

Food Parenting Measurement Issues: Working Group Consensus Report

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Abstract

Childhood obesity is a growing problem. As more researchers become involved in the study of parenting influences on childhood obesity, there appears to be a lack of agreement regarding the most important parenting constructs of interest, definitions of those constructs, and measurement of those constructs in a consistent manner across studies. This article aims to summarize findings from a working group that convened specifically to discuss measurement issues related to parental influences on childhood obesity. Six subgroups were formed to address key measurement issues. The conceptualization subgroup proposed to define and distinguish constructs of general parenting styles, feeding styles, and food parenting practices with the goal of understanding interrelating levels of parental influence on child eating behaviors. The observational subgroup identified the need to map constructs for use in coding direct observations and create observational measures that can capture the bidirectional effects of parent-child interactions. The self-regulation subgroup proposed an operational definition of child self-regulation of energy intake and suggested future measures of self-regulation across different stages of development. The translational/community involvement subgroup proposed the involvement of community in the development of surveys so that measures adequately reflect cultural understanding and practices of the community. The qualitative methods subgroup proposed qualitative methods as a way to better understand the breadth of food parenting practices and motivations for the use of such practices. The longitudinal subgroup stressed the importance of food parenting measures sensitive to change for use in longitudinal studies. In the creation of new measures, it is important to consider cultural sensitivity and context-specific food parenting domains. Moderating variables such as child temperament and child food preferences should be considered in models.

Introduction

Rates of obesity have tripled for children in the past three decades.¹ Consequences of childhood obesity include increased medical problems, impaired social/emotional functioning, and risk of dysfunctional eating behaviors.² Parents influence the development of childhood obesity through their parenting behaviors with their children.³ Currently there exists a wide range of measures assessing parental influences on child eating behaviors and child weight status with the most common measure being the Child Feeding Questionnaire (CFQ).^{3,4} The CFQ measures highly controlling parenting practices (restric-

tion, monitoring, and pressure to eat), and various versions of this questionnaire have been used in the field since the 1990s.⁵ However, as the research field has evolved, crossing disciplines such as medicine, psychology, nutrition, and public health, there appears to be disagreement regarding the most important parenting constructs of interest, definitions of those constructs, and how to measure them in a consistent manner across studies. The International Society for Behavioral Nutrition and Physical Activity 2012 preconference meeting entitled "Parenting Measurement: Current Status and Consensus Reports" convened in Houston, Texas, USA from May 20 to May 22, 2012, to address these issues. Four measurement working

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groups convened, with participants choosing one of four areas of measurement interest—food parenting, parenting styles, physical activity parenting, or media use parenting.

The current article discusses the proceedings of the food parenting measurement working group. Early group discussions targeted the lack of cultural sensitivity in current measures and the focus on highly controlling practices in the field of food parenting. Because many of the parenting measures were developed with white middle class families, their use with diverse populations at an increased risk for childhood obesity may be problematic.³ Additionally, the current food parenting paradigm evolved from a focus on a few highly controlling food parenting practices (*e.g.*, restriction, pressure to eat) without examining the entire continuum of practices.^{3,4} Given the above issues, the working group identified six areas that needed to be addressed for improved food parenting measurement. These areas included more traditional methodologies that enhance measurement, such as observational methods, qualitative methods, and longitudinal design, as well as the involvement of communities in providing insight into parenting. In addition, because highly controlling parenting practices that interfere with child eating self-regulation have been linked to child weight outcomes, better measurement of child self-regulation of energy intake was targeted as well. The six targeted areas are identified and discussed below, and include the rationale for the topic, why there is a need for better measurement in the targeted area, and future directions. Although cultural sensitivity and paradigm expansion were not identified as separate subgroups, these issues were addressed throughout the six targeted areas.

