

Responsive Feeding Is Embedded in a Theoretical Framework of Responsive Parenting^{1–3}

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Abstract

Children throughout the world are confronted with growth problems ranging from underweight and stunting to overweight and obesity. The development of healthy eating behaviors depends on both healthy food and responsive parenting behaviors. With origins from anthropology, psychology, and nutrition, responsive parenting reflects reciprocity between child and caregiver, conceptualized as a 4-step mutually responsive process: 1) the caregiver creates a routine, structure, expectations, and emotional context that promote interaction; 2) the child responds and signals to the caregiver; 3) the caregiver responds promptly in a manner that is emotionally supportive, contingent, and developmentally appropriate; and 4) the child experiences predictable responses. This paper examines evidence for the practice and developmental benefits of responsive parenting with a view to providing a theoretical basis for responsive feeding. Recommendations are made that future efforts to promote healthy growth and to prevent underweight and overweight among young children incorporate and evaluate responsive feeding. *J. Nutr.* 141: 490–494, 2011.

Introduction

Variations in growth are defining health issues for children in the 21st century. Early nutritional problems can undermine children's health and well-being, beginning either with the underweight and stunting common among children in low- and middle-income countries or the overweight and obesity common in high-income countries. Although the role of the family environment on children's growth and development is well recognized (1), many interventions to prevent underweight or overweight have focused primarily on nutritional interventions (2,3), with limited attention directed toward the interactive behaviors between caregivers and children that characterize early feeding experiences. However, evidence has shown that parent-child interaction patterns dominated by parental intrusiveness and lack of reciprocity precede early feeding difficulties (4) and are associated with poor growth (5). Both parent-child interaction patterns and dietary behaviors established early in

life track over time (6,7), making the first few years of life an ideal time to help families establish healthy interaction patterns and dietary behaviors, thus avoiding both underweight and overweight. This paper examines evidence for the practice and developmental benefits of responsive parenting with a view to providing a theoretical basis for responsive feeding.

Responsive parenting

During the first year, infants and caregivers learn to recognize and interpret both verbal and nonverbal communication signals from one another. This reciprocal process forms a basis for the emotional bonding or attachment between infants and caregivers that is essential to healthy social-emotional functioning (8). If there is a disruption in the communication between children and caregivers, characterized by inconsistent and nonresponsive interactions, the relationship may lack trust and security, hindering the child's subsequent social and emotional development (7,9).

Responsive parenting reflects reciprocity between child and caregiver, often studied in the context of play. Observational studies (10,11) have shown that caregiver behaviors are considered to be responsive if they follow a child's behavior within a few seconds (prompt), are emotionally supportive of the child's needs, show a change from prior behavior indicating that they are dependent on the child's signal (contingent), and are related conceptually to the child's prior action (developmentally appropriate, not intrusive or controlling). Thus, responsive behaviors are prompt, emotionally supportive, contingent, and developmentally appropriate. Reviews of international studies conceptualize responsive parenting as a 4-step process: 1) the

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caregiver creates a routine, structure, expectations, and emotional context that promotes interaction; 2) the child signals through motor actions, facial expressions, or vocalizations; 3) the caregiver recognizes the signals and responds promptly in a manner that is emotionally supportive, contingent on the signal, and developmentally appropriate; and 4) the child experiences a predictable response (10,12). Although the process appears to be child driven, caregivers provide a strong influence on the interaction and the child. Not only do caregivers proactively set the stage for responsive interactions (step 1), but their response (step 3) may facilitate subsequent interactions, particularly if it is contingent. Responsive parenting is not necessarily complying with the child's request, which might be inappropriate, but rather acknowledging it.

