

Comprehensive Feeding Practices Questionnaire: Validation of a New Measure of Parental Feeding Practices

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Objective Measures of parents' feeding practices have focused primarily on parental control of feeding and have not sufficiently measured other potentially important practices. The current study validates a new measure of feeding practices, the Comprehensive Feeding Practices Questionnaire (CFPQ). **Method** The first study validated a 9-factor feeding practice scale for mothers and fathers. In the second study, open-ended questions solicited feeding practices from parents to develop a more comprehensive measure of parental feeding. The third study validated an expanded 12-factor feeding practices measure with mothers of children from 2 to 8 years of age. **Results** The CFPQ appears to be an adequate tool for measuring the feeding practices of parents of young children. **Conclusions** Researchers, clinicians, and health educators might use this measure to better understand how parents feed their children, the factors that contribute to these practices, and the implications of these practices on children's eating behaviors.

Key words children; feeding practices; parent-child relations; scale development.

Parents, teachers, and health practitioners have become increasingly concerned in recent years about a range of negative outcomes surrounding eating habits and weight for children. These concerns include child underweight and under-nutrition, overweight and obesity, negative body image, and maladaptive eating and dieting behaviors; all of which have been documented in young children (e.g., Braet, Mervielde, & Vandereycken, 1997; Budd & Chugh, 1998; Chatoor, 2002; Cooke, Wardle, & Gibson, 2003; Davison & Birch, 2001; Dietz, 1998; Hill, Oliver, & Rogers, 1992; Young-Hyman, Schlundt, Herman-Wenderoth, & Bozylinski, 2003). One line of research that has been pursued to understand these childhood eating and weight concerns examines the role of parents in feeding their children.

Research suggests that parents' feeding practices play a critical role in the development of children's taste preferences, eating habits, nutrition, and eventual weight status (Benton, 2004; Carper, Fisher, & Birch, 2000; Hodges, 2003; Krebs & Jacobsen, 2003; Kremers, Brug, de Vries, & Engels, 2003; Satter, 1999). For an excellent review of parental feeding practices and their relationship to child overeating and overweight, see Faith,

Scanlon, Birch, Francis, & Sherry (2004). The parental feeding practice that is most often examined is parental use of restriction or control of the child's food intake (Faith et al., 2003; Fisher & Birch, 1999; Robinson, Kiernan, Matheson, & Haydel, 2001). Some research has linked restrictive feeding to negative child eating and weight outcomes (e.g., Birch & Davison, 2001); whereas others have failed to find this link (e.g., Carnell & Wardle, 2007). Other feeding practices, such as using food as a reward, parental monitoring of children's food consumption, teaching children about healthy eating, parental modeling of healthy habits, or allowing children control over feeding have been less studied, but may be important in the parent-child feeding relationship.

A complete understanding of the complex interactions that make up parent feeding practices is critically important to understanding individual differences in what and how much people eat. The current work examines previous approaches to the measurement of parents' child feeding behaviors and outlines the development and initial validation of a new self-report instrument that examines multiple feeding behaviors.

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Approaches to Examining Parental Feeding Behavioral Observations

One measurement approach for examining parental feeding practices has been behavioral observations of parent–child interactions during mealtime (Drucker, Hammer, Agras, & Bryson, 1999; Iannotti, O’Brien, & Spillman, 1994; Klesges et al., 1983; Koivisto, Fellenius, & Sjoden, 1994; McKenzie et al., 1991; Orrell-Valente, Hill, Brechwald, Dodge, Pettit, & Bates, 2007). Although there is utility in observing parents’ behavior during mealtime, this research provides little information about the feeding practices that parents engage in while not at the dinner table. It is likely that many parent–child feeding interactions, especially parental restriction of some foods or the use of food as a reward, do not often occur during planned mealtimes, but instead, when less nutritious food is more readily available. Moreover, behavioral observations are necessarily difficult and time consuming to collect, thus limiting their wide-spread utility.

Parental Self-Reports

Consequently, parents’ self-reports are critical to our understanding of feeding practices. Previous attempts to create and validate self-report measures of parental feeding practices have provided a good start to the measurement of this important parental behavior. However, the two most widely used scales in the child feeding literature, the Child Feeding Questionnaire (CFQ; Birch et al., 2001) and the Preschooler Feeding Questionnaire (PFQ; Baughcum et al., 2001), do not yet fully capture the range of behaviors regarding the construct of child feeding.

The emphasis on parental control (i.e., through pressure or restriction) in previous feeding measures (Hughes et al., 2006; Carnell & Wardle, 2007) may have hindered other important constructs from being fully explored. This is especially true for feeding practices that have been associated with healthy outcomes in children. For example, parental modeling of healthy foods is an effective feeding practice (Hendy & Raudenbush, 2000; Lee & Birch, 2002), yet this construct is not incorporated into previous self-report measures of parental feeding. Research also suggests that exposure to foods (such as having healthy foods available in the home, encouraging children to taste new foods many times) may be an effective feeding practice as exposure fosters increased liking and higher consumption of these foods (Wardle et al., 2003). Although much research has been done to examine the impact of parents’ nutrition knowledge on making good food choices (e.g., Gibson, Wardle, & Watts, 1998), previous measures of parental feeding

practices have not examined the extent to which parents try to teach their children about nutrition.