Conceptualization of Levels of Parental Influence

In a seminal article on parenting, Darling and Steinberg⁶ conceptualized and defined parenting style and parenting practice constructs, discussed the differences, and posited that parenting styles would moderate the relationship between parenting practices and various child outcomes. Subsequently feeding style measures were developed within the field of childhood obesity, with some measures^{7,8} mirroring the general parenting style paradigm and others⁹ focusing on specific parental feeding behaviors. Other common measures targeted only highly controlling food parenting practices, such as restriction, monitoring, and pressure to eat, to better understand specific aspects of parental influences on child self-regulation of intake.⁵ These different conceptualizations and paradigms resulted in much confusion over labels that are possibly overlapping, and do not adequately describe the constructs of interest. The “conceptualization of levels of parental influence” subgroup addressed the lack of clear and concise terms in the food parenting practices literature and of conceptual differences across the constructs. These lacks impact other targeted areas (*i.e.*, qualitative and observa-

tional methods, longitudinal designs, etc.) because defining and contrasting these constructs has implications for future measurement, methods, and study designs addressing food parenting practices.

Conceptualizing the constructs of general parenting styles, feeding styles, and food parenting practices involves the level of influence (*i.e.*, Where do food parenting practices end and feeding styles begin? Where do feeding styles end and parenting styles begin?), dimensions (*i.e.*, Are general parenting style dimensions best to reflect feeding styles? Or are more food-related dimensions needed, such as instrumental and emotional?), and operationalization of constructs [*i.e.*, Do feeding styles need to be operationalized in terms of specific food parenting behaviors (as often happens) or is the construct attitudinal?].

The subgroup defined and distinguished three separate constructs—general parenting styles, feeding styles, and food parenting practices in the following ways. Food parenting practices are proximal to child eating behaviors and parenting styles distal. Parenting styles typically reflect parent-child interactions across a wide range of situations, provide the socioemotional context in which specific parenting practices are processed and internalized by children, and reflect a philosophy of how children should be raised and the goals parents have for their children’s development. Feeding styles are more domain-specific than parenting styles and describe parent-child interactions across food-related situations. Food parenting practices include specific behaviors or strategies parents use to influence child dietary intake, *e.g.*, limiting intake of snack foods, increasing availability of fruits and vegetables in the home, and insisting on breakfast consumption.

Unfortunately, definitions, operationalization, and the way in which these influences are theorized to relate to each other have differed across studies^{10–12} making cross-comparisons and recommendations difficult to make. Some authors defined feeding styles using terminology similar to the parenting style literature (*e.g.*, authoritative feeding, indulgent feeding).^{7,8,13} Parents that adopt an authoritative feeding style, for example, apply a high level of nurturance in directing their child’s eating and encourage their child to eat in healthy ways (*e.g.*, by encouraging them to try new foods).⁷ Other researchers identified aspects of feeding, such as instrumental feeding (rewarding the child’s desired behavior with food), emotional feeding (using snacks in response to the child’s emotional distress), control over feeding (controlling the child’s food intake), and encouragement/prompting to eat (encouraging the child to eat a large variety of foods).⁹

The bulk of research on food parenting practices and their relationship to child dietary intake has been narrowly focused on controlling or restrictive parenting behaviors. Ideally, the food parenting practices concept should be expanded to encompass a broader range of parenting practices, including, for example, types of appropriate control that may encourage healthier child intake (*e.g.*, reducing portion sizes and/or providing healthier snacks)

and ways of implementing those practices (*e.g.*, having fruit and vegetables easily available; not having energy-dense snack foods available in the house).¹⁴

The aim of this working subgroup was to come to a consensus regarding the definitions of these constructs and develop a theoretical framework interrelating the levels of parental influence on child dietary behavior based on mixed methods (*e.g.*, qualitative studies among parents, children and experts, quantitative studies, observational studies, literature review, and theoretical reflections).

