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# Food Parenting: A Selective Review of Current Measurement and an Empirical Examination To Inform Future Measurement

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## Abstract

***Background:*** Interactions between parents and children in regard to food are an important part of the development of food preferences and intake patterns for children. The measurement of this complex and multidimensional construct is very challenging.

***Methods:*** This article examines the current status of measurement in this domain in a selective review, considers qualitative input from parents and adolescents in an empirical examination of the topic, and makes concrete recommendations for the future.

***Results:*** Qualitatively, there were important differences between what the adolescents reported that their parents did to impact their eating habits, what parents of younger children report they currently do, and what researchers typically measure in research on parental feeding practices.

***Conclusions:*** On the basis of these empirical findings and our review of the literature, we recommend that food parenting be measured on three levels: Feeding styles (*e.g.*, authoritative), food parenting practices (*e.g.*, restriction), and specific feeding behaviors (*e.g.*, putting food out of the child's reach). Specific recommendations for future study are given for each level of measurement.

## Introduction

Although parents and children interact with one another around many issues, there is perhaps no subject more pervasive in their interactions than that of food. As the gatekeepers of food, parents often choose what foods are available in the home, prepare the food, permit their children to eat some foods and deny them others, and determine the frequency of meals and snacks, as well as portion sizes.[1] Parents also contribute to their child's eating in more subtle ways, such as modeling eating behaviors, having discussions about food with and around their children, and conveying attitudes about food through comments and nonverbal communication, just to name a few.[2,3] Interactions about food occur multiple times a day starting when a child is born until they are adults (and sometimes beyond). Given the extent and complexity of these interactions, it is not surprising that the measurement of food parenting is very challenging. Nonetheless, researchers and clinicians interested in describing and understanding the precursors to and implications of variability in food parenting depend upon having reliable, valid, and conceptually appropriate measurement strategies.

With rates of childhood obesity at their highest point in history,[4] and an extremely obesogenic environment in which parents are raising children,[5,6] understanding the etiology of childhood overweight is critical to guide prevention and treatment efforts. Nonetheless, to date, researchers have not conclusively determined which food parenting practices are associated with healthy weight status, nutrient intake, and food preferences in children. Some of this lack of clear consensus may be due to inconsistency in how various aspects of food parenting have been measured. Thus, it may be beneficial for researchers to take a critical look at how food parenting is currently measured, to determine both the strengths and weaknesses of existing approaches, and to adjust measurement strategies as needed to maximize the likelihood that clear findings can emerge from future research.

## A Review of Currently Measured Constructs in Food Parenting

Food parenting is comprised of parents' knowledge, beliefs, affect, and behaviors vis-à-vis their children and food. For example, parents might know about the health

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benefits of certain foods for kids, believe that children should make their own choices about what to eat, feel guilty when their child eats too much junk food, and keep a good supply of fruits and vegetables in the house. Current measures of food parenting focus primarily on behavior (Comprehensive Feeding Practices Questionnaire,[7] Child Feeding Questionnaire[8]), with less emphasis on measuring knowledge,[9] beliefs (*e.g.*, self-efficacy[10]), and affect (*e.g.*, worry,[11] guilt). Furthermore, current research on food parenting employs measures of general styles of feeding (*i.e.*, authoritarian, permissive) as well as specific food parenting approaches (*e.g.*, pressuring the child to eat more, restricting). A thorough review of the methods available to measure food parenting is available elsewhere,[12] thus the following sections provide only a selective overview of the constructs commonly measured in this field.

