6.28	<0.01
Modelling	4.51 ^a	0.53	3.99 ^b	1.00	3.88 ^b	0.92	9.39	<0.001
Pressure to eat	2.42	1.02	2.77	1.11	2.85	0.81	3.21	0.051
Restrict food for health	3.55 ^{a,b}	1.27	3.75 ^a	1.02	3.21 ^b	0.86	4.55	<0.05
Restrict food for weight control	1.99 ^a	0.79	2.21 ^{a,b}	0.82	2.54 ^b	0.80	6.76	<0.01
Teach about nutrition	4.65 ^a	0.50	4.06 ^b	0.70	3.97 ^b	0.82	17.01	<0.001

The Parental Authority Questionnaire (PAQ)⁽³⁷⁾ was used to assess three parenting style types: Authoritative, *n* 59; Authoritarian, *n* 63; Permissive, *n* 63. The Comprehensive Feeding Practices Questionnaire (CFPQ)⁽³⁷⁾ assessed twelve aspects of parental feeding behaviour: (i) child control over feeding (five items); (ii) using food to regulate the child's emotions (three items); (iii) encouraging balance and variety (four items); (iv) making healthy foods available in the home (four items); (v) using food as a reward (three items); (vi) involving the child in meal planning and preparation (three items); (vii) monitoring the child's food intake (four items); (viii) modelling healthy eating (four items); (ix) pressuring the child to consume more food at meals (four items); (x) restricting a child's intake for health-related reasons (four items); (xi) restricting the child's food intake for weight reasons (eight items); and (xii) teaching about nutrition (three items). All variables are parent report.

^{a,b,c}Mean values within a row with unlike superscript letters were significantly different ($P < 0.05$).

showed that mothers of underweight children were less likely to restrict food for weight control than all other mothers. Moreover, mothers of normal-weight children were less likely to restrict food for weight control than mothers of obese children. Mothers of children who were obese were more likely than mothers of underweight children to offer food as a reward. Mothers who were Caucasian were more likely to encourage balance and variety and to make healthy foods available in the home than non-Caucasian participants. Non-Caucasian participants were more likely to offer food as a reward and to teach their children about nutrition than Caucasian participants. Mothers who were unemployed or homemakers were less likely to use food as a reward than mothers who were full- or part-time employed or students. Authoritarian mothers' mean BMI (29.08 kg/m²) was higher than that of permissive (26.02 kg/m²) and authoritative mothers (25.83 kg/m²; $F(2, 190) = 4.17$, $P < 0.05$). Thus, maternal race/ethnicity (Caucasian *v.* non-Caucasian), maternal weight status, maternal employment, (unemployed/homemaker *v.* full-/part-time employed or student) and child weight status were controlled for in subsequent analyses. No feeding practices were related to child age after controlling for demographic covariates.

Relationships among parenting styles and feeding practices

A MANOVA was conducted to examine how feeding practices differed between parenting style groups. After controlling for relevant covariates, the multivariate effect of parenting style was significant ($F(24, 336) = 3.64$, $P < 0.001$, partial $\eta^2 = 0.21$). In univariate tests, parental reports of eleven of the twelve feeding practices differed

based on parenting style (see Table 1). Authoritative parents reported using more healthy practices and fewer unhealthy practices than both authoritarian and permissive parents. Permissive and authoritarian parents differed on the unhealthy practices they employed. Pressure to eat was the only practice that did not differ by parenting style.

Discussion

The current study investigated the relationship between parenting styles and parental feeding practices. Overall, parents who had authoritative parenting styles reported more healthy feeding practices than parents with an authoritarian or permissive style. Differences in feeding practices were seen by parenting style in eleven out of the measured twelve feeding practice variables, demonstrating the far-reaching connection between parenting style and feeding practices.

In general, authoritative parents establish rules and standards, but are flexible and receptive to their child's needs⁽¹⁰⁾. In contrast, authoritarian parents are inflexible and can be insensitive to their child's needs, whereas permissive parents do not enforce many rules^(10,37,41). Consistent with this, the feeding practices used by authoritarian and permissive parents can lead to children having difficulty regulating their own food intake, including eating in the absence of hunger^(11,25,29,30).

The future health of children is based, in part, on the behaviours that parents engage in. Parental education on healthy feeding behaviours and parenting styles may contribute to the health of future generations. However, there are several limitations worth noting. While feeding

behaviours directly relate to food consumption, parenting style itself does not always directly relate to eating⁽⁴²⁾. The present sample was predominantly Caucasian and well-educated. Also, only mothers in two-parent households with children aged 7–11 years were recruited for the study. Given research indicating that racial/ethnic background and socio-economic status are correlated with both parenting style⁽⁴³⁾ and feeding practices⁽⁴⁴⁾, this is especially important. The sample size for the current study was relatively small for the number of tests; therefore the results should be interpreted with caution.