Observational Methods

Observational methods are optimal in providing access to the verbal and nonverbal context of behavioral dynamics during feeding. Although they do not provide insight into the inner thoughts of those observed, they can provide a perspective on food parenting practices that may be important yet not captured through parent reports (*i.e.*, capturing some food parenting practices of which some parents may not be aware or may not choose to report).^{15,16} For example, some parents may have difficulty self-reporting their behavior due to lower levels of education, cultural norms, or language barriers¹⁷; other parents may underreport some food parenting practices such as ignoring, yelling, or forcing the child to eat.¹⁸ However, observational methods also have limitations. Parents may alter their food parenting behaviors by the nature of being observed, and researchers may capture only a small snippet of parent-child interactions in time (*e.g.*, not in restaurants or fast food outlets, watching TV, in their automobiles, infrequent practices, etc.), thus limiting the ability to generalize observations to “what parents usually do.” Despite these limitations, observations still comprise an optimal way to measure how parents feed their children (using positive versus negative affect when delivering messages) and what they are doing during eating occasions (*e.g.*, asking questions, giving hints, delivering direct commands). Assessing convergence between self-report and observational measures is one way of addressing the time-and-resource intensive nature of observational methods. One example of a self-report measure assessing parenting influences on child eating behaviors and weight showing adequate convergence is the Caregiver’s Feeding Styles Questionnaire (CFSQ).¹³ Decisions about the use of self-report versus observational measures should be a careful one, because observations can provide a different perspective on what parents do with their children in the eating context and information that may not converge with what is reported in questionnaires.¹⁹

Observational feeding research lacks common coding to compare results across multiple observational studies. Additionally, observational studies typically measure multiple observations of a single eating context (*e.g.*, snack, dinner meal) without examining whether food parenting practices are stable across different meals or locations. For example, it is unknown whether food parenting

practices displayed during dinner are the same as those displayed during breakfast and lunch, or whether these practices are different during weekend versus weekday meals. Given known variability in daily intake²⁰ and hypotheses that discordant patterns of feeding interactions between child and caregiver may increase obesity risk,^{21–24} assessing whether there is variance in feeding responsiveness throughout days and across contexts may identify new intervention targets for obesity prevention. Also, observational studies tend to have small samples due to the high cost of conducting observations resulting in low power to detect differences. A common food parenting coding system could be used across previous sets of audio/videotaped parent-child observations of different ages and contexts to produce data that would otherwise be difficult to fund and collect. However, the biggest impediment to this is deciding what constructs should be coded and coming to a consensus of how to operationalize those constructs.

Finally to better understand the impact of food parenting practices on children’s eating behaviors, researchers need to include influential caregivers (*e.g.*, fathers, grandmothers, and older siblings) in addition to the mother, who traditionally has been the focus of such studies. Methodological issues arise in assessing the influence of multiple caregivers on a child, especially in analyses. Hierarchical linear modeling could account for the fact that children are nested within families but additional sophisticated statistical methods are needed to incorporate different caregivers and different practices in the same models.

The observational methods subgroup intends to map parenting constructs of warmth/responsiveness, control/demandingness, and structure in existing observational measures, and explore how these constructs relate to food parenting practices within and across meals. The targeted child age groups will be infancy through early childhood as this developmental period is generally recognized as one where learning may have powerful influences on subsequent self-regulation of eating and child weight.^{3,23} This subgroup will attempt to identify codes that are flexible enough to capture specific feeding behaviors or food parenting practices at a certain stage of development and capture stable constructs (*e.g.*, structure) over time. For example, the structure provided during infancy to facilitate eating would be different than that for the 3- to 4-year-old or even a preteen, but the concept of “structure” could still be measured along dimensions of degree and appropriateness.

Observational codes are needed that capture the bidirectional effects of the child and the caregiver(s) during feeding interactions across development. This would greatly advance our field. Even further, developing an observational measure(s) that can capture the dynamics of familial feeding interactions as the young child is increasingly incorporated into family meals merits exploration. While more complex than technological, measurement, and analytic perspectives, such a

measure(s) would enhance ecological validity and our understanding of the development of children's eating behaviors in the myriad familial food contexts in which children live and grow.