Cross-cultural studies have shown variability in behaviors that constitute parental responsiveness (13). Harkness and Super (14) described the ecological niche of caregiving whereby parental responsiveness is guided by cultural and environmental opportunities, beliefs about caregiving, and perceptions of children's needs and abilities. Some cultures view socialization as the parent molding the child to adopt ways of the culture, whereas others view it as a bi-directional process of adult-child collaboration whereby parental directives are adjusted to the individual proclivities of the child (15). For example, in some cultures, adults respond to their infants' actions through praising, kissing, and speaking in a nurturant tone (13). If they do not value their children's verbalizations, they may not reliably respond to vocalizations (13). In contrast, many cultures do respond to their infants' vocalizations; a cross-cultural study of caregivers and infants from Berlin, Los Angeles, Beijing, Delhi, and rural Nso in Cameroon reported common styles of caregiver responsiveness in the home (16). Two-thirds of infants' nondistress vocalizations received a response within 1 s, usually vocal or tactile. In turn, the frequency and intensity of children's signals varied based on the caregiver's responsiveness. Another study found that when 5-mo-olds received a response to 30–50% of their noncry vocalizations, they continued to vocalize (17). However, in the absence of a response, the infants showed a burst of high intensity vocalizations, followed by a dramatic drop in vocalizations, suggesting that infants' vocalizations are sustained by caregiver responses but disappear when no response is forthcoming. Other studies have shown that within the first year of life, infants maintain and extend their vocalizations when caregivers respond promptly with a response that “matches” the infant's signal (e.g. smile when the child smiles, surprise when the child looks surprised) (18,19). Furthermore, infants are more attentive to caregivers who respond by matching their signals (18). Even when there are differences in the amount and style of responsiveness, infants appear to benefit from caregivers who are responsive by being more attentive to them and producing more distinct and meaningful signals.

In child development, parental responsiveness originates from attachment theory (8), socialization theories (15), and ecological and transactional theories of child development (20,21). Strong evidence from observational and intervention research has shown that warm and responsive interactions between caregivers and their young children contribute to a secure attachment in infancy (22–24). Forming a secure attachment is a milestone of emotional development that provides the basis for subsequent relationships (8). Moreover, cognitive and language development in the second year are more sophisticated among children who received responsive play and social interactions during infancy (11,22,25–30).

Likewise, in low- and middle-income countries, including Ethiopia, Bangladesh, and Kenya (31,32), parental responsiveness varies among caregivers and has been positively linked to children's language development. Intervention trials in high-, middle-, and low-income countries have been effective in promoting parents' responsiveness and in linking improvements to children's social and emotional development, including attachment (22,33). Thus, despite cultural variations in responsive styles, responsive parenting is linked to advances in child development.

Responsive parenting applied to feeding

Building on an earlier framework for responsive care and feeding (34), the principles of responsive parenting can be applied to the feeding context. For caregivers, responsive feeding includes: 1) ensuring that the feeding context is pleasant with few distractions; that the child is seated comfortably, ideally facing others; that expectations are communicated clearly; and that the food is healthy, tasty, developmentally appropriate, and offered on a predictable schedule so the child is likely to be hungry; 2) encouraging and attending to the child's signals of hunger and satiety; and 3) responding to the child in a prompt, emotionally supportive, contingent, and developmentally appropriate manner. Findings from responsive parenting research predict that responsive feeding should promote children's attentiveness and interest in feeding, attention to their internal cues of hunger and satiety, ability to communicate needs to their caregiver with distinct and meaningful signals, and successful progression to independent feeding.

Parent responsiveness has a central role in breast-feeding, as mothers learn to interpret their child's signals of hunger and satiety and to feed or stop accordingly (35). Nutritional experts have provided universal guidelines for what and how to feed infants and young children (2). As one of these principles, responsive feeding promotes reciprocity in feeding interactions and, ultimately, children's responsibility for healthy eating. **Table 1** provides age-appropriate examples of responsive interactions between caregivers and children. For example, the first year of life is marked by rapid growth, high nutritional demands, and progress in oral, fine motor, and digestive skills. By age 12 mo, children can sit independently, chew a range of textures, feed themselves finger foods, and participate in family meals. The variability in feeding behavior that occurs as children transition from assisted feeding to self-feeding (36) may reflect differences in cultural patterns and perceptions of children's skills (37). Although not all cultures permit self-feeding by 12 mo, caregivers and children may nonetheless have strong reciprocal and responsive interactions during feeding. Current cross-cultural research supports the view that promoting both autonomy and secure relationships in the family will support children's needs for mastery and emotional interdependence (38).

Nonresponsive feeding

Most of the research on responsive feeding has focused on the consequences of nonresponsive feeding. Nonresponsive feeding is dominated by a lack of reciprocity between the caregiver and child, because the caregiver takes control and dominates the feeding situation (controlling/pressuring), the child controls the situation (indulgence), or the caregiver ignores the child (uninvolved) (39). When caregivers control the feeding, not only do they potentially override the child's internal hunger and satiety regulatory cues, but it is thought that they may interfere with the child's emerging autonomy and striving for competence (40).