Another limitation of previously developed feeding questionnaires is the way in which restrictive feeding has been conceptualized. Although this research provides a good starting point, new work suggests that restrictive feeding is a more complex construct than originally thought, with parents restricting their children’s food intake for multiple reasons (Musher-Eizenman & Holub, 2006). There is also evidence that restrictive feeding is a separate construct from using food as a reward for behavior; however, the CFQ combines the two (Anderson, Hughes, Fisher, & Nicklas, 2005).

The Current Study

The current study offers and validates a new self-report measure of parental feeding practices using previous measures of parental feeding as an initial framework. Additional literature on parental feeding practices and input from parents (Study 2) were used to develop new subscales related to parental feeding, as well as to more fully capture constructs addressed by existing measures. The goals in the creation of this measure were to develop a psychometrically valid scale that more adequately measures restrictive feeding and that represents a more complete range of feeding practices that may be relevant to child outcomes. Through the three studies, we attempt to capture a broad range of behaviors that parents might engage in when feeding their children that might be related to healthier or unhealthier eating in their children. Study 1 presents the validation of the scale on parents of preschool-age children (ages 3–6 years); whereas Study 3 broadens the range of ages to which the survey might apply (from 18 months to 8 years old).

STUDY 1—Initial Validation

Method

Participants

This sample included 269 mothers and 248 fathers. These parents had children between the ages of 3 and 6 years old (mean child age = 5.0 years). The average ages of the parents were 34.5 years (mothers) and 36.3 years (fathers). Most of the sample (92%) reported their race as Caucasian (5% African-American, 2% Asian, Hispanic, or other). The median income range endorsed was \$55,000–\$75,000 and the median education level was college graduate.

Initial Item Generation Procedure

Multiple strategies were used to create the initial pool of items. First, items from select subscales of the two most

widely used instruments in the child feeding literature (CFQ, Birch et al., 2001; PFQ, Baughcum et al., 2001) were retained. Specifically, items from the monitoring (three items; e.g., “How much do you keep track of the high-fat foods that your child eats?”), restriction (six items; e.g., “I have to be sure my child does not eat too many sweets—candy, ice cream, cake or pastries.”), and pressure to eat (four items; e.g., “My child should always eat all of the food on her plate.”) subscales from the CFQ were included. Items retained from the PFQ included those related to using food to regulate the child’s emotional states (four items; e.g., “Do you give this child something to eat or drink if she/he is upset even if you think she/he is not hungry?”) and child’s control of feeding interactions (three items; e.g., “Do you allow this child to eat snacks whenever she/he wants?”). Items related to parental use of food as a reward were retained from both the PFQ “pushing child to eat more” subscale (two items) and the CFQ restriction subscale (two items). Additionally, seven new items were created to supplement these existing scales.

Four subscales from the CFQ that were not directly related to parents’ feeding practices (i.e., perceived responsibility, perceived parent weight, perceived child weight, concern about child weight) were not included in the CFPQ. The majority of subscales (i.e., difficulty in child feeding, concern about child overeating and overweight, concern about child being underweight, structure during feeding interactions, and age-inappropriate feeding) were not retained from the PFQ because the content of the items focused more on children’s eating behaviors, parents’ emotions related to feeding, their attitudes related to their children’s body size, or parents’ perceptions of the feeding environment and not parents’ feeding practices or behaviors. Additionally, low loading items from the original validation studies (Baughcum et al., 2001; Birch et al., 2000), items that were deemed potentially confusing for parents, or duplicate items across the PFQ and CFQ were not included in the new measure.

To further delineate the important and most widely studied feeding practice of restriction, items were adapted from a measure of adult restraint (i.e., Dutch Eating Behavior Questionnaire; Restrained Eating Scale; van Strein, Fritjers, Bergers, & Defares, 1986) to tap the construct of parental restriction to control the child’s weight. Seven items were modified to ask parents about feeding children rather than personal dietary restraint (see Musher-Eizenman & Holub, 2006, for more details regarding construction of these subscales).

A thorough review of the literature was also conducted to gather any additional constructs related

to parent feeding practices. This review of the literature suggested additional domains necessary to fully capture the range of behaviors and attitudes regarding parental feeding. Items were added related to direct teaching about food and nutrition (three items; e.g., “I discuss with my child why it’s important to eat healthy foods”), providing a healthy feeding environment (two items; e.g., “Most of the food I keep in the house is healthy”), modeling eating behaviors (four items; “I model healthy eating for my child by eating healthy foods myself”), and encouraging balance and variety (four items; “I encourage my child to eat a variety of foods”).

