

Research Report

The benefits of authoritative feeding style: caregiver feeding styles and children's food consumption patterns

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Abstract

This research tested the associations between caregiver feeding styles and children's food consumption patterns among African-American (AA) and Hispanic (H) caregivers and their preschool children. Participants were 231 caregivers (101 AA; 130 H) with children enrolled in Head Start. Caregivers completed questionnaires on authoritarian and authoritative feeding styles (Caregiver's Feeding Styles Questionnaire; CFSQ) and various aspects of children's food consumption patterns (availability of, feeding attempts for, and child's consumption of dairy, fruit, and vegetables). Simultaneous multiple regression analyses tested the unique contribution of feeding styles in predicting food consumption patterns. Authoritative feeding was positively associated whereas authoritarian feeding was negatively associated with the availability of fruit and vegetables. Authoritative feeding was also positively associated with attempts to get the child to eat dairy, fruit, and vegetables, and reported child consumption of dairy and vegetables. Authoritarian feeding was negatively associated with child's vegetable consumption. All results remained significant after controlling for child's gender and body mass index (BMI), and caregiver's ethnicity, BMI, and level of education. Overall, results provide evidence for the benefits of authoritative feeding and suggest that interventions to increase children's consumption of dairy, fruit, and vegetables should be targeted toward increasing caregivers' authoritative feeding behaviors. © 2004 Elsevier Ltd. All rights reserved.

Keywords: Child feeding; Parenting styles; Food consumption patterns

Introduction

Childhood obesity has become a serious public health problem. One in four children is at risk for overweight, and 15% are overweight (Ogden, Carroll, & Flegal, 2003; Troiano, Flegal, Kuczmarski, Campbell, & Johnson, 1999). The prevalence of overweight among 4- and 5-year olds increased from 5 to 10.4% from 1976 to 2000 (Ogden, Flegal, Carroll, & Johnson, 2002), and this increase has been significantly higher among African-American (AA; 16%) and Hispanic (H; 30%) preschool children (Stolley et al., 2003). Obese children tend to become obese adults (Magarey, Daniels, Boulton, & Cockington, 2003). Thus, researchers have begun to examine factors that influence eating behaviors, particularly in young children. By the time children are 3 or 4 years old, eating is no longer deprivation-driven, but is

influenced by their responsiveness to environmental cues about food intake. Research suggests that particularly influential environmental cues involve early feeding experiences with caregivers (e.g. parents).

Caregiver feeding styles are one mechanism through which children's preferences and food consumption patterns may be shaped (Anliker, Laus, Samonds, & Beal, 1992; Cullen et al., 2000; Eppright, Fox, Fryer, Lamkin, & Vivian, 1969; Gable & Lutz, 2000). Feeding styles represent the caregiver's approach to maintain or modify children's behaviors with respect to eating. Birch and Fisher (1995) identified three child feeding patterns that map on to Baumrind's (1971) taxonomy of parenting styles: authoritarian, permissive, and authoritative. In the domain of child feeding, authoritarian represents behaviors such as restricting the child from eating certain foods and forcing the child to eat other foods. Thus, authoritarian feeding is characterized by attempts to control the child's eating with little regard for the child's choices and preferences.

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Permissive feeding is characterized by what might be termed ‘nutritional neglect’, whereby the child is allowed to eat whatever he or she wants in whatever quantities he or she wants. With permissive feeding, little or no structure is provided, and choices are limited only by what is available. Finally, authoritative feeding represents a balance between authoritarian and permissive such that the child is encouraged to eat healthy foods, but is also given some choices about eating options. For example, with authoritative feeding, adults may determine which foods are offered, and children may determine which foods are eaten.

Feeding styles have been associated with dietary intake. Authoritarian feeding has been associated with lower intake of fruit, juices, and vegetables, whereas authoritative feeding has been associated with greater fruit and vegetable availability, higher intake of fruit and vegetables, and lower intake of junk food (Cullen et al., 2000; Gable & Lutz, 2000). Additionally, when parents restricted their child’s consumption of foods high in fat and sugar (a form of authoritarian control), children were more likely to fixate on those items and consume more of these ‘forbidden foods’ even when they were satiated (Fisher & Birch, 2000). Clearly, caregiver feeding styles have important implications for the development of children’s eating patterns, particularly those styles that facilitate intake of healthy foods such as dairy, fruit, and vegetables.

