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Development and Preliminary Validation of a Feeding Coparenting Scale (FCS)

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Abstract

Evidence is growing that fathers, along with mothers, play an important role in children's eating and obesity risk. Qualitative work with a small sample found that the roles of fathers and mothers are not mutually exclusive in shaping their child's eating behaviors, rather fathers and mothers may relate to one another in their roles as parents in food parenting (i.e., feeding coparenting). There is currently no self-reported measure of how fathers and mothers coparent around child feeding. However, it would be useful in order to be able to assess this construct more broadly. Hence, based on prior qualitative work and findings related to the roles of fathers and mothers in food parenting, we developed a feeding coparenting scale (FCS). Parent responses on the FCS and measures of related constructs (i.e., relationship satisfaction, traditional gender-role attitudes, general coparenting, and perceived involvement in child feeding tasks) that were hypothesized to relate to feeding coparenting were assessed among 307 parents (n=178 females) of preschool-aged children through Amazon Mechanical Turk (MTurk) in order to examine the validity and reliability of the FCS. An exploratory factor analysis was conducted to examine the psychometric properties of the FCS. Three factors emerged: 1) shared positive views and values in child feeding, 2) active engagement in child feeding, and 3) solo parenting in child feeding. A total feeding coparenting score was also calculated. Support for construct validity of the measure with constructs hypothesized to be associated with FCS (e.g., relationship satisfaction) was observed. The internal consistency of the FCS total and subscales was adequate for whole sample, fathers, and mothers. Results suggest that the FCS may be a useful tool for assessing how mothers and fathers work together with each other in the child feeding domain.

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Keywords

father; mother; feeding; coparenting; child

Extant work on the roles of parents in shaping children's eating behaviors have focused on mothers (Kalinowski et al., 2012). Yet, more recent work showed that fathers of preschool-aged children are also involved in child feeding and may play a critical role (Khandpur, Blaine, Fisher, & Davison, 2014; Khandpur, Charles, Blaine, Blake, & Davison, 2016; Mallan, Daniels, et al., 2014; Mallan, Nothard, et al., 2014). Specifically, attitudes about food parenting (e.g., child feeding beliefs) among fathers of preschool-aged children are associated with child eating and weight outcomes (see review by Khandpur et al., 2014). Although fathers are involved in food parenting, a recent review found that male caregivers only represented a small percentage of the existing intervention studies on parenting and childhood obesity (Davison et al., 2018).

Coparenting refers to how fathers and mothers mutually support each other, share leadership, and work together as a team to raise children (Boričević Maršanić & Kušmić, 2013). Feinberg proposed that high quality coparenting involves the construction and operation of a mutually agreed upon partnership structure such that parents' perceptions of satisfaction of the division of parenting are mutually agreed upon, and that such joint engagement is more important than whether parents attain an objectively equal division of parental labor (Feinberg, 2002). Specifically, Feinberg (2003) conceptualized and developed measures to capture the coparenting framework and found that the presence of a cooperative alliance, joint/mutual engagement and agreement among parents are associated with positive child outcomes (e.g., low externalizing behaviors, positive parent-child relationship (Boričević Maršanić & Kušmić, 2013; Feinberg & Kan, 2008). However, the joint roles of fathers and mothers coparent in food parenting (i.e., feeding coparenting) is less well understood, and could have important implications for developing effective pediatric obesity prevention efforts that focus on parenting and the family context.

Feeding Coparenting

Recent work has started to address the role of fathers in food parenting, particularly among preschool-aged children who are often the focus of obesity prevention efforts (Khandpur et al., 2014). For example, Mallan and colleagues (2014) examined the perceptions of responsibility in food parenting among 436 fathers of children between 2 and 5 years old and found that the majority of the fathers were engaged and involved in family meals and child feeding. In addition, it was found that the frequency of meals fathers ate with their child was predicted by fathers' higher perceived responsibility for child feeding and more involved and positive attitude toward their role as a father (Mallan, Nothard, et al., 2014). The importance of fathers' attitudes is also evidenced in another study where fathers of preschool-aged children's (M= 3.6 years old) beliefs and role modeling of healthy eating and physical activity was positively associated with their provision of healthy meal and physical activity environments for their children (Walsh et al., 2017). A longitudinal study also showed that children whose fathers increased their frequency of involvement in child

care activities (e.g., physical child care by taking children outside) had lower odds of obesity from age 2 to age 4 years of age (Wong et al., 2017) compared to children who fathers had least involvement. Taken together, prior work suggests that fathers are also involved in food parenting and that fathers' involvement is important in preventing childhood obesity, despite the general conception that female caregivers are the primary parent responsible for meals and feeding their children.

Although the role of fathers has been demonstrated to be an important construct to be considered among preschool-aged children, and fathers often become increasingly engaged with children during this age period (Bailey, 1994; Hook, 2006), the importance of coparenting between fathers and mothers in child feeding has most often in the literature focused solely on breast-feeding initiation and continuation during infancy (e.g., Nickerson, Skyes & Fung, 2012). For instance, mothers viewed that emotional and practical support provided by their spouse was important for breast-feeding continuation, especially during times of unexpected breastfeeding challenges (Nickerson et al., 2012). This suggests that it is important to examine how fathers and mothers coparent in the feeding domain.