Data Collection Procedure

Parents were recruited to participate in a larger study examining family, peer, and media influences on children’s attitudes about weight. A subset of the parents was recruited through daycare centers and preschools; these parents completed questionnaires and returned them to the researchers in sealed envelopes. Participation rates of eligible parents varied by center and averaged 58%. A second subset of parents was recruited by undergraduate students in psychology classes. Students distributed questionnaires to parents with children in the specified age range (3–6 years old). Parents returned the completed questionnaires in sealed envelopes to the students, who then submitted them to the researchers. Of the surveys that were distributed to parents via this method, 90% were completed and returned. Questionnaires with problematic response patterns were dropped from analysis. These data collection procedures (as well as the procedures described in study 2 and 3) were approved by the Human Subjects Review Board on the campus in which this research was conducted; parents provided written informed consent. Parents completed one of several versions of a paper and pencil questionnaire that included the items described above. Mothers and fathers were instructed not to discuss their responses with one another before returning the questionnaires.

Two response formats were used depending on whether the items addressed frequency or degree. The response formats were “never, rarely, sometimes, mostly, always” or “disagree, slightly disagree, neutral, slightly agree, agree.” See appendix for response format used and item content.

Results

First, several problematic items were dropped. These included items about which some parents expressed confusion (e.g., through comments in the margin of the

questionnaire) and items that had very low variability (i.e., $SD \leq .5$).

Then, to test whether the *a priori* factor structure would fit the data of mothers and fathers, a two-group confirmatory factor analyses was conducted with all available data (missing data were not imputed; AMOS 6.0; Arbuckle, 2005). First, 11 factors of the Comprehensive Feeding Practices Questionnaire (CFPQ) were constrained to load only on the items making up each subscale, and the factors were allowed to correlate freely with one another (this analysis included all subscales presented in Appendix A, except for involvement). The error terms were not allowed to correlate in this, or any subsequent, model. This model failed to converge on an acceptable solution.

Next, items that did not demonstrate significant item–total correlations with their expected factors, and factors with only one remaining item after problematic items were deleted (pressure to eat and food environment). The resulting 9-factor model was tested for the mothers' and fathers' data. All items loaded on the expected factors .30 or higher. A model in which factor loadings were constrained to be equal for mothers and fathers [$\chi^2(1142) = 2155$, RMSEA = .039, CFI = .98] was compared to a model in which the estimates were allowed to vary freely [$\chi^2(1116) = 2126$, RMSEA = .040, CFI = .98]. The insignificant $\Delta\chi^2: \Delta df$ ratio suggested that the same model fit the data for the mothers and fathers. The standardized factor loadings of the final model with 36 remaining items and 9 factors are shown in Table I.

STUDY 2—Additional Item Generation and Validation

Following the initial psychometric analyses, there remained some constructs that were not sufficiently described by the model. Specifically, pressure to eat and providing a healthy environment did not have a sufficient number of strong items to define these subscales. To generate additional items for these subscales, open-ended responses were solicited from parents about the feeding practices that they, and other parents, use. Additionally, parental responses were coded to ascertain the extent to which parents spontaneously named the existing CFPQ factors allowing for better understanding of the centrality of these feeding practices in the minds of parents.

Method

Participants

Thirty-three mother–father pairs with children between 4- and 6-years old (mean = 5.2 years) provided responses. This reflected a participation rate of 83% of those approached to participate. The average age of the mothers was 34.5 years (Range: 23.8–49.0 years) and 36.6 years for the fathers (Range: 24.5–58.3). Most of the mothers (91%) reported their race as Caucasian, and 9% reported their race as being African-American. For fathers, 91% reported their race as Caucasian, 6% as African-American, and 3% as other. The median reported income was \$55,000–\$75,000 and the median education level was high school graduate for mothers and college graduate for fathers.

Procedure

The open-ended response sample completed paper and pencil surveys. Two of the items on the survey asked parents to read and respond to the following, “We all know that parents and children have many interactions throughout the day that involve food. Undoubtedly, you have seen some of these interactions that you have felt would lead to a child having healthy attitudes towards eating. You have probably also seen parents do things that you have felt would lead to a child having unhealthy attitudes towards eating. First, please list things that parents do involving food that you think lead to a child having healthy attitudes towards eating.” Space was provided for several responses to this item; then parents were asked to list behaviors that lead to unhealthy attitudes towards food. This approach was adopted to encourage parents to consider a broad range of feeding behaviors. For the current analyses, responses were collapsed across the healthy and unhealthy items. All parent responses were transcribed and coded as belonging to one of the existing feeding behavior subscales or as a new behavior. Then, the two authors worked independently to organize the new behaviors into subcategories, with 98% agreement. Discrepancies were resolved through discussion. Because many parental responses were multifaceted, each subpart of the response was considered and coded. Some responses simply referred to eating healthy and unhealthy foods without specifying a feeding practice; these are listed in the table as noncodeable. Coders exhibited 92% agreement on which responses were noncodeable.