TABLE 1 Example of the progression of feeding behavior and responsivity for young children and caregivers¹

	Caregiver proactive preparation	Child skills and signals	Caregiver responsivity	What child learns
Birth to 6 mo	Prepare to feed when infant signals hunger.	Signal hunger/satiety through voice, facial expression, and actions	Responds to infants signals: feeds when hungry, stop with satiety	Caregiver will respond and meet her needs
6–12 mo	Ensure child is comfortably positioned; establish family mealtimes/routines	Sit; chew and swallow semisolid foods; self-feed with fingers	Respond to child's signals; increase variety, texture, and tastes Respond positively to child's attempts to self-feed	To begin to self-feed; to experience new tastes and textures; that eating and mealtimes are fun
12–24 mo	Offer 3–4 healthy choices/meal; offer 2–3 healthy snacks each day; offer foods that can be picked up, chewed, and swallowed	Self-feed many different foods; use baby-safe utensils; use words to signal requests	Respond to child's signals of hunger and satiety; respond positively to child's attempts to self-feed	To try new foods; to do things for herself; to ask for help; to trust that caregiver will respond to her requests

¹ Represents a nonexhaustive example of caregiver preparation and responsivity.

Caregivers who control the pace of feeding and prohibit attempts at self-feeding often explain their behavior by the need to be a competent parent. They may have concerns about their child's intake, appetite, size, and propensity to refuse food (41). They may also have competing demands on their time and resources and feel pressed to complete the feeding task as quickly and efficiently as possible. When caregivers misinterpret their child's refusal to accept food as a sign of poor appetite, rather than a signal for autonomy, the mealtime may become stressful, potentially leading to the child's feelings of frustration, inattention to internal cues, and lack of interest in communicating these cues to the caregiver. The American Academy of Pediatrics Expert Committee has recommended that caregivers avoid restrictive feeding behaviors (3).

Controlling feeding may also arise when children experience problems in feeding or growth, such as recovery feeding after illness. Under these circumstances, recommendations tend to be guided by children's nutritional needs, focusing on the quantity and quality of food and the frequency of feeding (12). As a result, health and nutrition counselors may not focus on parent responsivity and parents may interpret the recommendations as a mandate to use controlling strategies to "get their child to eat." This strategy has the potential to undermine the child's trust in an otherwise responsive parent.

Caregivers may also resort to controlling or restrictive behaviors if they perceive their child to be at risk for overweight (42). Evidence from laboratory studies has shown that caregiver restriction is associated with subsequent weight gain as children "eat in the absence of hunger," particularly those who are already overweight (40). Yet recent findings from a large national longitudinal cohort study showed that caregiver controlling behavior followed children's excessive weight gain, rather than preceding it (43). As Ogden et al. (44) have suggested, covert restriction (e.g. avoiding fast food restaurants and purchases of high-fat food) may have different consequences from overt restriction (e.g. limiting what a child may eat). Further research is warranted to understand the relation between caregiver restriction and children's weight gain.

Indulgence is characterized by caregiver responses that may be prompt and seemingly nurturant but lack the qualities of contingency and developmental appropriateness (39). Caregivers who misinterpret their child's signals or are unable or unwilling to attend to the specific situation may find it easiest to give in to the child, regardless of the contingency or developmental appropriateness of their response. For example, care-

givers who indiscriminately respond to children's cries or protests by offering favored food such as candy or chips, regardless of the situation, are behaving in an indulgent manner and teaching children that crying is an effective means to elicit favored food. Recent evidence also suggests that children of indulgent caregivers are at risk for higher BMI (45). Uninvolvement is characterized by the caregiver's lack of attention to the child (39). In response to caregiver lack of responsivity, children may resort to intense or inappropriate methods that are likely to attract caregiver attention (17), such as throwing food or refusing to eat. Although this type of behavior is likely to elicit reprisals from caregivers and often an increase in caregiver control, it does result in increased caregiver attention.

