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General and Food-Specific Parenting: Measures and Interplay

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Abstract

Background: Parental influence on child food intake is typically conceptualized at three levels—parenting practices, feeding style, and parenting style. General parenting style is modeled at the most distal level of influence and food parenting practices are conceptualized as the most proximal level of influence. The goal of this article is to provide insights into contents and explanatory value of instruments that have been applied to assess food parenting practices, feeding style, and parenting style.

Methods: Measures of food parenting practices, feeding style, and parenting style were reviewed, compared, and contrasted with regard to contents, explanatory value, and interrelationships.

Results: Measures that are used in the field often fail to cover the full scope and complexity of food parenting. Healthy parenting dimensions have generally been found to be positively associated with child food intake (*i.e.*, healthier dietary intake and less intake of energy-dense food products and sugar-sweetened beverages), but effect sizes are low. Evidence for the operation of higher-order moderation has been found, in which the impact of proximal parental influences is moderated by more distal levels of parenting.

Conclusions: Operationalizing parenting at different levels, while applying a contextual higher-order moderation approach, is advocated to have surplus value in understanding the complex process of parent–child interactions in the area of food intake. A research paradigm is presented that may guide future work regarding the conceptualization and modeling of parental influences on child dietary behavior.

Introduction

Emerging research efforts have focused on the role of parents in the development of dietary behaviors of their children. Parental influences that these studies examine can typically be classified as three types—parenting practices, feeding style, and parenting style (see Baranowski et al., this issue, for definitions).[1] The three levels of parenting differ from each other in that parenting style describes parent–child interactions across a wide range of situations, whereas feeding style describes these interactions only across food-related situations, and food parenting practices are by definition domain-specific, applying to intakes of certain kind and amount of foods.

The three levels of parental influence do not independently shape the child's dietary behavior. Both theoretical and empirical evidence exists regarding the interplay between types and levels of parental influence. For instance, Darling and Steinberg[2] postulated that parenting style modifies the association between parenting practices and adolescent behavior. An increasing number of studies have shown that food parenting practices indeed operate in the context of parenting style.[3,4] In more general terms, social ecological theory assumes the operation of higher-order moderation processes,[5] implying that parenting factors at higher, more distal, levels can moderate the impact of factors at a lower level. As such, a factor at a higher level forms the context in which proximal parenting processes operate.

There is a lack of consensus on the exact definitions, concepts, and optimal measures to assess parental influences on child dietary behavior.[6–8] The aim of this article is not to provide consensus in these areas, but to provide insights into contents and explanatory value of instruments that have been applied to assess parenting style, feeding style, and food parenting practices. In contrast to most papers in this field, which tend to be primarily devoted to proximal parenting practices,[9,10] this article puts an emphasis on the more distal parenting dimensions (*i.e.*,

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feeding styles and parenting styles). The theoretical and statistical modeling of parenting measures in relation to child dietary behavior will be discussed, as well as future steps that need to be taken to advance this field of research.

Food Parenting Practices

Parents have control over their children's home environment and can have great influence on their children's dietary practices by controlling availability and accessibility of foods, meal routines, and food socialization practices, and by providing house rules. By far, most studies in the area of food parenting have been devoted to the influence of parental control strategies. However, studies toward the impact of parental control strategies provide contradictory findings. Parental control has been found to have a detrimental impact on promoting healthy behaviors,[11,12] whereas other studies showed a health-promoting impact of parental control strategies.[3,13,14] Ogden, Reynolds, and Smith[15] suggest that such contradictory findings may reflect the complex nature of parental control in which some of these controlling practices may be more beneficial than others.