### *Infant-Specific Food Parenting Behaviors*

Two commonly measured food parenting practices specific to infants are duration of breastfeeding and age of introduction of complementary foods (*e.g.*, Infant Feeding Style Questionnaire,[13] assessment of infant milk feeding practices[14]). Duration of breastfeeding has been hypothesized to reduce the risk of overweight and obesity in adolescence and adulthood perhaps because breastfeeding promotes child self-regulation of hunger and satiety.[15,16] However, research on breastfeeding and overweight has demonstrated mixed results.[17,18] A World Health Organization review in 2007 supported the link,[18] whereas others[19–21] found no association between duration of breastfeeding and adulthood overweight. Research findings are also mixed on the outcomes of early or late introduction of complementary foods.[19,22–26]

### *Controlling Food Parenting*

The construct that has, perhaps, received the most attention for toddler-aged children through adolescents is coercive or controlling food parenting practices, specifically parent-centered feeding practices in which the parent, rather than the child, makes decisions about what, when, or how much the child should eat. One theoretical premise that has guided a great deal of the research in this area is that when parents control their child's eating in this way, it undermines the child's natural ability to respond to their own internal hunger and satiety cues, thus establishing maladaptive patterns of eating. The two most commonly measured coercive food parenting practices are pressure to eat and restriction, and the most frequent measurement instrument for both of these is the Child Feeding Questionnaire.[8]

Several reviews have indicated that controlling feeding practices in general, and restriction in particular, is the aspect of food parenting most consistently linked to child weight outcomes.[27,28] In addition to pressure and restriction, a range of other controlling food parenting behaviors have also been measured, including pushiness,[29] encouragement to clean the child's plate,[30] parent control of intake,[31] threat to withhold food/play,[32] aversive instruction, aversive contact,[33] coerciveness,[34] and rewarding eating with desired activities or nonfood objects.[35]

### *Instrumental Food Parenting*

Many measures of food parenting also include scales to assess food parenting practices that aim to regulate either the behavior or the emotions of the child. Using food as a reward to regulate the child's behavior is theorized to make food that is offered as a reward (usually sweets) more desirable and the food that the child is rewarded for eating (usually vegetables) less desirable.[28,35–37] Using food to regulate the child's emotions (such as giving a snack to calm a temper tantrum) may lay the groundwork for later emotional eating and has been associated with childhood overweight.[38,39]

### *Feeding Styles*

A related line of research has examined general feeding styles rather than specific food parenting behaviors (*e.g.*, Parental Feeding Style Questionnaire,[40] The Caregiver's Feeding Style Questionnaire[41]). The most commonly measured constructs in this domain are authoritative, authoritarian, indulgent (also known as permissive[42]), and uninvolved (also known as laissez-faire[13]) feeding styles. Research has linked permissive feeding styles to lower intake of fruits, vegetables, and dairy foods in children.[43]

Consistent with parenting style labels, authoritative feeding style is associated with parents who are generally more responsive to their children's needs, whereas the authoritarian feeding style is associated with parents who assert more rigid control.[30,41] It should be noted that parents can be described concurrently by both general styles and the more specific behaviors described previously. As Ventura and Birch[44] describe, feeding styles are contexts within which specific food parenting behaviors occur and may serve to moderate the impact of those specific behaviors (*e.g.*, restriction in the context of an authoritarian feeding style may have different outcomes than restriction in the context of an authoritative feeding style[42,45]). Furthermore, feeding styles are trait-like, whereas food parenting practices are more responsive to situational specifics such as setting, or age, gender, and weight status of the child.[44]

## An Empirical Examination

Although instruments designed to measure food parenting are abundant, several decades of research using these measures have not yet yielded a clear picture of optimal food parenting or specific guidelines for parents to follow in this domain. It is possible that the existing measures examine only a subset of possible food parenting behaviors, which may or may not be the most critical ones. Thus, in an attempt to better understand the food parenting behaviors that parents and their children perceive to be most influential in determining long-term eating habits and

weight outcomes, the current study used two samples (older adolescents and parents) to gain insight into what these groups see as significant food parenting behaviors.

## Methods

*Participants.* Two convenience samples (older adolescents and parents) were included. Older adolescents ($n = 103$, 21% overweight or obese, 79% white) were recruited from psychology courses at a large midwestern university and were on average 19.3 years old. These participants reported that they were responsible for their own food intake for between 6 months and 3 years (since coming to college). Parents ($n = 95$, 41% overweight or obese, 94% white, median income = $55,000–$75,000) were recruited via MTurk (Amazon.com's online workforce), met several criteria (*i.e.*, fluent in English, US residency, have a child under the age of 19), and were paid for completing the survey. Of the parents, 54% had infants/preschoolers, 59% had school-aged children between ages 5 and 12, and 45% had teenage children, with many families reporting children in multiple age groups. Students gave written consent to participate, and parents indicated consent by clicking on the ''continue'' button on the survey. Data collection was approved by the Human Subjects Review Board at Bowling Green State University.