Strategies to promote responsive feeding

Although caregivers often attribute feeding problems to their child, it is easier to change children's behavior by altering the context or the caregiver's behavior, rather than attempting to change the child directly. Interventions to promote parental responsivity in nonfeeding contexts (22,33) have their parallel in responsive feeding interventions that promote caregiver responsivity and child self-feeding (46,47).

Caregivers can facilitate children's signals and reciprocity through proactive preparation. Applied to play, the provision of age-appropriate play materials, some new and some familiar, keeps the child in place, engaged, and at liberty to act on the materials and emit signals. This proactive preparation provides a structure so the child knows what to do and can explore new options and the caregiver can provide support that expands on the child's repertoire. Applied to feeding, proactive preparation includes establishing routines around mealtimes, such as eating in the same place and at the same time; ensuring that children are seated in a supportive and comfortable position; and modeling appropriate mealtime behavior, such as making healthy choices for the entire family (39). Young children raised by caregivers who eat healthy foods, such as a diet rich in fruits and vegetables, are more likely to choose and prefer fruits and vegetables (48). In contrast, children of caregivers who model unhealthy dietary behaviors (i.e. diets high in refined carbohydrates and saturated fats) are likely to develop unhealthy diets themselves (49). When caregivers engage in responsive interactions with their children, they are likely to maintain the child's feeding in the short term, the clarity of expressed signals of hunger and satiety, and ultimately responsibility for recognizing and acting on such signals. A recent survey of health and

nutritional personnel from 6 countries endorsed parenting practices characterized by structure, nondirective control, and responsivity as being most effective in promoting fruit and vegetable consumption among toddlers (50).

In summary, although adequate intake of healthy food is necessary for young children's growth and development to avoid the threats of both underweight and obesity, food alone is not sufficient. Children benefit from responsive parenting and are likely to benefit from a responsive feeding environment where their internal signals of hunger and satiety are recognized and met with prompt, emotionally supportive, contingent, and developmentally appropriate responses. The short-term benefits of responsive feeding are expected to be children's increasing attention to internal signals of hunger and satiety and to eating in a competent and responsible manner. The long-term benefits of responsive parenting are enhanced psychosocial, cognitive, and language competence, and the long-term benefits of responsive feeding are likely to include healthy nutrition and growth. Although responsivity is valued in many cultures, parents who lack confidence in their children's ability to consume enough food or to learn to self feed and caregivers who themselves feel stressed or pressured may turn to nonresponsive feeding behaviors. As a result, feeding can become frustrating for both parents and children, dominated by miscommunication, misinterpretation, and battles over food. Nutritional recommendations that focus exclusively on food and ignore the feeding context may be ineffective, inadvertently encouraging parents to use nonresponsive, controlling behaviors, with little consideration of children's contribution to feeding interactions.

Evidence has shown that interventions are effective in promoting parental responsivity in both play and feeding contexts. Research is needed to examine the short- and long-term impact of responsive feeding on children's growth and development. Future efforts to promote healthy growth and to prevent underweight and overweight among young children should incorporate and evaluate strategies to promote responsive feeding.

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Literature Cited

1. Kral TV, Rauh EM. Eating behaviors of children in the context of their family environment. *Physiol Behav.* 2010;100:567–73.
2. WHO. Guiding principles for complementary feeding of the breastfed child. Geneva: WHO; 2003.
3. Barlow SE. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics.* 2007;120 Suppl 4:S164–92.
4. Silberstein D, Feldman R, Gardner JM, Karmel BZ, Kuint J, G R. The mother-infant feeding relationship across the first year and the development of feeding difficulties in low-risk premature infants. *Infancy.* 2009;14:501–25.
5. Farrow C, Blissett J. Does maternal control during feeding moderate early infant weight gain? *Pediatrics.* 2006;118:e293–98.
6. Feinstein L, Sabates R, Sorhaindo A, Rogers I, Herrick D, Northstone K, Emmett P. Dietary patterns related to attainment in school: the importance of early eating patterns. *J Epidemiol Community Health.* 2008;62:734–9.
7. Kochanska G, Woodard J, Kim S, Koenig JL, Yoon JE, Barry RA. Positive socialization mechanisms in secure and insecure parent child dyads: two longitudinal studies. *J Child Psychol Psychiatry.* 2010;51:998–1009.