Results

The majority (65% for mothers, 65% for fathers) of the codeable open-ended responses from parents fit into

Table 1. Standardized Loadings from the Confirmatory Factor Analyses, Item Means, and Subscale Internal Consistency Coefficients for Study 1 and Study 3

Subscale and Item # (SD)	Study 1				Study 3	
	Mothers		Fathers		Mothers	
	β	<i>M</i> (<i>SD</i>)	β	<i>M</i> (<i>SD</i>)	β	<i>M</i>
Monitoring	$\alpha = .78$		$\alpha = .87$		$\alpha = .81$	
1	.86	3.94 (.8)	.91	3.53 (1.0)	.91	4.54 (.6)
2	.94	3.91 (.8)	.95	3.47 (1.0)	.95	4.49 (.7)
3	.50	3.29 (1.0)	.65	2.93 (1.0)	.54	3.86 (1.0)
4	—	—	—	—	.70	4.69 (.6)
Emotion Regulation	$\alpha = .77$		$\alpha = .78$		$\alpha = .74$	
7	.66	1.86 (.8)	.65	1.99 (.9)	.60	1.89 (.7)
8	.76	1.55 (.7)	.80	1.68 (.8)	.74	1.60 (.7)
9	.76	1.49 (.6)	.78	1.72 (.8)	.77	1.55 (.6)
Food as a Reward	$\alpha = .68$		$\alpha = .66$		$\alpha = .69$	
19	.69	2.20 (1.2)	.67	2.41 (1.2)	.64	1.98 (1.2)
23	.74	2.40 (1.3)	.68	2.51 (1.2)	.72	2.17 (1.3)
36	.53	2.35 (1.4)	.54	2.53 (1.3)	.64	2.00 (1.3)
Child Control	$\alpha = .49$		$\alpha = .70$		$\alpha = .69$	
5	.65	2.58 (.8)	.63	2.67 (.8)	.44	2.43 (.8)
6	.38	2.97 (1.0)	.39	2.84 (.9)	.66	3.17 (1.0)
10	.30	2.57 (1.6)	.52	2.49 (.9)	.50	2.53 (1.0)
11	.69	2.36 (.9)	.70	2.39 (.8)	.55	2.65 (1.0)
12	.44	2.92 (1.1)	.46	2.83 (1.0)	.63	3.26 (1.3)
Modeling	$\alpha = .77$		$\alpha = .84$		$\alpha = .80$	
44	.56	3.76 (1.1)	.61	3.30 (1.2)	.57	4.27 (1.0)
46	.51	3.52 (1.3)	.67	3.20 (1.2)	.69	4.16 (1.1)
47	.87	4.09 (.9)	.91	3.60 (1.1)	.78	4.64 (.7)
48	.92	4.05 (.9)	.90	3.45 (1.1)	.93	4.54 (.8)
Restriction for Weight	$\alpha = .79$		$\alpha = .82$		$\alpha = .70$	
18	.37	3.08 (1.3)	.39	3.03 (1.1)	.39	2.80 (1.4)
27	.66	1.49 (.9)	.72	1.71 (1.0)	.55	1.24 (.7)
29	.69	1.56 (.9)	.80	1.70 (.9)	.53	1.43 (.9)
33	.73	1.42 (.8)	.78	1.56 (.9)	.64	1.18 (.5)
34	.46	2.34 (1.3)	.56	2.24 (1.2)	.65	2.42 (1.5)
35	.43	2.11 (1.2)	.49	2.35 (1.3)	.31	1.92 (1.3)
41	.62	1.64 (.9)	.63	1.98 (1.0)	.70	1.17 (.5)
45	.59	1.17 (.6)	.57	1.37 (.7)	.35	1.01 (.1)
Restriction for Health	$\alpha = .76$		$\alpha = .69$		$\alpha = .81$	
21	.70	3.44 (1.4)	.63	3.37 (1.2)	.73	3.22 (1.4)
28	.67	3.45 (1.3)	.59	3.41 (1.2)	.80	2.85 (1.5)
40	.62	2.73 (1.2)	.58	2.91 (1.0)	.76	2.45 (1.3)
43	.65	3.32 (1.3)	.57	3.19 (1.2)	.59	3.12 (1.4)
Teaching Nutrition	$\alpha = .60$		$\alpha = .67$		$\alpha = .68$	
25	.80	4.30 (.9)	.87	3.82 (1.1)	.84	4.43 (1.0)
31	.62	3.67 (1.1)	.77	3.25 (1.1)	.72	3.84 (1.3)
42	.31	1.59 (.9)	.34	1.97 (1.0)	.42	4.40 (1.0)
Encourage Balance/Var	$\alpha = .60$		$\alpha = .73$		$\alpha = .58$	
13	.36	4.01 (.8)	.43	3.77 (.8)	.40	4.38 (.6)
24	.77	4.54 (.7)	.76	4.28 (.8)	.51	4.86 (.4)
26	—	—	—	—	.49	4.47 (.9)
38	.83	4.46 (.7)	.83	4.20 (.8)	.73	4.72 (.5)

(Continued)

Table I. Continued

Subscale and Item # (SD)	Study 1				Study 3	
	Mothers		Fathers		Mothers	
	β	M (SD)	β	M (SD)	β	M
Pressure to Eat					$\alpha = .79$	
17	–	–	–	–	.64	1.69 (1.0)
30	–	–	–	–	.70	2.20 (1.3)
39	–	–	–	–	.67	2.63 (1.3)
49	–	–	–	–	.80	2.62 (1.5)
Healthy Environment					$\alpha = .75$	
14	–	–	–	–	.79	4.17 (.97)
16	–	–	–	–	.65	2.11 (1.1)
22	–	–	–	–	.63	4.61 (.6)
37	–	–	–	–	.64	1.89 (1.2)
Involvement					$\alpha = .77$	
15	–	–	–	–	.74	3.68 (1.1)
20	–	–	–	–	.80	3.92 (1.2)
32	–	–	–	–	.64	3.91 (1.2)

the 11 existing theoretical subscales (Table II). For the remaining responses, new codes were developed. These included codes about the routine of eating (“set dinner times”), the presentation of foods (“cutting sandwiches into fun shapes”), and involving children in food selection and preparation. Responses that were not feeding practices *per se* (e.g., encouraging physical activity or the role of television advertising) were coded as other. Additionally, some comments about restriction could not be specifically coded as restricting for health or restricting for weight, and were thus coded as restriction unspecified; these responses were not counted as fitting into the 11 existing subscales.