Several different strategies to manage dietary behaviors can be used, which vary according to aspects of both the child and the parent.[16] Examples of validated measures that assess food parenting practices include the Child Feeding Questionnaire[17] and the Comprehensive Feeding Practices Questionnaire.[18] One typical measure of restrictive parenting practices that is presented here is based on the validated parent–child food control questionnaire developed by Cullen and colleagues.[19] Perceived restrictive parenting practices are assessed through adolescent reports using nine items. Four questions (identical for fathers and mothers) assess specific practices regarding the dietary behavior of interest and an additional item assesses the availability of the product in the home environment (see Table 1 for the items). All parenting items are measured on 5-point bipolar scales ranging from completely agree (+2) to completely disagree (−2). A single score is computed by summing the scores on these items in such a way that a higher score reflects more restrictive food parenting practices. Results of the studies that have applied this measure to adolescent dietary behavior are summarized in Table 1.

Average item scores were found to be slightly below the scale midpoint, and Cronbach alpha values indicated good reliability of the scale.[20] Correlations with dependent variables were in a direction that indicates that higher levels of parental restriction were related to lower levels of consumption of energy-dense products. Explained variance of the parental restriction variable was 6–7%.

In all studies, moderation of the relationship between restrictive parenting and adolescent dietary behavior has been identified. Two studies[3,21] showed significantly larger associations among children that were raised in a family that scored high on the parenting style dimension of responsiveness. In a study by De Bruijn et al.,[14] statistically significant negative associations between restrictive parenting practices and soft drink consumption were only apparent in adolescents that scored moderately (not lowest or highest tertile) on the personality factor of agreeableness.

Table 1. Restrictive Food Parenting Practices

My mother tells me *how much* sugar-sweetened beverages I am allowed to consume	As far as my father is concerned, I can decide for myself *when* to consume sugar-sweetened beverages (reversed coding)
My father tells me *how much* sugar-sweetened beverages I am allowed to consume	As far as my mother is concerned, I am only allowed to consume sugar-sweetened beverages in the weekend
My mother tells me *which* snacks I am allowed to consume	As far as my father is concerned, I am only allowed to consume sugar-sweetened beverages in the weekend
My father tells me *which* snacks I am allowed to consume	My mother always has my favorite sugar-sweetened beverage available at home (reversed coding)
As far as my mother is concerned, I can decide for myself *when* to consume sugar-sweetened beverages (reversed coding)	

Study	Sample *N* Mean age (SD)	Study design	Dependent variable	Average item score (SD)	Cronbach's alpha	Correlation with dependent variable	Moderator tested
Van der Horst et al.[3]	*N* = 383 13.5 (0.6)	Cross-sectional Adolescent-report	Consumption of sugar-sweetened beverages	−0.79 (0.79)	0.86	−0.37*	Parenting style dimensions
De Bruijn et al.[14]	*N* = 208 15.2 (1.9)	Cross-sectional Adolescent-report	Soft drinks consumption	−0.44 (0.87)	0.87	−0.26*	Adolescent personality
Gevers et al.[21]	*N* = 404 13.2 (0.8)	Cross-sectional Adolescent-report	Snack consumption	−0.21 (0.32)	0.82	−0.25*	Parenting style dimensions

*$p < 0.01$; five-point bipolar scales ranging from completely agree (+2) to completely disagree (−2).

SD, standard deviation.

Parental Feeding Styles

Various differences in definitions and conceptualizations of feeding style circulate in the literature. Whereas some groups define feeding styles in similar terminology as used in the parenting style literature (*e.g.*, authoritative feeding, indulgent feeding; see for example refs. 6, 22, 23), other groups prefer to define general aspects of feeding. Three questionnaires have been developed to assess parental feeding style—the Caregiver's Feeding Styles Questionnaire (CFSQ), the Infant Feeding Style Questionnaire (IFSQ), and the Parental Feeding Style Questionnaire (PFSQ).