To date, most research on feeding styles has focused on authoritarian directives including rewards, instructions, punishments, coercion, and restriction (Casey & Rozin, 1989; Heptinstall et al., 1987; Johnson & Birch, 1993). Very little research has evaluated authoritative feeding. This almost exclusive focus on authoritarian feeding is evident in the ways in which feeding styles have been studied and measured. One of the most widely used measures of feeding styles is the child feeding questionnaire (CFQ) developed by Birch et al. (2001). Based on current parenting and child feeding constructs, the CFQ was developed for use with caregivers of preschool and elementary school children. However, it measures primarily authoritarian control in child feeding such as restriction, use of pressure to eat, and monitoring.

Additionally, most of the research describing feeding styles has been conducted on non-Hispanic white populations. Few studies have examined child feeding interactions among various ethnic groups (Cousins, Power, & Olvera-Ezzell, 1993; Olvera-Ezzell, Power, & Cousins, 1990). Parents of AA preschool children frequently prompted their children to eat and were generally successful in getting their children to eat through the use of commands, actions, and rationales (Iannotti, O’Brien, & Spillman, 1994). In a study conducted in rural Mexico, children made more than nine requests for food in a day’s time, had 13.5 eating episodes, and received 3.5 parental prompts to eat (Garcia, Kaiser, & Dewey, 1990). Low-income Latino parents believed that using bribes at mealtimes was an effective strategy (Kaiser, Martinez, Harwood, & Garcia,

1999). This has important implications because other studies have found the use of bribes to be adversely related to food preferences in young children (Birch, Marlin, & Rotter, 1984). Although these studies have examined feeding behaviors in various ethnic groups, they have focused primarily on authoritarian practices and have not addressed how feeding styles are associated with consumption patterns for particular foods (e.g. dairy, fruit, and vegetables) in AA and H samples.

The current research attempted to address limitations of previous research on feeding styles, particularly in terms of how they are measured and with whom they are studied. Participants in this study were AA and H caregivers and their preschool children. This study focused on the differing outcomes associated with authoritarian and authoritative parenting. Both styles represent attempts to actively get the child to comply with parental requests, but the manner in which these attempts are carried out are quite different. For example, a caregiver using an authoritarian style may use threats or bribes to attempt to get the child to eat his or her vegetables, whereas a caregiver using a more authoritative style may try to reason with the child and explain to the child why it is important to eat vegetables. These different approaches to seeking compliance may be associated with different nutrition-related outcomes. The goal of this study was to examine how feeding styles are associated with availability, attempts to get the child to consume, and child’s consumption of dairy, fruit, and vegetables in AA and H preschool children.

Method

Participants

The current study was part of a larger study examining environmental influences on children’s eating patterns among AA and H. Data were collected from caregivers who had one child enrolled at Head Start centers located throughout the Houston Metropolitan Area. At 10 centers, 231 primary caregivers (101 AA; 130 H) completed the questionnaires. Primary caregiver was defined as the person who takes care of the targeted Head Start preschooler most of the time during the week when the child is not at Head Start. Caregivers ranged in age from 20 to 73 years ($M = 31$ years; $SD = 9$ years); 227 were women, and four were men (92% mothers, 2% fathers, 4% grandmothers, and 2% were of some other relation to the child). Head Start centers in Houston are predominantly AA and H. In this sample, 44% of caregivers were AA, and 56% were H. The children of the participants were AA (45%) and H (55%), and they ranged from 3 to 5 years of age with 42 3-year-olds (18%), 117 4-year-olds (51%), and 72 5-year-olds (31%). Additional information about the sample is provided in Table 1. A more detailed description of the sample is available in Nicklas, Morales, and Hughes (2004).

Table 1
Sample demographics

	<i>n</i> (%)
<i>Caregivers (M age=31 years)</i>	
Hispanic (H)	130 (53)
African-American (AA)	101 (47)
Total	231 (100)
<i>Children (M age=4 years)</i>	
Boys	105 (45)
Girls	126 (55)
HA	127 (55)
AA	104 (45)
HA boys	61 (26)
HA girls	66 (29)
AA boys	44 (19)
AA girls	60 (26)
Total	231 (100)

There was no significant mean age difference between AA and H caregivers ($p=0.43$).