In addition, this process suggested additional items for the two weaker subscales, as well as some potentially important items for some of the other subscales (e.g., “keeping track of sugary drinks” for the monitoring subscale). Items reflecting 1 of the 3 newly suggested subscales were also added to the measure (involvement). The other subscales (routine and presentation) were excluded from the measure on theoretical grounds. It was decided that items measuring meal routine reflected general family functioning more than feeding behaviors. For food presentation, no theoretical evidence was available that this construct impacts child outcomes; thus, it was not included in the CFPQ.¹

¹Items from these deleted scales are available upon request from the authors.

Table II. Frequency of Parental Open-Ended Responses by Parent Gender

Codes	Mothers	Fathers
Monitoring	3	4
Emotion regulation	2	1
Food as a reward	4	8
Child control	6	8
Modeling	12	9
Restriction for weight	1	0
Restriction for health	1	2
Teaching nutrition	7	3
Encourage balance/var	7	8
Pressure to eat	6	9
Healthy environment	17	16
Involvement	5	4
Routine of eating	10	8
Presentation of foods	3	3
Restriction unspecified	13	16
Other	4	5
Noncodeable	35	26

Note. Parents responded to items about both healthy and unhealthy practices (collapsed here). Noncodeable responses included discussions of type of food served with no feeding practice named.

STUDY 3—Final Validation

The open-ended procedure yielded examples of feeding practices that were not tapped by the initial version of the CFPQ. Thus, items were created to ask about these practices, and a second validation of the more complete survey was undertaken. In addition, although the first

two studies focused on parents of preschool-age children (ages 3–6), it is likely that these feeding practices are not unique to this age span. Thus, to increase the applicability of the scale, Study 3 included parents of children in a wider age span. Children younger than 18 months of age have feeding issues that are unique to infancy. Furthermore, although parents continue to play a role, the eating habits of children older than 8 years of age are also heavily influenced by their peers and other factors (Cullen et al., 2001). Thus, Study 3 included parents of children from 18 months to 8 years of age.

Method

Participants

This sample consisted of 152 mothers with children between the ages of 1.6 and 8 years (mean child age = 4.2 years). They were residents of 32 US states. The average age of the mothers was 34.6 years, and 93% of the sample reported their race as Caucasian (2% African-American, 5% Asian, Hispanic, or other). The median reported income was \$75,000–\$95,000 and education ranged from some high school to graduate or professional degree (median education level was a master's degree). Six mothers residing outside of the US and 12 fathers completed the survey, but these data are not considered here.

Procedure

The previously described items from the nine subscale measure were retained, and additional items were added to supplement the previously described scales. Three additional items suggested by parents to tap the construct of child involvement (“I involve my child in planning family meals”) were also added.

Parents were also asked to respond to items on three related attitude scales. Concern for child overweight (three items) was taken directly from the concern about child overweight scale of the CFQ (Birch et al., 2001). Concern for child underweight (three items) were adapted from the CFQ by changing the word “overweight” to “underweight” and “diet” to “eat more.” Parents also responded to three items that assessed the extent to which they feel responsible for their child's eating (e.g., “I feel that I have an important role in establishing lifelong eating habits in my child”).²

An invitation to complete a web-based version of the complete set of CFPQ items (as well as demographic

questions and the attitude scales) was distributed via e-mail to a wide sample of individuals with young children. A web-based approach was adopted to reach a more geographically diverse sample of parents than in the previous studies and to ascertain the validity of the scale when administered in this alternative format. Recruitment began with a sample of individuals who were acquaintances of a university-based research team. Attempts were made in this initial sample to recruit a geographically and socio-demographically diverse set of parents. These initial participants were asked to forward the recruitment e-mail to parents they knew who fit the target criteria.

Participants read an on-line consent form before completing the survey. Data were submitted to a centralized database automatically upon completion of the survey. Families with more than one child in the age range were asked to respond about the child whose name came first alphabetically. Data were examined to ensure that parents completed the questionnaire only once.

Results

A confirmatory factor analysis was run to examine if the anticipated factor structure of the items was retained across the larger pool of items and constructs, and across the wider age span of children. The fit of the final model was good [$\chi^2(1061) = 1580$, RMSEA = .057, CFI = .98]. All items and standardized factor loadings are given in Table I. The Flesch–Kincaid reading level of the final scale was 6.4, suggesting a suitable level of reading ease for parents with a wide range of educational attainment.