In summary, given the critical role that the parents have in the development and maintenance of children's eating behaviours and attitudes^(45,46), parenting style should be a key focus in future intervention and prevention programmes.

Acknowledgements

Financial support: This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors. *Conflict of interest:* None. *Authorship:* A.K.-B. contributed to the study design, research question, heavy data analysis, heavy manuscript writing. D.H. contributed to the study design, research question, light data analysis, heavy manuscript writing. S.Z. contributed to the study design, heavy data analysis, manuscript writing. D.M.-E. contributed to the study design, data analysis, manuscript editing. *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 were approved by the Institutional Review Board of Bowling Green State University. Participants gave their informed consent.

References

- Ogden CL, Carroll MD, Kit BK *et al.* (2014) Prevalence of childhood and adult obesity in the United States, 2011–2012. *JAMA* **311**, 806–814.
- Dietz WH (2004) Overweight in childhood and adolescence. *N Engl J Med* **350**, 855–857.
- Li C, Ford ES, Zhao G *et al.* (2009) Prevalence of pre-diabetes and its association with clustering of cardiometabolic risk factors and hyperinsulinemia among US adolescents: National Health and Nutrition Examination Survey 2005–2006. *Diabetes Care* **32**, 342–347.
- Daniels SR, Arnett DK, Eckel RH *et al.* (2005) Overweight in children and adolescents: pathophysiology, consequences, prevention, and treatment. *Circulation* **111**, 1999–2012.
- Freedman DS, Mei Z, Srinivasan SR *et al.* (2007) Cardiovascular risk factors and excess adiposity among overweight children and adolescents: the Bogalusa Heart Study. *J Pediatr* **150**, 12–17.
- Benjamin RM (2010) The Surgeon General's vision for a healthy and fit nation. *Public Health Rep* **125**, 514–515.
- Harrison K, Bost KK, McBride BA *et al.* (2011) Toward a developmental conceptualization of contributors to overweight and obesity in childhood: the Six-Cs model. *Child Dev Perspect* **5**, 50–58.
- Pearson N, Biddle SJ & Gorely T (2009) Family correlates of fruit and vegetable consumption in children and adolescents: a systematic review. *Public Health Nutr* **12**, 267–283.
- Ventura AK & Birch LL (2008) Does parenting affect children's eating and weight status? *Int J Behav Nutr Phys Act* **5**, 15.
- Rhee KE, Lumeng JC, Appugliese DP *et al.* (2006) Parenting styles and overweight status in first grade. *Pediatrics* **117**, 2047–2054.
- Birch LL, Fisher JO & Davison KK (2003) Learning to overeat: maternal use of restrictive feeding practices promotes girls' eating in the absence of hunger. *Am J Clin Nutr* **78**, 215–220.
- Hughes SO, Power TG, Fisher JO *et al.* (2005) Revisiting a neglected construct: parenting styles in a child-feeding context. *Appetite* **44**, 83–92.
- Blissett J & Haycraft E (2008) Are parenting style and controlling feeding practices related? *Appetite* **50**, 477–485.
- Hubbs-Tait L, Kennedy TS, Page MC *et al.* (2008) Parental feeding practices predict authoritative, authoritarian, and permissive parenting styles. *J Am Diet Assoc* **108**, 1154–1161.
- Darling N & Steinberg L (1999) Parenting style as context: an integrative model. *Psychol Bull* **113**, 487–496.
- Baumrind D (1967) Child care practices anteceding three patterns of preschool behavior. *Genet Psychol Monogr* **75**, 43–88.
- Baumrind D (1971) Current patterns of parental authority. *Dev Psychol* **4**, 1–103.
- Tung H-J & Yeh M-C (2014) Parenting style and child-feeding behaviour in predicting children's weight status change in Taiwan. *Public Health Nutr* **17**, 970–978.
- Kremers SPJ, Brug J, de Vries H *et al.* (2003) Parenting style and adolescent fruit consumption. *Appetite* **41**, 43–50.
- Patrick H, Nicklas TA, Hughes SO *et al.* (2005) The benefits of authoritative feeding style: caregiver feeding styles and children's food consumption patterns. *Appetite* **44**, 243–249.
- Topham GL, Hubbs-Tait L, Rutledge JM *et al.* (2011) Parenting styles, parental response to child emotion, and family emotional responsiveness are related to child emotional eating. *Appetite* **56**, 261–264.
- Sleddens EFC, Gerards SMP, Thijs C *et al.* (2011) General parenting, childhood overweight and obesity-inducing behaviors: a review. *Int J Pediatr Obes* **6**, 12–27.
- Berge J, Wall M, Loth K *et al.* (2010) Parenting style as a predictor of adolescent weight and weight-related behaviors. *J Adolesc Health* **46**, Suppl. 1, S14–S15.
- Gable S & Lutz S (2000) Household, parent, and child contributions to childhood obesity. *Fam Relat* **49**, 293–300.
- Arredondo EM, Elder JP, Ayala GX *et al.* (2006) Is parenting style related to children's healthy eating and physical activity in Latino families? *Health Educ Res* **21**, 862–871.
- Fisher JO & Birch LL (1999) Restricting access to palatable foods affects children's behavioral response, food selection, and intake. *Am J Clin Nutr* **69**, 1264–1272.
- Faith MS, Scanlon KS, Birch LL *et al.* (2004) Parent-child feeding strategies and their relationships to child eating and weight status. *Obes Res* **12**, 1711–1722.
- Fisher JO, Mitchell DC, Smickilas-Wright H *et al.* (2002) Parental influences on young girls' fruit and vegetable, micronutrient, and fat intakes. *J Am Diet Assoc* **102**, 58–64.
- Francis LA & Birch LL (2005) Maternal weight status modulates the effects of restriction on daughters' eating and weight. *Int J Obes (Lond)* **29**, 942–949.
- Vereecken C, Legiest E, De Bourdeaudhuij I *et al.* (2009) Associations between general parenting styles and specific food-related parenting practices and children's food consumption. *Am J Health Promot* **23**, 233–240.
- Johnson SL & Birch LL (1994) Parents' and children's adiposity and eating style. *Pediatrics* **94**, 653–661.