Procedures

The study protocol and instruments were reviewed and approved by the Internal Review Board of Baylor College of Medicine. Primary caregivers were recruited at the Head Start center prior to dropping off or picking up their child and with phone calls to the home. Data collection took place after hours at the Head Start centers in a room separate from the children. A staff member explained the purpose of the study and confidentiality was assured. After reading and signing the consent forms, caregivers completed measures of caregiver feeding styles (Caregiver Feeding Styles Questionnaire; CFSQ), the frequency with which their preschool child was served particular foods, the frequency with which the caregiver tried to get their preschool child to consume particular foods, the frequency with which their preschool child consumed particular foods, and demographics. The particular foods that were studied included dairy, fruit, and vegetables. These foods were selected because of the recent emphasis on increasing intake of these foods for better health (Carruth & Skinner, 2001; Dennison, Rockwell, & Baker, 1998). After questionnaires were distributed, staff members remained in the room to assist with any questions concerning completion of the questionnaires. Bilingual staff were available at predominantly H centers where Spanish was the primary language.

Measures

The caregiver's feeding style questionnaire (CFSQ). The CFSQ was developed to assess feeding styles among AA and H caregivers (Hughes, Power, Fisher, Mueller, & Nicklas, 2004). Items were developed to examine authoritarian and authoritative feeding. Back translations and individual cognitive interviews were used with a test sample to insure that the meaning and sensitivity of the items were comparable across the two ethnic groups. Caregivers

indicated how often they engaged in various behaviors with their child during mealtime. Participants rated each item on a five-point scale where 1 = 'Never', 2 = 'Rarely', 3 = 'Sometimes', 4 = 'Most of the time', and 5 = 'Always'. Sample items for authoritarian included 'Physically struggle with the child to get him/her to eat', and 'Show disapproval of the child for not eating'. Sample items for authoritative included 'Reason with the child to get him/her to eat', and 'Allow choosing of appropriate foods'. Items were averaged to yield separate authoritarian and authoritative scores for each person. The measure has been shown to have good test-retest reliability ($r_s=0.85$ and 0.82 for authoritarian and authoritative, respectively; Hughes et al., 2004) and strong internal reliabilities (Cronbach's $\alpha_s=.86$ and $.71$ for authoritarian and authoritative, respectively). Authoritarian and authoritative feeding styles are moderately correlated, $r=.37$.

Availability of dairy, fruit, and vegetables. To assess the availability of dairy, fruit, and vegetables, caregivers indicated how often their child was served each of these foods during a typical weekday dinner meal. Caregivers responded for each food type (i.e. dairy, fruit, and vegetables) using a 0–3 scale where 0 = 'Never', 1 = 'Sometimes', 2 = 'Often', and 3 = 'Always'.

Feeding attempts for dairy, fruit, and vegetables. Caregivers indicated how often they tried to get their child to eat dairy, fruit, and vegetables. They responded to the item, 'When you are sitting at the dinner table with the child, how often do you try to get the child to eat or drink...' Caregivers responded for each food type (i.e. dairy, fruit, vegetables) using a five-point scale where 1 = 'Never', 2 = 'Rarely', 3 = 'Sometimes', 4 = 'Most of the time', and 5 = 'Always'.

Child's dairy consumption. To assess child's dairy consumption, caregivers responded to a series of items regarding the child's consumption of specific dairy products during the week. This level of specificity was used to assess dairy consumption because the dairy category can be somewhat ambiguous, and participants in this sample tend to have items in their diet that include dairy products that they might not otherwise think of as dairy (e.g. main dishes with cheese). Items included assessment of how many cups of yogurt and slices of cheese the child consumed during the week; how many times the child consumed cottage or ricotta cheese, main dishes with cheese, pasta with cheese, sandwiches with cheese, vegetables with cheese, milk-based desserts, and milk-based soups; and how many glasses of white milk the child drank during the week. Caregivers responded to each item using a 0–3 scale where 0 = 'never/not at all', 1 = '1 time per week', 2 = '2–4 times per week', and 3 = '5+ times per week'. For the item assessing glasses of milk consumed, anchors were modified to reflect number of glasses consumed; for items assessing consumption of cups of yogurt and slices of cheese, anchors were modified to reflect number of items consumed (i.e. cups, slices). Responses to all items were averaged to create

an aggregate measure of total dairy intake. Internal reliability (Cronbach's α) for aggregate dairy consumption was .81.