Next, to examine if the 12 subscales of the CFPQ related to one another in theoretically expected ways, we calculated bivariate correlations among the subscales (Table III). Monitoring correlated positively with creating a positive environment, modeling, and encouraging balance and variety, and negatively with food for emotion regulation, food as a reward and child control. Modeling, encouraging balance and variety, and involving children in food preparation were all also correlated positively with one another and with teaching about nutrition and creating a healthy food environment. Restriction for weight control and restriction for health reasons were positively correlated with one another. Furthermore, restriction for weight control correlated positively with food as a reward, whereas restriction for health reasons correlated positively with emotion regulation and food as a reward.

²The CFQ (Birch et al., 2001) includes a subscale for parental responsibility for feeding, but the nature of the items is somewhat different from those used here.

Table III. Partial Correlations Between CFPQ Subscales After Controlling for Child Age and Gender

	1	2	3	4	5	6	7	8	9	10	11
1. Monit	–										
2. Em. Reg.	–.22	–									
3. Reward	–.20	.25	–								
4. Pressure	.02	.09	.25	–							
5. Ch. Con.	–.19	.09	–.02	–.19	–						
6. Teaching	.11	–.11	.05	.08	–.03	–					
7. Env.	.43	–.13	–.24	–.11	–.18	.11	–				
8. RW	.14	.14	.19	–.07	–.07	–.03	.01	–			
9. RH	.04	.24	.30	.03	.01	.09	–.13	.34	–		
10. Model	.31	–.14	.09	–.06	–.14	.26	.47	.19	.06	–	
11. Inv.	.18	–.10	–.07	–.10	.04	.42	.21	.01	–.05	.34	–
12. Bal/Var	.40	–.20	–.15	.00	–.03	.30	.51	.01	.02	.50	.42

Note. Correlations in bold are significant at the .05 level.

Table IV. Partial Correlations Between CFPQ Subscales and Parents' Concerns and Feelings of Responsibility After Controlling for Child Age and Gender

	Monit	E. R.	Rew	Press	CC	Teach	Env	RW	RH	Model	Inv	Bal/Var
Conc. overweight	–.03	.16	.14	–.09	–.08	–.05	–.04	.51	.22	–.07	.01	–.09
Conc. underweight	–.06	–.03	–.07	.45	.08	–.01	–.17	–.28	.03	–.19	–.01	.02
Responsibility	.38	.01	.08	.34	–.30	.09	.24	.22	.16	.23	.09	.35

Note. Correlations in bold are significant at the .05 level.

The final step in the validation procedure was to examine the external validity of the subscales. Bivariate correlations were examined between the CFPQ and attitude measures (i.e., concern about the child being overweight, concern about the child being underweight, and parental feelings of responsibility toward child feeding, Table IV). Parents who reported more concern about their child being overweight also reported more restriction of both types. Those who were concerned about their child being underweight reported pressuring their children to eat more and less restriction for weight reasons. Finally, parents who reported feeling more responsible for their children's eating habits also reported more monitoring of the child's food intake, pressure to eat, providing a healthy environment, restriction of both types, modeling, and encouraging balance and variety. Higher feelings of responsibility were associated with allowing the child less control over feeding interactions.

General Discussion

The goal of the current research was to describe the development and validation of a comprehensive parent report measure of feeding practices. Whereas previous scales have measured only a subset of feeding practices,

the 12 subscales of the CFPQ allow researchers and clinicians to measure many aspects of this complex behavior. Another benefit of this measure is that the factor structure of the items appears to be consistent for mothers and fathers and across multiple modalities of survey administration (i.e., paper and pencil and computer based). Thus, the scale provides flexibility for use in multiple settings and can be adapted to suit the needs of a particular project.

This initial examination of the validity of the CFPQ yielded positive results. Factor analysis suggested that the items form coherent scales. Furthermore, relationships between feeding practices and parents' attitudes about their child's weight and their responsibility for feeding their child, provided further support for the instrument. For example, parents concerned that their child is overweight reported more restriction of both types, whereas parents concerned that their child is too thin reported less restriction for weight control and more pressure to eat. Furthermore, parents who avowed greater responsibility for the feeding of their child reported more monitoring of what their child ate and were less likely to grant their child control over feeding interactions.

Although the goal was to create a measure that would be as comprehensive as possible, there remain some feeding behaviors that may not be adequately

represented in the CFPQ. During the open-ended item generation by parents, many parents' responses included the word "snack." In most cases, these responses were coded as either restriction (e.g., "don't allow child to eat snacks between meals") or as child control (e.g., "allow children to get snacks without asking"). However, the word snack is ambiguous. Indeed, in completing the questionnaires, some parents indicated confusion about the word snack in one of the items, noting that it could be interpreted either as meaning food eaten between meals or as typically unhealthy snack foods. Although typically snack foods are energy dense and nutrient poor (e.g., chips, cookies), snacks of fruits and vegetables may be beneficial to a child's health. Thus, snacking is a very complicated issue and one that deserves further attention in both measurement and substantive work. Future research should work to develop questions that adequately measure the quality, quantity, and frequency of children's snacks, as well as the relationships between snacking and outcomes of interest.