8. Ainsworth MDS, Belhar MC, Waters E, Wall S. Patterns of attachment: a psychological study of the strange situation. Hillsdale, NJ: Lawrence Erlbaum Assoc; 1978.
9. Kretchmar MD, Jacobvitz DB. Observing mother-child relationships across generations: boundary patterns, attachment, and the transmission of caregiving. *Fam Process.* 2002;41:351–74.
10. Bornstein MH, Tamis-LeMonda CS. Maternal responsiveness and infant mental abilities: specific predictive relations. *Infant Behav Dev.* 1997;20:283–96.
11. Landry SH, Smith KE, Swank PR, Assel MA, Vellet S. Does early responsive parenting have a special importance for children's development or is consistency across early childhood necessary? *Dev Psychol.* 2001;37:387–403.
12. Eshel N, Daelmans B, Cabral de Mello M, Martines J. Responsive parenting: interventions and outcomes. *Bull World Health Organ.* 2006;84:991–8.
13. Bradley RH. The HOME environment. In: Handbook of cultural developmental science. Bornstein MH, editor. New York: Psychology Press; 2010. p. 505–30.
14. Harkness S, Super CM. The developmental niche: a theoretical framework for analyzing the household production of health. *Soc Sci Med.* 1994;38:217–26.
15. Bugenthal DB, Goodnow JJ. Socialization processes. In Damon W, Eisenberg N, editors. Handbook of child psychology. 5th ed, 3rd vol. Social, emotional, and personality development. New York: Wiley; 1998. p. 389–462.
16. Kartertner J, Keller H, Lamm B, Abels M, Yovsi RD, Chaudhary N, Su Y. Similarities and differences in contingency experiences of 3-month-olds across sociocultural contexts. *Infant Behav Dev.* 2008;31:488–500.
17. Goldstein MH, Schwade JA, Bornstein MH. The value of vocalizing: five-month-old infants associate their own noncry vocalizations with responses from caregivers. *Child Dev.* 2009;80:636–44.
18. Rochat P, Striano T. Who's in the mirror? Self-other discrimination in specular images by four- and nine-month-old infants. *Child Dev.* 2002;73:35–46.
19. Nicely P, Tamis-LeMonda C, Grolnick WS. Maternal responsiveness to infant affect: stability and prediction. *Infant Behav Dev.* 1999;22:103–17.
20. Bronfenbrenner U, Ceci SJ. Nature-nurture reconceptualized in developmental perspective: a bioecological model. *Psychol Rev.* 1994;101:568–86.
21. Sameroff A, editor. The transactional model of development: how children and contexts shape each other. Washington, DC: American Psychological Association; 2009.
22. Bakermans-Kranenburg MJ, van IZendoorn MH, Juffer F. Less is more: meta-analyses of sensitivity and attachment interventions in early childhood. *Psychol Bull.* 2003;129:195–215.
23. Isabella RA. Origins of attachment: maternal interactive behavior across the first year. *Child Dev.* 1993;64:605–21.
24. Van den Boom DC. The influence of temperament and mothering on attachment and exploration: an experimental manipulation of sensitive responsiveness among lower-class mothers with irritable infants. *Child Dev.* 1994;65:1457–77.
25. Tamis-LeMonda CS, Bornstein MH, Baumwell L, Damast AM. Responsive parenting in the second year: specific influences on children's language and play. *Early Dev Parent.* 1996;5:173–83.
26. Tamis-LeMonda CS, Bornstein MH, Baumwell L. Maternal responsiveness and children's achievement of language milestones. *Child Dev.* 2001;72:748–67.
27. Tamis-LeMonda CS, Shannon JD, Cabrera N, Lamb ME. Fathers and mothers at play with their 2- and 3-year-olds: contributions to language and cognitive development. *Child Dev.* 2004;75:1806–20.
28. Landry SH, Smith KE, Swank PR. Responsive parenting: establishing early foundations for social, communication, and independent problem-solving skills. *Dev Psychol.* 2006;42:627–42.
29. Malmberg LE, Stein A, West A, Lewis S, Barnes J, Leach P, Sylva K, FCCC. Parent-infant interaction: a growth model approach. *Infant Behav Dev.* 2007;30:615–30.
30. Smith KE, Landry SH, Swank PR. The role of early maternal responsiveness in supporting school-aged cognitive development for children who vary in birth status. *Pediatrics.* 2006;117:1608–17.
31. Aboud FE, Alemu T. Nutrition, maternal responsiveness and mental development of Ethiopian children. *Soc Sci Med.* 1995;41:725–32.