Child's fruit and vegetable consumption. To assess consumption of fruit and vegetables, caregivers indicated how many times the child consumed fruit and vegetables during the week. Caregivers responded to each item using a 0–3 scale where 0 = 'never/not at all', 1 = '1 time per week', 2 = '2–4 times per week', and 3 = '5+ times per week'. Analyses were conducted on fruit and vegetables separately.

Caregiver and child body mass index (BMI). Height and weight measurements were taken for both caregivers and preschool children to determine BMI (weight (kg)/height (m²)). Trained examiners followed the protocol described by Lohman, Roche, and Martorell (1988). Caregivers and children were dressed in light clothing and asked to remove their shoes. Height was measured in duplicate to the nearest 0.1 cm and weight was measured in duplicate to the nearest 0.1 kg. For both height and weight, the duplicate readings were averaged to create single indexes of height and weight. Height and weight scores were then converted to age- and gender-specific BMI z-scores using the revised 2000 growth charts from the Centers for Disease Control and Prevention (Kuczmarski, Ogden, & Guo, 2002).

Demographics. Participants provided information on demographic variables such as education level of the parent, age of child, age of parent, gender and ethnicity of child, gender and ethnicity of parent, and several other indicators included for other purposes.

Analytic strategy

All statistical analyses were performed using the Statistical Analysis System (SAS; Version 8.2). First, a series of regression analyses were conducted to establish the general associations between caregiver feeding styles and the availability of dairy, fruit, and vegetables; feeding

attempts for dairy, fruit, and vegetables; and child's consumption of dairy, fruit, and vegetables. For example, availability of dairy was regressed on authoritative and authoritarian feeding styles. The same analytic strategy was employed for availability of fruit and vegetables, feeding attempts for dairy, fruit, and vegetables, and child's consumption of these foods.

A second set of analyses tested the robustness of the findings gleaned from the first set of analyses by controlling for potential covariates including characteristics of the caregiver (i.e. ethnicity, BMI, education) and characteristics of the child (i.e. gender, BMI). Ethnicity was included only for caregiver because ethnicity of child and caregiver were almost always the same ($r = .97$). To test the unique role of feeding styles in children's food consumption patterns after controlling for the aforementioned covariates, a series of simultaneous multiple regressions were conducted. For example, availability of fruit served as the criterion, the CFSQ subscales (i.e. authoritarian, authoritative) served as predictors, and the potentially confounding characteristics of the caregiver and the child listed above served as covariates. A similar analytic strategy was employed to test the availability of dairy, fruit, and vegetables and feeding attempts and consumption of dairy, fruit, and vegetables separately. For all analyses, statistical significance was set at $p < 0.05$.

Results

Main analyses

Availability. First, the associations between caregiver feeding styles and availability of dairy, fruit, and vegetables were tested. Table 2 provides regression coefficients for caregiver feeding styles predicting availability of dairy, fruit, and vegetables. First, as shown, authoritative feeding was positively associated with the availability of fruit and

Table 2
Regression analyses

	Authoritarian	Authoritative
<i>Availability</i>		
Dairy	$F(1, 228) = 1.16, p = .28$	$F(1, 228) = 1.28, p = .25$
Fruit	$F(1, 227) = 5.74, p < .05, \beta = -0.16$	$F(1, 227) = 23.99, p < .0001, \beta = 0.32$
Vegetables	$F(1, 228) = 7.69, p < .01, \beta = -0.19$	$F(1, 228) = 7.08, p < .01, \beta = 0.19$
<i>Feeding attempts</i>		
Dairy	$F < 1$	$F(1, 226) = 10.18, p < .01, \beta = 0.22$
Fruit	$F < 1$	$F(1, 226) = 24.17, p < .0001, \beta = 0.33$
Vegetables	$F < 1$	$F(1, 228) = 16.14, p < .0001, \beta = 0.27$
<i>Child's consumption</i>		
Dairy	$F < 1$	$F(1, 227) = 16.14, p < .001, \beta = 0.24$
Fruit	$F(1, 228) = 1.56, p = .21$	$F < 1$
Vegetables	$F(1, 209) = 4.73, p < .05, \beta = -0.16$	$F(1, 209) = 4.56, p < .05, \beta = 0.16$

Caregiver feeding styles predicting (1) availability of dairy, fruit, and vegetables, (2) attempts to get the child to eat dairy, fruit, and vegetables, and (3) consumption of dairy, fruit, and vegetables.

vegetables. Thus, caregivers who were more (relative to less) authoritative were more likely to make fruit and vegetables available. Additionally, authoritarian feeding was associated with lower availability of fruit and vegetables. Caregivers who were more (relative to less) authoritarian were thus less likely to make fruit and vegetables available.