Measurement of Child Self-Regulation of Energy Intake

As indicated previously, controlling parenting practices have been linked to a lessened ability to self-regulate energy intake in children.²⁵ A number of researchers have expressed an interest in including more proximal child outcome measures in study designs examining the impact of food parenting practices on child weight. Children's ability to self-regulate their energy intake could prove to be a valuable proximal outcome measure for studies designed to change parenting behaviors and provide a better understanding of the trajectory of the development of child overweight/obesity over time. In addition to examining self-regulation of energy intake as a proximal child outcome in studies of parenting and childhood obesity, members of the child self-regulation of energy intake subgroup identified two more areas as high priority—clearly defining self-regulation of energy intake and creating developmentally appropriate measures to be used across different child age groups.

First, it is important that researchers interested in self-regulation of energy intake operate with a clear definition of the construct. The following definition of self-regulation of energy intake was proposed based on previous work in the area—the ability (both inborn and socialized) to appropriately respond to internal cues of hunger and satiety.²⁶ Self-regulation of energy intake is conceptually different from the general ability to self-regulate (*e.g.*, executive functioning) and is more specific to children's eating behaviors and weight outcomes. A clear definition of the construct will allow researchers to achieve continuity in future studies of child eating self-regulation and allow for better comparisons across studies.

Second, new measures need to be created that are developmentally appropriate across different child age groups (both objective and parent report). Currently, quasi-experimental objective measures exist to assess self-regulation of energy intake in preschoolers (aged 3–5 years) involving preloads and meal termination²⁵ and eating in the absence of hunger.^{27,28} Although objective measures exist for preschool-aged children, these measures are fairly complicated and costly to administer, resulting in small study samples. Currently, there are no objective measures that capture children's ability to self-regulate energy intake in younger children. This subgroup plans to adapt the Eating in the Absence of Hunger task (an objective measure designed for preschoolers)²⁹ for use with toddlers (children ages 1–3 years). Through bottle feeding, parents have the potential to override infants' inborn ability to self-regulate their milk intake; however, as children grow older and consume more varieties of food, more opportunities

exist for parents to thwart their child's internal cues of fullness (*e.g.*, restricting certain foods, pressuring their child to eat everything on the plate). Targeting toddlerhood is important because this inborn ability to self-regulate begins to diminish at this age.^{30,31} The subgroup also plans to develop additional objective measures that may assess energy self-regulation more accurately in older children.

Valid parent-report measures are also needed that are equivalent across different age groups for use in larger samples. The Children's Eating Behavior Questionnaire (a parent-report measure of child eating self-regulation) has been used in larger samples of parents with children between the ages of 3 and 11.³² Other self-report measures already exist (*e.g.*, Dutch Eating Behavior Questionnaire) for use with older children who have the ability to fill out surveys.³³ Although conceptually similar, it is unclear whether these questionnaires are measuring the same construct or different aspects of a similar concept. Additional work is needed to determine if they are measuring the same thing. Future work should also explore the overlap between biology and social psychology; developing a contextual model of the various influences on energy self-regulation would greatly inform the literature on the development of childhood obesity.³⁴

Translational/Community Involvement

Community-based participatory research methods (CBPR) have been overlooked in the food parenting measurement literature.^{35,36} Incorporating input from the people being studied can provide an important aspect of food parenting measurement not normally advocated by those developing new measures. This could provide a key approach for elucidating parental understanding and views regarding food parenting practices and perspectives on food parenting and weight that may vary across communities and ethnicities. Community-based research methods and approaches to better understand childhood obesity^{37,38} involve a cyclical, iterative process that includes partnership development.³⁹ To incorporate successful community-based research methods, both researchers and community members must subscribe to a number of common principles, including the use of egalitarian, evidence-based, participatory, reflective, and action-oriented approaches.⁴⁰ These methods should improve the interface between researchers and the community and, therefore, enhance the influence that communities and the cultural aspects of those communities have on the measurement of food parenting practices.