The CFSQ was developed by Hughes and colleagues[24] and assesses the dimensions of demandingness (how strongly parents encourage eating) and responsiveness (the ways that parents encourage eating). These dimensions can be combined to describe authoritative, authoritarian, indulgent, and uninvolved feeding styles. The self-administered, 31-item questionnaire was developed specifically for low-income minority parents, using both qualitative and quantitative methods, and has been used extensively in these populations.[25] The CFSQ has been found to possess adequate to good internal consistency (Cronbach alpha of scales 0.71–0.86[24,26]) and good 2- to 3-week test–retest reliability ($r = 0.73$–0.79[27]). Studies using the CFSQ showed that indulgent and uninvolved feeding styles were associated with unhealthier dietary intakes among children.[28–30]

The IFSQ, developed by Thompson et al.[31] is a self-report questionnaire that assesses five feeding styles (laissez-faire, responsive, indulgent, restrictive, and pressuring) among mothers of infants and young children. Within each feeding style, items examined several relevant subconstructs, such as diet quantity, diet quality, satiety, and the quality of attention or interactions. The original questionnaire consisted of 105 items, which was reduced to 83 after a Confirmatory Factor Analysis.[31] The IFSQ incorporates 39 questions on maternal beliefs (coded on a 5-point scale—disagree, slightly disagree, neutral, slightly agree, agree), 24 questions on behaviors, and an additional 20 behavioral items pertaining to solid feeding for infants over 6 months of age (coded on a 5-point scale—never, seldom, half of the time, most of the time, always). Internal reliability for the subconstructs has been found to be good (Cronbach alpha 0.75–0.95). Several subconstructs (responsive to satiety cues, pressuring with cereal, indulgent pampering, and indulgent soothing) were found to be inversely related to infant weight-for-length *z*-score.[31]

The PFSQ[32] was developed and validated in the United Kingdom and consists of 27 items representing four scales, each including 4–10 items. The four scales are ''instrumental feeding,'' comprising four items with statements such as ''In order to get my child to behave him/herself I promise him/her something to eat''; ''control over eating,'' comprising 10 items, such as ''I decide how many snacks my child should have''; ''emotional feeding,'' comprising five items, such as ''I give my child something to eat to make him/her feel better when s/he is feeling upset'' and ''encouragement to eat,'' comprising eight items, such as ''I encourage my child to enjoy his/her food.'' The response format consists of a Likert scale ranging from 1 (never) to 5 (always). The PFSQ has been found to possess adequate to good internal consistency (Cronbach alpha ranging from 0.67–0.83[32,33]) and good 2-week test–retest reliability ($r = 0.76$–0.83). The parental feeding dimensions of ''instrumental feeding'' ($r = 0.19$; $p < 0.05$) and ''emotional feeding'' ($r = 0.25$; $p < 0.01$) have been found to be positively associated and ''encouragement to eat'' to be negatively associated with children's snacking behavior ($r = -0.21$; $p < 0.01$).[33]

Parenting Styles

The commonly used typological approach in parenting research is based on the work of Baumrind[34] and later Maccoby and Martin,[35] who described parenting style as a function of two dimensions of parental behavior—the extent to which parents are responsive to their children's needs and controlling on their children's behaviors (see also Baranowski et al., this issue).[1] Table 2 provides an overview of all instruments to assess general parenting style that have been applied in the field of behavioral nutrition and physical activity. In total, we identified 19 distinct instruments that were used in 36 studies.[3,36–70,71] The measures differ considerably in terms of operationalization of dimensions, number of items, and persons completing the instrument (*i.e.*, parent report vs. child report). However, despite the availability of a large number of instruments, comprehensive measurement tools assessing the apparent broad range of parenting constructs are currently lacking. For example, studies that have assessed control tend to neglect the aspect of psychological control.[72] Psychological control refers to the regulation of the child's behavior through psychological means such as love withdrawal and guilt induction, *e.g.*, behaving in a cool and unfriendly way when a child misbehaves or making a child feel guilty when he/she gets low grades in school. Psychological control is a more manipulative, suppressive form of control[73–76] and is seen as a risk factor for problem behavior.[40,77,78] Researchers have increasingly called for the concept of psychological control to be included in parenting research,[40,72,77,79,80] to clarify inconsistent findings relating parenting to dietary behaviors.[79]

The questionnaire that has been used most often in relation to child dietary behavior and/or weight is the parenting style questionnaire that is based on earlier work by Steinberg et al.[76,81] Our group has also applied the Dutch translation[78] of this questionnaire in multiple studies[3,36,40,41] (Table 3). In our first studies, we only assessed the dimensions of responsiveness and demandingness by an adolescent report questionnaire,[3,36] while later[40,41] we also included the dimension of psychological control by parental report. In the adolescent report questionnaire responsiveness is measured with ten items (Cronbach alpha