*Procedure.* Both samples were asked to share accounts of food parenting behaviors. College students were prompted with, ''List five things that your parents did when you were growing up that impacted your eating habits today.'' Parents were prompted with, ''Please tell us five things you do as a parent that you think have an impact on your children's eating habits.'' Qualitative responses were coded by the two authors, using themes from existing food parenting measures as well as themes that emerged from the data. Each student comment ($n = 493$) was coded into one of 19 categories (*e.g.*, specific foods eaten, availability, pressure, modeling, portion size, etc.). Parent comments ($n = 461$) were coded into the same categories, plus three additional categories that emerged from their responses (*i.e.*, providing healthy meals and snacks, meal rules and routine, and moderation). Both authors coded a subset of the data (25%), with very high agreement (kappa = 0.86). All disagreements between coders were resolved through discussion before the remaining responses were coded.

## Results

*Older adolescents.* A summary of the coded responses can be found in Table 1. A striking finding from this sample was that the four most frequently mentioned constructs were things that are not typically measured by the most commonly used food parenting questionnaires. The most common response was that eating or not eating a specific food or drink during childhood shaped current eating habits. For example, one student commented, ''A lot of our meals were cooked with butter, so now I like butter on most of my food.'' Another participant wrote, ''Water was mostly all we drank.'' The next most common responses referred to eating or not eating out in restaurants or fast food establishments. For example, one student wrote, ''We were really busy, so we ate fast food many times throughout the week;'' another said, ''We only went out to eat about once a month. It was a really special occasion.'' The third most common category was the availability of healthy or unhealthy foods in the home. For example, one participant wrote, ''We always had easily accessible sweets in the house. Now I snack more than I should.'' Another commented, ''Most of the snacks we had around the house were fruit.'' Although this is consistent with research showing that specific food availability and accessibility (*e.g.*, fruit, juice and vegetable; soft drinks) are

**Table 1. Percentages of Participants Reporting Food Parenting Behaviors by Category**

| Category | Adolescents Percent of respondents | Parents Percent of respondents |
|---|---|---|
| Specific foods eaten | 44% | 27% |
| Ate out/fast food | 39% | 13% |
| Availability | 37% | 39% |
| Family meals | 31% | 32% |
| Pressure | 28% | 8% |
| Child control/indulgent | 22% | 13% |
| Modeling | 17% | 48% |
| Encouraged variety | 16% | 14% |
| Snack rules | 15% | 2% |
| Teaching about nutrition | 14% | 28% |
| Restriction | 12% | 23% |
| Physical activity | 11% | N/A |
| Made me taste | 11% | 6% |
| Breakfast | 11% | 5% |
| Portion size | 10% | 10% |
| Packed school lunch | 7% | 3% |
| Reminders about weight | 6% | N/A |
| Emotion regulation | 6% | N/A |
| Food as a reward | 4% | 3% |
| Provide healthy foods | N/A | 50% |
| Meal rules and routine | N/A | 20% |
| Moderation | N/A | 8% |

On average, each participant reported five food parenting behaviors. Adolescents, $n = 103$; parents, $n = 95$.

N/A, not applicable.

good predictors of the consumption of these foods.[46,47] These constructs are not often included in widely used food parenting surveys. The fourth most common construct mentioned was eating family meals; for example, ''We had family dinner around the table every week night.'' Again, while a great deal of evidence supports family meals as a predictor of healthier child food intake and BMI status,[48–50] most commonly used food parenting questionnaires do not ask about this practice.

It is also noteworthy that 22% of participants reported behaviors consistent with a generally indulgent feeding style, whereas none reported an authoritarian or authoritative style. Additionally, the coercive food parenting practice of pressure to eat more was mentioned by 28% of the participants, whereas restriction was less common at 12%. Modeling was mentioned by 17% of the adolescents. The remaining constructs (several of which are often measured by researchers, such as food as a reward and using food to regulate emotions) were mentioned by 16% of the respondents or fewer.