Although some qualitative studies have explored parental beliefs, attitudes, and practices around feeding in an effort to inform the development of food parenting practice measures,^{41–45} only a few studies, to our knowledge, have actively engaged parents and communities in this process. Future goals should include research studies in which the community helps to set the agenda within the study topic; having community members participate is an added value in itself for enhancing health.⁴⁶ In addition, measurement

can be strengthened by incorporating community theories of etiology and change into the science.⁴⁷ Getting community input on whether our current measures are actually reflecting the realities of what parents are doing while feeding their children is an additional way that community members could provide helpful feedback. Incorporating parents and communities closely in the process will help to improve measurement of food parenting practices and, ultimately, foster better understanding of the development of childhood obesity.

Qualitative Methods

Qualitative methods are hypothesis generating and aim at gathering an in-depth understanding of behavior, often including beliefs, attitudes, or goals, to explain a phenomenon. Hypotheses generated in qualitative work can be tested using quantitative methods. Qualitative research in food parenting practices has taken several forms, including participant observation of family mealtimes,⁴⁸ focus groups,⁴⁹ and individual interviews discussing mothers' beliefs about feeding.⁵⁰ Qualitative researchers have approached analysis in two general ways: (1) Using grounded theory in which themes are identified in the data and a model is developed (thereby retaining the richness and complexity of the data); and (2) a coding scheme applied to the data, such that individual participants can be categorized as exhibiting or not exhibiting a particular code (for example, a belief, attitude, or goal that emerges in their narrative). A benefit of the latter approach is its transformation of qualitative data to quantitative data that can then be used to compare participants with regard to other characteristics (*e.g.*, the child or mother's weight status or sociodemographic group).

Qualitative methods are important for several reasons. First, self-report questionnaire respondents do not always understand the questions as intended.⁵¹ Qualitative work can inform the development of quantitative measures.⁵² Second, new conceptualizations of food parenting practices may emerge that could guide the development of quantitative measures. Third, food parenting practices may be directly influenced or moderated by parents' beliefs, goals, and attitudes. Understanding a parent's motivation for using a particular food parenting practice is an essential step in developing effective interventions⁵³; these motivations are often complex and not easily captured by existing questionnaires. Fourth, feeding behaviors may be a domain of parenting strongly embedded in one's own childhood experiences, often laden with affect⁵⁴; emotions as inherent aspects of food parenting practices are poorly understood and not captured by existing questionnaires. Finally, the currently limited understanding of the substantial variability in food parenting practices, beliefs, attitudes, and goals across sociodemographic groups calls for continued qualitative work in this area.⁵⁵

Qualitative research is needed to: (1) Reveal parents' reasoning and affect around food parenting practices on a

more complex level; (2) engage specific populations to better understand cultural factors; and (3) engage a broad range of sociodemographic and cultural groups. Qualitative analysis of the same data by engaging researchers with different cultural and discipline perspectives may lead more quickly to the development of unified theories and constructs in food parenting practices.

Longitudinal Design

Most parenting studies within the last decade have focused on cross-sectional associations that prevent determination of causality.^{12,23} Thus, it is not clear whether food parenting practices impact child weight, child weight status impacts food parenting practices, or the relationship is reciprocal.^{56,57} In longitudinal/intervention research, there are a number of key measurement considerations, including the need for measures that are developmentally appropriate, show stability over time (in the absence of intervention), and are sensitive to the effects of intervention. In addition, longitudinal studies need to control for the child's baseline weight status, because parents' food parenting practices may be in response to their weight perceptions of their child.^{56,57} The dearth of longitudinal studies and of randomized controlled intervention trials means there is a lack of evidence-based research with which to inform advice for parents.²³ Furthermore, whether or not our current instruments can detect changes in feeding behaviors remains to be determined. One randomized control trial in Australia in which children were recruited into the study at birth may shed some light on these issues.⁵⁸ This ongoing study has the capability to control for child baseline weight status and provide information on maternal food parenting practices and child food preferences, diet quality, and food consumed.⁵⁸ Longitudinal and randomized control trials need to use common definitions and instruments and adjust for the child's weight at baseline.