32. Sigman M, Neumann C, Carter E, Cattle DJ, D'Souza S, Bwibo N. Home interactions and the development of Embu toddlers in Kenya. *Child Dev.* 1988;59:1251–61.
33. Landry SH, Smith KE, Swank PR, Guttentag C. A responsive parenting intervention: the optimal timing across early childhood for impacting maternal behaviors and child outcomes. *Dev Psychol.* 2008;44:1335–53.
34. Engle PL, Bentley M, Pelto G. The role of care in nutrition programmes: current research and a research agenda. *Proc Nutr Soc.* 2000;59:25–35.
35. Daelmans B, Dewey K, Arimond M. New and updated indicators for assessing infant and young child feeding. *Food Nutr Bull.* 2009;30 Suppl 2:S256–62.
36. Parkinson KN, Drewett RF. Feeding behaviour in the weaning period. *J Child Psychol Psychiatry.* 2001;42:971–8.
37. Worobey J, Lopez MI, Hoffman DJ. Maternal behavior and infant weight gain in the first year. *J Nutr Educ Behav.* 2009;41:169–75.
38. Kagitcibasi C. Autonomy and relatedness in cultural context: implications for self and family. *J Cross Cult Psychol.* 2005;36:403–22.
39. Black MM, Hurley K. Infant nutrition. In Bremner JG, Wachs T, editors. *Handbook on infant development.* 2nd vol. Applied and policy issues. New York: Wiley-Blackwell; 2010. p. 33–61.
40. Birch LL, Fisher JO, Davison KK. Learning to overeat: maternal use of restrictive feeding practices promotes girls' eating in the absence of hunger. *Am J Clin Nutr.* 2003;78:215–20.
41. Moore AC, Akhter S, Aboud FE. Responsive complementary feeding in rural Bangladesh. *Soc Sci Med.* 2006;62:1917–30.
42. May AL, Donohue M, Scanlon KS, Sherry B, Dalenius K, Faulkner P, Birch LL. Child-feeding strategies are associated with maternal concern about children becoming overweight, but not children's weight status. *J Am Diet Assoc.* 2007;107:1167–75.
43. Rhee KE, Coleman SM, Appugliese DP, Kaciroti NA, Corwyn RF, Davidson NS, Bradley RH, Lumeng JC. Maternal feeding practices become more controlling after and not before excessive rates of weight gain. *Obesity (Silver Spring).* 2009;17:1724–9.
44. Ogden J, Reynolds R, Smith A. Expanding the concept of parental control: a role for overt and covert control in children's snacking behaviour? *Appetite.* 2006;47:100–6.
45. Hughes SO, Shewchuk RM, Baskin ML, Nicklas TA, Qu H. Indulgent feeding style and children's weight status in preschool. *J Dev Behav Pediatr.* 2008;29:403–10.
46. Aboud FE, Shafique S, Akhter S. A responsive feeding intervention increases children's self-feeding and maternal responsiveness but not weight gain. *J Nutr.* 2009;139:1738–43.
47. Penny ME, Creed-Kanashiro HM, Robert RC, Narro MR, Caulfield LE, Black RE. Effectiveness of an educational intervention delivered through the health services to improve nutrition in young children: a cluster-randomised controlled trial. *Lancet.* 2005;365:1863–72.
48. Skinner JD, Carruth BR, Bounds W, Ziegler P, Reidy K. Do food-related experiences in the first two years of life predict dietary variety in school-aged children? *J Nutr Educ Behav.* 2002;34:310–5.
49. Papas MA, Hurley KM, Quigg AM, Oberlander SE, Black MM. Low-income African American adolescent mothers and their toddlers exhibit similar dietary variety patterns. *J Nutr Educ Behav.* 2009;41:87–91.
50. O'Connor T, Watson K, Hughes S, Beltran A, Hingle M, Baranowski J, Campbell K, Canal DJ, Lizaur AB, et al. Health professionals' and dietetics practitioners' perceived effectiveness of fruit and vegetable parenting practices across six countries. *J Am Diet Assoc.* 2010;110:1065–71.