32. Collins C, Duncanson K & Burrows T (2014) A systematic review investigating associations between parenting style and child feeding behaviours. *J Hum Nutr Diet* **27**, 557–568.
33. Taylor A, Wilson C, Slater A *et al.* (2011) Self-esteem and body dissatisfaction in young children: associations with weight and perceived parenting style. *Clin Psychol* **16**, 25–35.
34. Musher-Eizenman D & Holub S (2007) Comprehensive Feeding Practices Questionnaire: validation of a new measure of parental feeding practices. *J Pediatr Psychol* **32**, 960–972.
35. Buhrmester M, Kwang T & Gosling SD (2011) Amazon's Mechanical Turk: a new source of inexpensive, yet high-quality, data? *Perspect Psychol Sci* **6**, 3–5.
36. Paolacci G, Chandler J & Ipeirotis P (2010) Running experiments on Amazon Mechanical Turk. *Judgm Decis Mak* **5**, 411–419.
37. Buri JR (1991) Parental authority questionnaire. *J Pers Assess* **57**, 110–119.
38. Smetana JG (1995) Parenting styles and conceptions of parental authority during adolescence. *Child Dev* **66**, 299–316.
39. Buri JR, Louiselle PA, Misukanis TM *et al.* (1988) Effects of parental authoritarianism and authoritativeness on self-esteem. *Pers Soc Psychol Bull* **14**, 271–282.
40. Doaei S, Kalantari N, Gholamalizadeh M *et al.* (2013) Validating and investigating reliability of Comprehensive Feeding Practices Questionnaire. *Zabedan J Res Med Sci* **15**, 42–45.
41. Baumrind D (1991) The influence of parenting style on adolescent competence and substance use. *J Early Adolesc* **11**, 56–95.
42. De Bourdeaudhuij I, te Velde S, Maes L *et al.* (2009) General parenting styles are not strongly associated with fruit and vegetable intake and social–environmental correlates among 11-year-old children in four countries in Europe. *Public Health Nutr* **12**, 259–266.
43. McLoyd VC (1990) The impact of economic hardship on black families and children: psychological distress, parenting, and socioemotional development. *Child Dev* **61**, 311–346.
44. Skala K, Chuang R-J, Evans A *et al.* (2012) Ethnic differences in the home food environment and parental food practices among families of low-income Hispanic and African-American preschoolers. *J Immigr Minor Health* **14**, 1014–1022.
45. Lindsay AC, Sussner KM, Kim J *et al.* (2006) The role of parents in preventing childhood obesity. *Future Child* **16**, 169–186.
46. Scaglioni S, Salvioni M & Galimberti C (2008) Influence of parental attitudes in the development of children eating behaviour. *Br J Nutr* **99**, Suppl. 1, S22–S25.