*Parents.* A summary of these responses is also provided in Table 1. The most common response from parents about what they do to impact their children's eating habits was that they provide healthy meals and snacks for their children (50% of participants). For example, many parents simply stated, ''I prepare healthy meals,'' or ''I give my children nutritious snacks.'' This construct was not mentioned at all by the adolescents. It is possible that in giving this response, parents were thinking more about their children's current eating than about the development of longer-term habits.

Second, parents expressed great confidence in the power of modeling. For example, one parent said, ''I eat smart choices myself, so that I set a good example.'' Whereas only 17% of the adolescents mentioned modeling, 48% of the parents did. Like the adolescents, many parents cited the importance of having healthy foods available in the home, and, among parents, this type of response was often put in terms of buying these foods (*e.g.*, ''I buy a lot of fruit,'' or ''I buy too much of the sweets he likes.''). Also, consistent with the adolescents, many parents mentioned the role that specific foods and drinks play in shaping their children's eating habits (*e.g.*, water, soda, meat, fried foods) as well as the important role of family meals.

It is also worth noting that teaching about nutrition either through direct didactic strategies (*e.g.*, ''Talk to him about the choices he makes as far as what he eats and drinks'' or ''I taught him to read nutrition labels'') or through involving the child in grocery shopping or cooking (*e.g.*, ''I encourage them to cook with me so they will be willing to try different foods.'') was mentioned often (28% of the respondents). Additionally, although restriction comprised the same percentage of responses from both parents and adolescents (5% of responses; *e.g.*, ''I don't let them have dessert'' or ''I limit the amount of sugar they can have.''), these responses were distributed differently between the two samples. Among parents, 23% mentioned restriction once (or occasionally twice) as one of the strategies they used. Among adolescents, only 12% of the students mentioned restriction, but most of them listed it three or more times. It is possible that a relatively large number of parents practice restriction, but because it is used in the context of many other behaviors, most adolescents do not notice it. This could be the case especially if restriction occurs in subtle or covert ways (*e.g.*, a parent restricts sweets by not keeping them in the house).[51] In contrast, the subset of adolescents who are aware of or sensitive to parental food restriction seem to experience it acutely as a very important part of their food environment. This supports the idea that there are individual differences either in the way that parents practice restriction, the way that children experience restriction, or both, that merit further exploration.

## Discussion

Results from the extant literature, coupled with the qualitative data summarized here, yield several concrete recommendations for future measurement. Given the complexity of the domain, measurement of food parenting must be multidimensional, and the subscales must be internally coherent. Regarding this latter point, the most commonly used scale to measure restriction (Child Feeding Questionnaire[8]) includes items about using food as a reward. Thus, when findings about this subscale are reported, it is not clear whether these findings are about restriction *per se*, or a more complex constellation of coercive food parenting practices.

In addition, this review and the qualitative data collected here suggest that in the domain of food parenting, it is important to consider three levels of measurement—broad styles, general strategies, and specific behaviors. Each of these will likely contribute unique information to our understanding of how food parenting is linked to child outcomes, and research must incorporate all of them for a complete understanding of this construct. Specific recommendations for each level follow.

### *Feeding Styles*

The first level addresses broad behavioral styles as described above[41] that are analogous to parenting styles well established in the literature (authoritarian, authoritative, indulgent, and uninvolved). Like parenting styles, feeding styles are based on the dimensions of responsiveness and demandingness. Research has demonstrated that various subsamples of parents (*e.g.*, Hispanic, African American) differ on feeding styles[41] and that feeding styles may have an impact on child weight outcomes for some subsets of children (*e.g.*, in one study, indulgent feeding was linked to higher BMI only in Hispanic boys).[52] Using this measurement approach more broadly would allow researchers to compare across samples, as well as to understand how broad styles interact with the other levels of measurement.