Feeding attempts. Next, the role of caregiver feeding styles in attempts to get children to eat dairy, fruit, and vegetables was tested. Regression coefficients for these analyses are also presented in Table 2. As shown, authoritative feeding was positively associated with attempts to get the child to consume dairy, fruit, and vegetables. Thus, caregivers who were more (relative to less) authoritative were more likely to try to get their children to consume these foods. The associations between authoritarian feeding and attempts to get the child to consume dairy, fruit, and vegetables were not statistically significant (all $ps > .43$).

Child's consumption. Finally, the role of feeding styles in children's consumption of dairy, fruit, and vegetables was tested. Coefficients for these results are presented in Table 2. Authoritative feeding was positively associated with consumption of dairy and vegetables, whereas authoritarian feeding was negatively associated with vegetable consumption. Thus, children of caregivers who were more (relative to less) authoritative were *more* likely to consume dairy and vegetables, whereas those of more (relative to less) authoritarian caregivers were *less* likely to consume vegetables.

Controlling for potential covariates

It was important to test whether these results could be accounted for by other factors such as child's sex and BMI, and caregiver's ethnicity, BMI, and education. Thus, the above analyses were repeated, controlling for these potential covariates. All results remained statistically significant, $ps < .05$. Thus, the results summarized above cannot be accounted for by these five variables.

Discussion

The purpose of this research was to test the associations between caregiver feeding styles and children's food consumption patterns. Overall, these findings provide support for the benefits of authoritative feeding, and confirm previous findings about the potential detriments of authoritarian feeding with regard to children's food consumption patterns. Authoritative feeding was positively associated with availability of fruit and vegetables; attempts to get the child to consume dairy, fruit, and vegetables; and child's consumption of dairy and vegetables. In contrast, authoritarian feeding was negatively associated with availability of fruit and vegetables, and

with child's consumption of vegetables. Importantly, all of these associations remained significant after controlling for potential confounding variables including ethnicity, BMI, and education of the caregiver and gender and BMI of the child.

The findings of this study extend previous research in several important ways. First, these results establish an association between caregiver feeding styles and children's food consumption patterns among AA and H families. Previous research has studied feeding styles primarily in non-Hispanic white populations. Second, the measure of feeding styles employed here (CFSQ; Hughes et al., 2004) assesses both authoritative and authoritarian feeding styles whereas previous measures have focused almost exclusively on authoritarian feeding practices (e.g. CFQ, Birch and Fisher, 2000). It was important to be able to assess both of these styles because both represent active attempts to get the child to comply with parental directives regarding food, but they represent very different approaches to achieving compliance. Importantly, in the current research, these different approaches were differentially associated with children's food consumption patterns. Finally, this study incorporated an extensive measure of dairy product consumption which included a number of mixed foods containing dairy products (e.g. main dishes with cheese) rather than limiting the assessment to just milk, cheese, and yogurt. Although many people would consider cheese a dairy product, they may not think of foods that contain cheese as dairy products. Including these additional food items thus provided a more comprehensive assessment of dairy consumption.