Discussion

Current measurement of parenting behaviors assessing influences on child dietary practices leading to obesity is problematic because of overlapping labels, inconsistent use of terms in the literature, and the lack of explicit definitions of the various constructs of interest. The most critical and time-sensitive goal to be undertaken by the conceptualization of levels of parental influence subgroup is to define food parenting practices and feeding styles in clear and concise terms and describe the differences across these constructs. Clearly defined constructs will provide a foundation for other improvements (observational methods, measurement of child self-regulation of energy intake, translational/community involvement, qualitative methods, and longitudinal design). These constructs are complex and will likely be further modified in the coming years as observational, qualitative, and longitudinal research studies further inform our understanding. As part of this

plan, the observational methods subgroup proposes to create an observational coding system that captures feeding behaviors across time, different caregivers, and contexts and evaluate the reciprocal nature of parent-child interactions during feeding. The self-regulation of the energy intake subgroup emphasized the importance of developing measurements that capture how children respond to internal cues of hunger and satiety across different ages and stages of development as a possible proximal outcome in child obesity research. This work will lay the foundation for a better understanding of how food parenting practices influence child satiety. The main focus is to develop objective measures of self-regulation of energy intake for different age groups and improve parent-report measures for use in larger samples. The translational/community involvement subgroup illuminated the importance of involving the community in the development of surveys that better reflect the understandings and concerns of parents in the community and cultural issues within communities. The qualitative methods subgroup focused on the use of qualitative methods to better understand the breadth of food parenting practices and reasons behind and motivations for the use of parenting behaviors. Finally, more longitudinal studies are needed to understand and enrich our knowledge of food parenting practices. The longitudinal subgroup stressed the importance of identifying food parenting measures that are sensitive to change and can be used in studies requiring longitudinal methods.

Future Directions

The overall focus of the six subgroups is to better define and measure constructs in the field of child feeding, thus ongoing collaborations are needed as these tasks are accomplished and the field evolves. Furthermore, the importance of cultural sensitivity and context as key issues in future measure development was stressed by all subgroups. Cultural sensitivity is especially important because a common approach in measurement is to develop a scale for one cultural group and use it with a second group without supporting conceptual, linguistic, and measurement equivalence across cultures. Beginning with multiple populations of interest during measurement development alleviates these problems in equivalence.⁵⁹ Future efforts are needed to encourage researchers to be sensitive to cultural issues during development and validation of food parenting practice measures.

Furthermore, parents may not have a single, consistent parenting style. Their style may differ across children within the same family and domains within a single child.²⁰ Applying this context-specific parenting theory to the feeding domain, food parenting practices may reflect the mood of the caregiver on a specific day, the meal that is being assessed, the caregiver being assessed, the number of children in the family, and a host of other variables. Additionally, how a parent approaches child feeding behaviors may be dependent on moderating variables, such as

child temperament and child food preferences. Taking these variables into account is highly important when attempting to better understand child eating behaviors and the factors that shape them.

Conclusion

The field of food parenting has evolved over time to include researchers from a wide range of disciplines. Currently, there is disagreement on important constructs of interest, definitions of those constructs, how those constructs relate to one another, and how to best measure those constructs. As part of a preconference session on parenting measurement, the food parenting practice working group formed six subgroups to address these issues and suggested ways that additional methods (observational, qualitative, and longitudinal) and involvement of the community could provide insight into better understanding of parental influences and measurement of those influences. Through the implementation of these suggestions and ongoing collaborations among the researchers, the overall quality of research aimed at understanding the determinants of child obesity will be fostered.

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