In addition, this level of measurement should be informed by literature on parenting styles. The conceptual and empirical issues facing these two measurement domains are likely to overlap considerably,[53,54] and the measurement of food parenting can benefit from the accumulated wisdom of general parenting research. For example, the literature on parenting styles has emphasized that parenting style creates an emotional context in which specific interactions between parents and children occur,[55] a conceptualization that is also relevant for feeding style.[52]

*Food Parenting Strategies*

This level includes the food parenting practices that have been measured most often in the literature and are more behaviorally based than the styles described above. For example, within the context of an authoritarian feeding style, a parent might use the specific strategy of restriction or pressure (or both). Although both restriction and pressure reflect a style that is parent centered and controlling, these strategies are likely to be associated with different child characteristics and different outcomes. Similarly, within an authoritative feeding style, parents might use the strategy of modeling or one of keeping a wide range of healthy foods available (or both). Again, despite reflecting a common style, the specific strategies may function differently in contributing to food intake and weight outcomes for children. Thus, both style and strategy should be measured simultaneously.

Although this level of measurement is the most fully developed in the current literature, the review here suggests some improvements. One recommendation at this level is that measurement of food parenting strategies might benefit from greater attention to positive food parenting. Although it is often considered a truism in psychological research that negative behaviors carry more weight than positive ones,[56] the measurement of positive food parenting is especially warranted in light of reports from parents that they overwhelmingly use positive strategies to impact their children's eating habits and weight outcomes. Modeling, especially enthusiastic modeling, of healthy food intake has been linked to greater intake of these foods by children.[57] Similarly, keeping healthy foods in the house,[58] having dinner together as a family (which provides opportunities for modeling as well as setting norms about portion size, making eating a pleasant experience, etc.[50]), and feeding children in a way that is responsive to hunger and satiety cues[59] have all been linked theoretically and empirically with good outcomes for children and were commonly reported by parents and older adolescents in our sample. However, these positive strategies have received less attention in previous measurement approaches than more controlling strategies such as restriction or pressure.

A second recommendation at this level is an increased emphasis on food parenting that occurs outside of regular meal times. Although this was not specifically coded in the qualitative data described above, a large number of the adolescents' and parents' responses focused on between-meal eating and snacks. The examination of food parenting in regard to snacks (especially unhealthy snacks) is important in light of reports that snacking frequency is related to girls' increased fat intake from energy dense foods and BMI.[60] Additionally, whereas meals more typically include healthy foods that parents want children to eat, many of the coercive food parenting practices (*e.g.*, restriction, food as a reward) that may be of concern in this area likely occur with greater frequency outside of mealtimes.

*Specific Food Parenting Behaviors*

This level of measurement has been less of a focus in previous research, and understandably so, because it is likely to present the most challenges. This level of measurement might include asking about specific foods or categories of foods that are given to the child (*e.g.*, does the parent give the child water, milk, or sugar-sweetened beverages to drink with meals,[61] how often is fast food given to the child[62]) and portion sizes of these foods. Parents' knowledge about food preparation techniques or the health benefits of various foods might be particularly relevant here as well. Furthermore, asking about specific types of foods is important because strategies such as pressure might take on a different significance if that pressure directs the child to finish their fries at a fast food restaurant versus an apple from their lunch. In addition, food parenting practices might differ across categories of food; for example, a parent might restrict candy but pressure their child to eat more vegetables. Specific food categories of interest might vary across studies, but categories commonly used in Home Food Inventories (*e.g.*, added fats, high fat meats, chips, and other snacks, etc.[63]), which have been identified as major contributors to overall energy intake, might be a reasonable starting point.

In addition, as suggested by Wardle and Carnell,[64] this level of measurement might also include a more fine-tuned exploration of *how* the food strategies described above are implemented. For example, when parents practice restriction, do they keep cookies in a jar on the counter and tell the child ''no'' every time cookies are requested, or do they limit cookie consumption by keeping them out of sight or providing a distraction when the child asks for them. An example in the current literature is the distinction made by some research between overt and covert control.[51] Although both of these constructs are a type of restriction, overt control is more easily detected by the child and may be associated with different outcomes. Obviously, the number of constructs that could potentially be measured in this last, most specific, level is enormous. Thus, drawing from the general parenting literature to select behaviors that are common among parents or likely to be linked to outcomes might be one place to begin. Qualitative research with parents of overweight children or parents of children with unhealthy eating habits might also yield important directions. In addition, research in this area might use vignettes, such as ''if you prefer that your child does not eat

many cookies, would you…'' providing multiple options for how this food parenting practice might be implemented. Finally, item banking and computerized adaptive testing, described elsewhere in this issue, might also help researchers in this effort.