This study is not without limitations. The correlational design of the study precludes drawing causal inferences about the relationship between caregiver feeding styles and children's food consumption patterns. Thus, although it is clear that these associations exist, at least in this sample, it is impossible to say definitively that caregiver feeding styles *cause* these variations in food consumption patterns. Also, because the sample included exclusively AA and H caregivers with preschoolers, results may not generalize to European-Americans or to caregivers of older children. Additionally, there were some limitations in the measures that were used in this study. For example, the questions regarding availability and feeding attempts were specific to the dinner meal, while the questions regarding food consumption were about consumption during the week. Although certainly a limitation, this may not be especially problematic in this sample given recent research documenting that roughly one-third of the total energy intake of Head Start children comes from meals served at Head Start, and these meals provide as much as 70% of the child's daily energy requirement (Bollella et al., 1999; Drake, 1992). Thus, for most caregivers in this sample, it is likely that all questions concerning food were answered in reference to the dinner meal, since that is the only meal at which many of these caregivers observe their child. Another potential

limitation is that the measure of consumption was somewhat rudimentary. The measure incorporated in this study simply asked caregivers to indicate how many times per week their child eats dairy, fruit, and vegetables. It would have been more advantageous to ask the question in a way that would allow a better approximation of number of servings per day. However, a measure similar to the one used in this study has been validated and used in the Bogalusa Heart Study (Frank et al., 1992).

Despite these limitations, overall, these findings provide further evidence for the benefits of authoritative feeding and serve to inform potential interventions. In this study, authoritative feeding was positively associated with the availability of fruit and vegetables, attempts to get the child to eat dairy, fruit, and vegetables, and with reported child consumption of dairy and vegetables. Thus, parents who are more authoritative with regard to feeding seem to be promoting more healthful eating patterns in their children. Authoritative feeding may be part of a broader model of optimal feeding styles involving such things as feeding behaviors, emotional climate of mealtimes, and meal structure. In contrast, authoritarian feeding was negatively associated with the availability of fruit and vegetables and reported child consumption of vegetables. In this way, authoritarian feeding seems to promote less healthful eating patterns in children, despite the good intentions authoritarian parents may have. Additionally, results further suggest that interventions to increase children's consumption of dairy, fruit, and vegetables should be targeted toward increasing parents' authoritative feeding practices and perhaps decreasing parents' authoritarian feeding practices.

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References

- Anliker, J. A., Laus, M. J., Samonds, K. W., & Beal, V. (1992). Mothers' reports of their three-year-old children's control over foods and involvement in food-related activities. *Journal of Nutrition Education*, 24, 285–291.
- Baumrind, D. (1971). Current patterns of parental authority. *Developmental Psychology Monograph, Part 2*, 4, 1–103.
- Birch, L. L., & Fisher, J. O. (1995). Appetite and eating behavior in children. In G. E. Gaull (Ed.), *The pediatric clinics of North America: Pediatric nutrition* (pp. 931–953). Philadelphia, PA: W.B. Saunders, 931–953.
- Birch, L. L., Fisher, J. O., Grimm-Thomas, K., Markey, C. N., Sawyer, R., & Johnson, S. L. (2001). Confirmatory factor analysis of the child feeding questionnaire: A measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. *Appetite*, 36, 201–210.
- Birch, L. L., Marlin, D. W., & Rotter, J. (1984). Eating as the 'means' activity in a contingency: Effects on young children's food preference. *Child Development*, 55, 432–439.
- Bolles, M. C., Spark, A., Boccia, L. A., Nicklas, T. A., Pittman, B. P., & Williams, C. L. (1999). Nutrient intake of head start children: Home versus school. *Journal of the American College of Nutrition*, 18, 108–114.
- Carruth, B. R., & Skinner, J. D. (2001). The role of dietary calcium and other nutrients in moderating body fat in preschool children. *International Journal of Obesity Related Metabolic Disorders*, 25, 559–566.
- Casey, R., & Rozin, P. (1989). Changing children's food preferences: Parent opinions. *Appetite*, 12, 171–182.
- Cousins, J. H., Power, T. G., & Olvera-Ezzell, N. (1993). Mexican-American mothers' socialization strategies: Effects of education, acculturation, and health locus of control. *Journal of Experimental Child Psychology*, 55, 258–276.
- Cullen, K. W., Baranowski, T., Rittenberry, L., Cosart, C., Hebert, D., & de Moor, C. (2000). Socio-environmental influences on children's fruit, juice, and vegetable consumption as reported by parents: Reliability and validity of measures. *Public Health Nutrition*, 3, 345–356.
- Dennison, B. A., Rockwell, H. L., & Baker, S. L. (1998). Fruit and vegetable intake in young children. *Journal of the American College of Nutrition*, 17, 371–378.
- Drake, M. (1992). Menu evaluation, nutrient intake of young children, and nutrition knowledge of menu planners in child care centers in Missouri. *Journal of Nutrition Education*, 24, 145–148.
- Eppright, E. S., Fox, H. M., Fryer, B. A., Lamkin, G. H., & Vivian, V. M. (1969). Eating behavior of preschool children. *Journal of Nutrition Education*, 1, 16–19.
- Fisher, J. O., & Birch, L. L. (2000). Parents' restrictive feeding practices are associated with young girls' negative self-evaluation of eating. *Journal of the American Dietetics Association*, 100, 1341–1346.
- Frank, G. C., Nicklas, T. A., Webber, L. S., Major, C., Miller, J. F., & Berenson, G. S. (1992). A food frequency questionnaire for adolescents: Defining eating patterns. *Journal of the American Dietetics Association*, 92, 313–318.
- Gable, S., & Lutz, S. (2000). Household, parent and child contributions to childhood obesity. *Family Relationships*, 49, 293–300.
- Garcia, S. E., Kaiser, L. L., & Dewey, K. G. (1990). The relationship of eating frequency and caloric density to energy intake among rural Mexican preschool children. *European Journal of Clinical Nutrition*, 44, 381–387.
- Heptinstall, E., Puckering, C., Skuse, D., Start, K., Zur-Szpiro, S., & Dowdney, L. (1987). Nutrition and mealtime behavior in families of growth-retarded children. *Human Nutrition and Applied Nutrition*, 41, 390–402.
- Hughes, S. O., Power, T. G., Fisher, J. O., Mueller, S., Nicklas, T. A. (2005). *Revisiting a neglected construct: Parenting styles in a child-feeding title*. *Appetite*, 44, 83–92.