Table 2. General Parenting Measures Used in the Field of Behavioral Nutrition and Physical Activity

Parenting measures (full instrument, particular scales or revised/short versions)	Study
Parenting style instrument: Perceived parental involvement Perceived parental strictness (Psychological control)	Kremers et al. 2003[36] Van der Horst et al. 2007[3] Pearson et al. 2010[37] De Bourdeaudhuij et al. 2009[38] Vereecken et al. 2009[39] Rodenburg et al. 2011[40] Rodenburg et al. 2012[41]
Parenting practices questionnaire or parenting styles and dimensions questionnaire: Authoritative parenting Authoritarian parenting Permissive parenting	Brann and Skinner 2005[42] Blissett and Haycraft 2008[43] Topham et al. 2010[44] Johnson et al. 2012[45] Topham et al. 2011[46]
Child rearing practices report: Authoritative parenting Authoritarian parenting	Gable and Lutz 2000[47] Chen et al. 2005[48] Chen et al. 2008[49]
Authoritative parenting index: Authoritative parenting Nonauthoritative parenting	Schmitz et al. 2002[50] Lytle et al. 2003[51]
Parental authority questionnaire: Authoritative parenting Authoritarian parenting Permissive parenting	Agras et al. 2004[52] Musher-Eizenman and Holub 2006[53]
Attitudes toward child-rearing scales: Authoritarian subscale Democratic subscale	Chen and Kennedy 2004[54] Chen and Kennedy 2005[55]
Parenting dimensions: Parental responsiveness (caring and communication) Parental demandingness (strictness)	Berge et al. 2010[56] Berge et al. 2010[57]
Parenting dimensions inventory: Nurturance Amount of control	Hennessy et al. 2010[58] Olvera & Power 2010[59]
Parenting dimensions (measure unknown): Harsh or overprotective parenting Inadequate (lax) supervision	Mustillo et al. 2003[60]
Abbreviated self-report measure of family functioning: Democratic style Permissive style Authoritarian style	Mendelson et al. 1995[61]
Paternal parenting style: Care Clear behavioral regulation Help Maturity expectations Lack of punishment High achievement expectations Immaturity expectations Psychological punishment Punishment by withholding privileges Harsh punishment Praise	Kim et al. 2008[62]
Parenting scales (observations and questionnaire): Sensitivity to child's need (supportive presence, respect for autonomy, reversed hostility; standardized interaction task during laboratory visit) Expectations for self-control (measure unknown)	Rhee et al. 2006[63]

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Table 2. General Parenting Measures Used in the Field of Behavioral Nutrition and Physical Activity *continued*

Parenting measures (full instrument, particular scales or revised/short versions)	Study
Parenting scale: Laxness (permissive, inconsistent discipline) Overreactivity (harsh, authoritarian discipline) Verbosity (reliance on talking)	Gibson et al. 2007[64]
Ghent parental behavior scale: Positive parenting behavior (positive involvement)	Moens et al. 2007[65]
Parenting dimensions: Warmth (6 items from the child rearing questionnaire) Control (5 items for the National Longitudinal Survey of Children and Youth) Irritability (4 items from the National Longitudinal Survey of Children and Youth)	Wake et al. 2007[66]
Parenting style scale (measure unknown): Authoritative parenting Authoritarian parenting Permissive parenting	Humenikova & Gates 2008[67]
Revised parental behavior inventory: Acceptance versus rejection (warmth) Psychological control versus psychological autonomy (psychological control) Firm control versus lax control (behavioral control)	Zeller et al. 2008[68]
'Parents and children': Warmth and support Psychological pressure Demands and control	Lohaus et al. 2009[69]
Measure unknown: Familial and parental acceptance Parental control or monitoring	Fuemmeler et al. 2012[70]

Note: This table is based on Sleddens et al.[71] review and an update.

values ranging from 0.82 to 0.83). Demandingness is measured with seven items (Cronbach alpha values ranging from 0.70 to 0.77; Table 3). As recommended by Stattin and Kerr,[82] it measures both parental knowledge and behavioral monitoring. In the three-dimensional parent report questionnaire, responsiveness and demandingness are both measured with seven items and psychological control is measured with eight items.[40,41] On the basis of these three parenting-style dimensions, five parenting styles can be established: Authoritative, permissive, authoritarian, rejecting, and neglecting parenting style (*e.g.*, refs. 83, 84).