Measurement of food parenting on all three of these dimensions will have several benefits. First, it may make the research more comparable across multiple racial, ethnic and socioeconomic (SES) groups. The weak psychometric fit of some commonly used measures in non-white samples[65] and the higher prevalence of overweight in non-white children[66] highlights the importance of this goal. Second, it will bring the measurement of food parenting more in line with well-established approaches in the measurement of general parenting. Third, it will encourage researchers to investigate specific behaviors (such as the serving of certain foods) that appear to be central to parents and children as they think about developing food habits.

## Some Additional Future Directions

Although the work described above is enough to keep researchers busy for a long time, a few additional recommendations for future work in this area are provided.

1. Although surveys are inexpensive and efficient to administer, a greater use of nonsurvey measures, such as observational coding and ecological momentary assessment, would likely contribute a great deal to how we understand food parenting and its relation to outcomes of interest. Observational coding has been used in numerous studies with a direct focus on child feeding practices.[52,67,68] This method entails quantifying parental actions, during dinner time for example, into useful behavioral groupings. Ecological Momentary Assessment (EMA[69]) is another methodology with great potential for use in food parenting research. This methodological strategy involves numerous repeated assessments of participants in real time, rather than relying on global, retrospective reports of behavior, and thus has the potential to shed a great deal of light on the dynamics of this complex behavior.
2. With the exception of infant-specific food parenting practices, most measures in this area are not especially attuned to developmental changes in children. The types of behaviors that comprise authoritative feeding for a preschooler are different from authoritative feeding for a preteen. Similarly, restriction may function differently for a young child than for an older one. Thus, it would be useful for researchers to develop food parenting and feeding style instruments for specific developmental levels so that appropriate comparisons could be made across ages or longitudinally.
3. Research has focused almost entirely on parent report; however, as seen in the data here, parents and their children may have different ideas about what is most salient or important in shaping their own eating habits. While a parent might take great pains to model vegetable eating, the child might pay greater attention to the popcorn treat that accompanies movie night. Therefore, measuring children's perceptions of their parents' practices may shed interesting light on the topic.
4. Most of the research to date has examined linear relationships between various food parenting practices and outcomes. However, this may not completely reflect the relationships that exist. One possibility is that the relationships are curvilinear. For example, too little or too much restriction may both be linked to negative outcomes for children, whereas a moderate amount of restriction might be ''just right.'' Another possibility is that clinical cut offs might exist above or below which certain food parenting practices become problematic.
5. The field would also benefit from increased attention to outcome variables other than BMI. Although excess weight is a major health concern, food parenting also shapes children's food preferences (which in turn could determine their micronutrient intake), attitudes about their own and other people's bodies (body image and weight bias), and long-term eating habits. Each of these issues deserves attention as outcomes.

Of course, the results presented here and thus the conclusions that can be drawn from them are not without limitations. For example, the wording of the prompt for parents was in the present tense (whereas the wording for the college students was retrospective), which might have encouraged different types of responses. Furthermore, self-report is limited in that both parents and older adolescents may be unaware of the impact of particular food parenting behaviors, and thus might fail to report them. Thus, additional research that incorporates observational data would be very valuable in further shaping measurement priorities. Finally, the parent sample included those with children in a very wide age range. Because food parenting likely varies widely with the developmental stage of the child, further work that takes the age of the child into account more closely is essential.

## Conclusions

Given worldwide rates of childhood overweight and the negative consequences associated with this phenomenon, the study of food parenting is timely and important. An emphasis on strong measurement of the right constructs has the potential to make this line of research more efficient and effective, and will help researchers provide the best possible support to parents and the health care providers who work with parents in choosing healthy approaches to food parenting.

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