It also appears that there is a distinction between two types of food as reward items. The first set of items referred to using food as a reward for behavior. These are the items that ultimately were included in this subscale. However, there were other items that were not included in the final CFPQ that referred to using food as a reward for food (e.g., promising dessert if a child eats his/her vegetables). Unfortunately, an insufficient number of items were available for this construct in this validation study to create distinct subscales. This distinction, however, is theoretically quite important. Research suggests that using sweet foods as a reward for eating healthy foods may alter taste preferences, encouraging increased liking of the sweet food and decreased liking of the healthy food (Capaldi, 1996). Thus, it is our hope that future work will explore this distinction fully.

Another set of feeding constructs that may be useful is parental behaviors that alleviate children's food neophobia. For example, one such construct that was not included in the scale is exposing children to foods repeatedly to encourage them to develop a preference for these foods. Items tapping this construct were not found in the review of the literature, nor was the construct suggested in the open-ended portion of this study. Nonetheless, research suggests that repeated exposure to a food (8–15 tries) is an effective way to encourage acceptance of a new food (Sullivan & Birch, 1990), and that most parents give up too soon when introducing a new food to a child (Wardle et al., 2003). Future research

should examine whether repeated exposure to foods may be part of the healthy environment or encouraging balance and variety subscales described in this study or, alternatively, represent an independent construct. Given the evidence that this practice can support the development of healthy eating habits in children, future research should explore this more fully.

Of the three new subscales suggested by parents' responses, only involvement in food preparation was included in the final scale. Future research may determine that the two other constructs (presentation and routine) are important predictors of eating outcomes for children and thus find that this is a weakness of the CFPQ. On the other hand, future research on these constructs may find that parents are not well-informed about what is really important in encouraging healthy eating outcomes in their children. It is possible that an overemphasis on food presentation or routine obscures other more important feeding issues.

This study also demonstrated that the constructs that parents spontaneously report as being central to feeding practices did not always overlap with those that have been emphasized in the literature. For example, a large number of parents mentioned providing a healthy food environment and modeling healthy eating habits; however, these constructs have been the focus of only a small amount of research. The results also indicated that parents did not spontaneously differentiate between restriction motivated by weight and by health. Nonetheless, research has supported the necessity for this distinction (Musher-Eizenman & Holub, 2006). Thus, it seems critical to have a well-constructed and sensitive scale to distinguish these constructs that on the surface may appear to be similar.

It is important to note that although the participants in this study were geographically diverse, all three samples were predominantly Caucasian, and of a high educational background, and socio-economic status. In addition, the recruitment method used in Study 3 may have yielded biases inherent to chain-sampling such that the final sample is likely to resemble the initial sample. Steps were taken to minimize this bias (Penrod, Preston, Cain, & Starks, 2003) such as clearly defining the population in question and initiating chains appropriately. Nonetheless, the samples included in these studies should not be taken as representative of all parents.

Notably, several studies suggest that scales that appropriately measure feeding practices in this population do not capture the feeding processes of more diverse

ethnic/racial or socioeconomic groups (Anderson et al., 2005), that these items may be misunderstood by more diverse samples (Jain, Sherman, Chamberlain, & Whitaker, 2004), and that ethnic/racial group may impact the frequency of use of some feeding practices (Faith et al., 2003; Hoerr, Utech, & Ruth, 2005). Previous research also suggests that there are differences in feeding practices depending on maternal education (Vereecken, Keukelier, & Maes, 2004) and income level (Baughcum et al., 2001). The creation of the CFPQ took this into account by including feeding constructs that have been found to be relevant in nonCaucasian samples. However, its applicability to these groups has not yet been confirmed. Given that cultural background undoubtedly impacts feeding practices and that rates of childhood obesity are elevated in groups with lower socioeconomic status and some ethnic groups in the US, it is of high importance to validate this measure with additional samples.

In addition, although the current study provided considerable support for the validity of the CFPQ, less is currently known about the reliability of the measure. The internal consistency (coefficient alpha) of most of the scales was moderate to high, but this index of reliability was lower than desired for some of the scales in some of the samples (Table I). Furthermore, a study of test-retest reliability would increase researchers' confidence in the measure.

The development of a comprehensive, valid and reliable tool to measure parental feeding practices opens up many possible research directions. Research priorities in this area include a better understanding of the impact that various feeding practices have on child health, eating habits, and weight outcomes in both the short and long term, as well as an exploration of the parent and child characteristics that are related to the use of these feeding practices. Carefully controlled longitudinal research that sheds light on causal relationships is of particular

importance. Thus, measures such as the CFPQ that can be used to assess the feeding practices of parents with children of a wide range of ages are especially useful. It is important to remember that further work needs to be done to assure the psychometric properties of this measure are appropriate for work in more diverse samples.

Furthermore, the support provided by this research for the computer-implementation of the scale is very promising. Although web-based data collection makes it difficult to know what biases may be inherent in the sample (i.e., how parents who did not complete the survey might differ from those who did), computer implementation (either on-line or in an office or laboratory setting) may make it easier for researchers and clinicians to gather information from large numbers of parents. This may also improve responding from fathers, who tend to have a lower response rate than mothers for paper and pencil questionnaires.