- Iannotti, R. J., O'Brien, R. W., & Spillman, D. M. (1994). Parental and peer influences on food consumption of preschool African American children. *Perceptual and Motor Skills*, *79*, 747–752.
- Johnson, S., & Birch, L. (1993). Parenting style and regulation of food intake. In *children Abstracts of the biennial meeting for the society for research in children development*. Chicago, IL: University of Chicago Press.
- Kaiser, L. L., Martinez, N. A., Harwood, J. O., & Garcia, L. C. (1999). Child feeding strategies in low-income Latino households: Focus group observations. *Journal of the American Dietetics Association*, *99*, 601–603.
- Kuczumski, R., Ogden, C., & Guo, S. (2002). CDC growth charts for the United States: Methods and development. *Vital Health Statistics*, *11*, 1–190.
- Lohman, T. G., Roche, A. F., & Martorell, M. (1988). *Anthropometric standardization reference manual*. Champaign, IL: Human Kinetics.
- Magarey, A. M., Daniels, L. A., Boulton, T. J., & Cockington, R. A. (2003). Predicting obesity in early adulthood from childhood and parental obesity. *International Journal of Obesity Related Metabolic Disorders*, *27*, 505–513.
- Nicklas, T. A., Morales, M., Hughes, S. O. (2004). *Prevalence of overweight is pervasive among Head Start preschool children and their mothers*. Manuscript under review.
- Ogden, C. L., Carroll, M. D., & Flegal, K. M. (2003). Epidemiologic trends in overweight and obesity. *Endocrinology and Metabolism Clinics of North America*, *32*, 741–760.
- Ogden, C. L., Flegal, K., Carroll, M., & Johnson, C. (2002). Prevalence and trends in overweight among US children and adolescents. *Journal of the American Medical Association*, *14*, 1728–1732.
- Olvera-Ezzell, N., Power, T. G., & Cousins, J. H. (1990). Maternal socialization of children's eating habits: Strategies used by obese Mexican-American mothers. *Child Development*, *61*, 395–400.
- Stolley, M. R., Fitzgibbon, M. L., Dyer, A., Horn, L. V., Kaufer-Christoffel, K., & Shiffer, L. (2003). Hip-Hop to Health Jr., an obesity prevention program for minority preschool children: Baseline characteristics of participants. *Preventive Medicine*, *36*, 320–329.
- Troiano, R. P., Flegal, K. M., Kuczumski, R. J., Campbell, S. M., & Johnson, C. L. (1999). Overweight prevalence and trends for children and adolescents: The National Health and Nutrition Examination Surveys, 1963–1991. *Archives of Pediatric and Adolescent Medicine*, *149*, 1085–1091.