In line with a recent review of the literature in this area,[71] results of studies that applied the parenting style questionnaire have shown that authoritative forms of parenting are associated with favorable energy balance-related behaviors of the children (Table 3). Rodenburg et al.[40,41] revealed that especially high levels of psychological control added to the explanatory value of the parenting styles (*i.e.*, rejecting parenting style as strongest correlate of low child fruit consumption and higher BMI *z*-scores). In addition, moderation analyses have supported the higher-order moderation hypothesis in most tests. The desired impact of restrictive practices on child sugar-sweetened beverage consumption (*i.e.*, more restriction related to less consumption) appeared to be strongest in a context of moderate demandingness and high responsiveness.[3] The association of parental modeling on child fruit intake (*i.e.*, less parental consumption related to less consumption by the child) was found to be most pronounced among children who were subject to the high levels of psychological control as well as those subject to high levels of demandingness.[41]

Discussion

The aim of this article was to provide insights into contents and explanatory value of instruments that have been applied to assess parenting style, feeding style, and food parenting practices. In general, reliability of the instruments was found to be acceptable. Healthy parenting dimensions were generally found to be associated with healthier dietary intake of the children, but the strength of the associations was typically weak. Measures that are used in the field often fail to cover the full scope and complexity of food parenting, with a primary focus on controlling food parenting practices. However, to date,

Table 3. Parenting Style Instrument

When I come home or leave the house, I have to tell my parents. (D)	My parents really know where I am after school. (D)
When I have a bad result at school, my parents encourage me to do better. (R)	If I get a good result at school my parents show admiration. (R)
I can count on my father when I have any problems. (R)	Me and my parents regularly do something fun together. (R)
My mother helps me with homework if I do not understand something. (R)	I can count on my mother when I have any problems. (R)
I find it very easy to talk to my mother openly. She is very involved in my life. (R)	
If I have a bad result in school my parents offer to help me. (R)	
My parents really know what I do in my leisure time. (D)	
My father helps me with homework if I do not understand something. (R)	What time are you usually allowed to stay out until on a school night (Sunday-Thursday)? (D)
My parents really know where I go in the evenings. (D)	
My parents know exactly where I am after school. (D)	What time are you usually allowed to stay out until on a Friday-evening or Saturday-evening? (D)
My parents make time to talk to me. (R)	

Study	Sample *N* Mean age (SD)	Study design	Dependent variable	Scales included in study	Cronbach's alpha	Strongest relation with dependent variable	Tested as higher-order moderator
Kremers et al.[36]	*N* = 1771 16.5 (0.8)	Cross-sectional Adolescent-reported	Fruit consumption	Responsiveness Demandingness	0.82 0.70	Authoritative parenting (+)	No
Van der Horst et al.[3]	*N* = 383 13.5 (0.6)	Cross-sectional Adolescent-report	Consumption of sugar-sweetened beverages	Responsiveness Demandingness	0.83 0.77	Authoritative parenting (+)	Yes
Rodenburg et al.[41]	*N* = 1762 8.2 (0.5)	Cross-sectional Parent-report	Fruit consumption	Responsiveness Demandingness Psychological control	0.71 0.71 0.72	Rejecting parenting (–)	Yes

R, responsiveness; D, demandingness; response scale ranging from −2 (completely disagree) to +2 (completely agree).

some studies have provided first indications that operationalizing parenting at different levels, while applying a contextual higher-order moderation approach, may have surplus value in understanding the complex process of parent–child interactions in the area of food intake. A major challenge for future empirical studies regarding child dietary behavior will be to document under what conditions higher-order environmental moderation is most or least likely to occur.[85,86]

Future Steps

Looking back at the past decade of parenting research in the area of childhood overweight, the international research community appears to have taken good and important first steps. But we need to proceed toward a next step in executing research that applies measures that have increased validity and comprehensiveness as well as theoretical frameworks that acknowledge the dynamic interplay of types and levels of parental influences on child energy balance-related behavior.