Finally, although this scale was primarily developed for use as a research tool, additional uses are possible. This scale has potential as a clinical instrument. As norms on the various subscales are determined, it is possible that clinicians working with overweight children or children with eating problems could use the CFPQ as part of a familial intake. Furthermore, the CFPQ could be used as an evaluation tool to assess the effectiveness of teacher or parent training programs that intend to improve the parent-child feeding relationship. It is our hope that a valid, reliable, and comprehensive tool for the measurement of parents' feeding practices will help advance research in this arena and will allow for much needed clarity in the ways in which parents feed their children.

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Appendix.

Child Control—Parents allow the child control of his/her eating behaviors and parent-child feeding interactions.

5. Do you let your child eat whatever s/he wants?
6. At dinner, do you let this child choose the foods s/he wants from what is served?
10. If this child does not like what is being served, do you make something else?
11. Do you allow this child to eat snacks whenever s/he wants?
12. Do you allow this child to leave the table when s/he is full, even if your family is not done eating?

Emotion regulation—Parents use food to regulate the child's emotional states.

7. When this child gets fussy, is giving him/her something to eat or drink the *first* thing you do?
8. Do you give this child something to eat or drink if s/he is bored even if you think s/he is not hungry?
9. Do you give this child something to eat or drink if s/he is upset even if you think s/he is not hungry?

(Continued)

Appendix. Continued

Encourage balance and variety—Parents promote well-balanced food intake, including the consumption of varied foods and healthy food choices.

13. Do you encourage this child to eat healthy foods before unhealthy ones?
24. I encourage my child to try new foods.
26. I tell my child that healthy food tastes good.
38. I encourage my child to eat a variety of foods.

Environment—Parents make healthy foods available in the home.

14. Most of the food I keep in the house is healthy.
16. I keep a lot of snack food (potato chips, Doritos, cheese puffs) in my house. **R**
22. A variety of healthy foods are available to my child at each meal served at home.
37. I keep a lot of sweets (candy, ice cream, cake, pies, pastries) in my house. **R**

Food as reward—Parents use food as a reward for child behavior.

23. I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behavior.
36. I withhold sweets/dessert from my child in response to bad behavior.
19. I offer my child his/her favorite foods in exchange for good behavior.

Involvement—Parents encourage child's involvement in meal planning and preparation.

15. I involve my child in planning family meals.
20. I allow my child to help prepare family meals.
32. I encourage my child to participate in grocery shopping.

Modeling—Parents actively demonstrate healthy eating for the child.

44. I model healthy eating for my child by eating healthy foods myself.
46. I try to eat healthy foods in front of my child, even if they are not my favorite.
47. I try to show enthusiasm about eating healthy foods.
48. I show my child how much I enjoy eating healthy foods.

Monitoring—Parents keep track of child's intake of less healthy foods.

1. How much do you keep track of the sweets (candy, ice cream, cake, pies, pastries) that your child eats?
2. How much do you keep track of the snack food (potato chips, Doritos, cheese puffs) that your child eats?
3. How much do you keep track of the high-fat foods that your child eats?
4. How much do you keep track of the sugary drinks (soda/pop, kool-aid) this child drinks?

Pressure—Parents pressure the child to consume more food at meals.

17. My child should always eat all of the food on his/her plate.
30. If my child says, "I'm not hungry," I try to get him/her to eat anyway.
39. If my child eats only a small helping, I try to get him/her to eat more.
49. When he/she says he/she is finished eating, I try to get my child to eat one more (two more, etc.) bites of food.

Restriction for Health—Parents control the child's food intake with the purpose of limiting less healthy foods and sweets.

21. If I did not guide or regulate my child's eating, s/he would eat too much of his/her favorite foods.
28. If I did not guide or regulate my child's eating, he/she would eat too many junk foods.
40. I have to be sure that my child does not eat too much of his/her favorite foods.
43. I have to be sure that my child does not eat too many sweets (candy, ice cream, cake, or pastries).

Restriction for weight control—Parents control the child's food intake with the purpose of decreasing or maintaining the child's weight.

18. I have to be sure that my child does not eat too many high-fat foods.
27. I encourage my child to eat less so he/she won't get fat.
29. I give my child small helpings at meals to control his/her weight.
33. If my child eats more than usual at one meal, I try to restrict his/her eating at the next meal.
34. I restrict the food my child eats that might make him/her fat.
35. There are certain foods my child shouldn't eat because they will make him/her fat.
41. I don't allow my child to eat between meals because I don't want him/her to get fat.
45. I often put my child on a diet to control his/her weight.

Teaching about nutrition—Parents use explicit didactic techniques to encourage the consumption of healthy foods.

25. I discuss with my child why it's important to eat healthy foods.
31. I discuss with my child the nutritional value of foods.
42. I tell my child what to eat and what not to eat without explanation. **R**

Note. Appendix includes all items retained in final scale. Factor names are presented with a brief operational definition of the factor content. Item numbers indicate the order in which they were presented in the survey. Items numbered 1–13 utilize a 5-point response scale "never, rarely, sometimes, mostly, always." Items numbered 14–49 utilize a 5-point scale with different anchors, "disagree, slightly disagree, neutral, slightly agree, agree." Items marked with an R were reverse coded.

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