A critical examination of our own measures of food parenting practices and styles has led to initiation of two lines of study that are aimed at improving their comprehensiveness. To date, this has led to the systematic development of the Comprehensive General Parenting Questionnaire[87] to comprehensively assess general parenting and a Delphi study addressing the full scope of food parenting practices. Other issues that need to be taken into account in future studies are the conceptualization of feeding styles,[8] the role of parental self-efficacy in relation to styles and practices,[88] potential relevance of similarity in parenting between parents,[21] the use of longitudinal and experimental research designs, as well as the translation of observational research results in health promotion interventions targeted at parents.[89,90]

It must be realized that parenting does not occur in isolation. It is embedded within a microsystem (the home) with other operating (physical, economic) environmental factors, as well as within broader (meso, exo, macro) systems. For example, the availability of snacks and soft drink vending machines in the adolescents' immediate environment (*e.g.*, schools) could contribute to a higher consumption of unhealthy foods. This will interact with parenting demands regarding the control of their child's soft drink consumption. Other relevant contextual factors include the person-related characteristics (*e.g.*, age, gender, weight status, eating style, food neophobia, personality) of the child and the parent.[91] For example, optimal food parenting practices will differ depending on the child's developmental stage. Parents of young children

might use pressure to get their child to eat or they may restrict access to foods. For adolescents, however, parents might use clearly defined rules about the times when a certain food can be eaten and how much of a certain food they can eat.

The operation of such higher-order moderation processes underlines the importance of distal, so-called ''upstream'' determinants of behavior, but, to date, distal factors have typically been operationalized as confounders in causal chain determinants research. In contrast, we emphasize a contextual rather than mechanistic orientation in explaining and predicting effects of parenting on child energy balance-related behaviors.

Tests of interactions are rare when environmental influences on energy balance-related behaviors are studied.[86] In the few cases that moderation is tested, it is typically examined as a result of the search for subgroup intervention effects based on person-related factors (*e.g.*, gender, age, ethnicity).[92] However, the search for person-related moderators of parenting influences may not sufficiently reflect the complexity of the impact of parenting. An accurate reflection would require the view of context as a dynamic system. In this view, the individual functions in a hierarchical system of elements, from the micro-level to the macro-level. An essential part of this view is that at all levels of the person-environment system, from the macro-level to the individual-level, the operating components function and develop as integrated systems.[93] In actual operation, the role and functioning of each element depends on its context of other, simultaneously working components, horizontally (*i.e.*, within levels) and vertically (*i.e.*, across levels). In the operationalization of the parenting context, it may be fruitful to adopt systems principles from Dynamic Systems Theory. The concept of system refers to a ''complex of interacting elements''[94] or a ''group of parts that are interacting according to some kind of process.''[95] What are common to the various definitions of a system are not the characteristics of the individual units or parts but rather the extent and nature of linkages or interrelationships among the various units.[96] The operation of any one element in a system depends on the existence and operation of other elements in the system. This implies that the impact of a restrictive parental rule toward child snacking cannot be understood by mechanistically modeling it by correcting for all other potential determinants in the causal chain (*e.g.*, proximity of fast food restaurants in the neighborhood, availability of snacks in the home, personal attributes, demographics), but by examining the system conditions under which the restrictive rule has an impact.

Conclusion

Content and construct validity of the applied measures of general and food-specific parenting should be improved. Operationalizing parenting at different levels, while applying a contextual higher-order moderation approach, is advocated to have surplus value in understanding the complex process of parent–child interactions in the area of food intake.

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