The joint roles of fathers and mothers in food parenting (i.e., feeding coparenting) during early childhood have recently gained more attention, primarily in qualitative studies. One such study using semi-structured interviews with 37 fathers found that approximately 62% of fathers reported sharing food responsibilities with the child's mother in various feeding tasks (e.g., meal planning, food preparation), while the remaining fathers reported either being the sole person responsible or that the mother was the sole person responsible for feeding (Khandpur, Charles, & Davison, 2016). Fathers also reflected that they engaged with mothers in different ways around food parenting. Specifically, about half of the fathers reported cooperative food parenting practices, yet a large percentage of fathers (40%) also reported instances of conflicting food parenting practices, for example around child access to energy-dense, nutrient-poor snacks, as well as introducing a variety of foods into the diet. Dissimilarities in practices often resulted in child tantrums or refusal to eat, suggesting that differences in how mothers and fathers coparent around feeding may be an important influence on children's eating outcomes (Khandpur, Charles, & Davison, 2016). Our own qualitative work with 30 father-mother dyads of preschool-aged children also found support for prior findings. For instance, we found that couples' division of labor regarding feeding tasks seemed to align with stereotypical gender roles, such that mothers were typically the primary person engaged in feeding tasks. In addition, we also found that although couples agreed on the importance of family mealtime, routines and healthy meals, couples typically disagreed on strategies to limit unhealthy foods (blinded for review). The importance of feeding coparenting was also demonstrated in another qualitative study assessing Hispanic mothers' views of fathers' role in promoting healthy eating (Lora, Cheney, & Branscum, 2017). In the study, fathers' traditional expectations about the type of foods and portion sizes adults should eat conflicted with mothers' meal preparations, such that although mothers favored eating low-calorie meals, the meals fathers preferred eating were high-calorie meals (e.g., quesadillas). In addition, fathers reported engaging in either supportive behaviors (e.g., preparing healthy meals, using healthier cooking methods, grocery shopping with children for healthy foods) or unsupportive behaviors (e.g., bringing high-calorie foods, such as pizza and sugary drinks into the home, using sweets and savory foods for emotional regulation,

and displaying an indulgent parental feeding style (Lora et al., 2017))—findings that illustrate how a spouse's behaviors can act as a barrier or facilitator to providing a healthy food environment for the child. Despite such emerging qualitative work suggesting the importance of feeding coparenting (Khandpur, Charles, Blaine, et al., 2016; Lora et al., 2017), no work has quantified how fathers and mothers of preschool-aged children relate and work together with each other in the food parenting context (i.e., feeding coparenting).

The Current Study

The goal of the current study was therefore to develop a self-report measure to assess feeding coparenting. To achieve this goal, first we used Feinberg's framework addressing the division of labor and joint engagement in coparenting (Feinberg, 2002, 2003; Feinberg, Brown, & Kan, 2012), along with findings from prior work (Guerrero, Chu, Franke, & Kuo, 2016; Khandpur et al., 2014; Khandpur, Charles, Blaine, et al., 2016; Khandpur, Charles, & Davison, 2016; Majee, Thullen, Davis, & Sethi, 2017; Pratt, Hoffmann, Taylor, & Musher-Eizenman, 2017; Watterworth et al., 2017) to develop items for feeding coparenting scale (FCS). Second, we examined whether the scale of feeding coparenting was associated with related constructs in expected directions consistent with theory and research. For instance, prior work showed that general coparenting was positively associated with relationship satisfaction (Le, McDaniel, Leavitt, & Feinberg, 2016), thus we expected that feeding coparenting would be positively associated with relationship satisfaction, as well as general coparenting. Specifically, we examined the associations between feeding coparenting and parents' reports of relationship satisfaction, traditional gender-role attitudes, general coparenting, and parents' perceived involvement in child feeding tasks.

Methods

Participants and Procedures

Parents were recruited through Amazon Mechanical Turk (MTurk). MTurk is an online platform designed to recruit individuals to complete assignments for various purposes, including research (Follmer, Sperling, & Suen, 2017). Once the study is posted, MTurk workers who reside in the U.S. are able to view the recruitment posting on the online platform provided by Amazon. For the current study, we advertised and recruited participants between May 2017 and December 2017. MTurk has been found to be a reliable and inexpensive way to recruit participants (Buhrmester, Kwang, & Gosling, 2011). For instance, MTurk respondents have been found to be more representative of the U.S. population than convenience samples recruited for in-person data collection (Berinsky, Huber, & Lenz, 2012; Casler, Bickel, & Hackett, 2013) and has been successfully used to study family processes, such as food parenting (Kiefner-Burmeister, Hoffmann, Meers, Koball, & Musher-Eizenman, 2014). MTurk workers who resided in the U.S. and who qualified as "master" workers by Amazon were able to view the recruitment posting in the current study. The study was described as examining how fathers and mothers parent around various child feeding tasks. Inclusion criteria were that the parent was at least 18 years old, had a child between 3 and 5 years old, and was currently married or living together with the spouse/partner for at least one year. Compensation for MTurk workers typically ranges from

$0.25 to $3.00 per completed task (Domoff, Miller, Kaciroti, & Lumeng, 2015; Follmer et al., 2017). For this study, participants were required to complete a 15-minute long survey, thus they were compensated with $1.00, which was the average rate for compensation for this type of short survey task for MTurk respondents (Buhrmester et al., 2011). The University of Michigan Institutional Review Board approved the study.

The Feeding Coparenting Scale (FCS) was developed based on prior qualitative work on the roles of fathers and mothers around child feeding (see Measures for more detailed information about the development of FCS). Specifically, we developed a 16-item self-report survey to assess feeding coparenting among parents with a preschool-aged child. A total of 307 eligible parents (n=178 females) with children between the ages of 3 and 5 years old participated in an online survey.[1] The majority of the parents (89.6%) reported that they were the biological mother/father to the index child. Half of the parents in this study reported that their age ranged between 25 and 34 years of age (52.9%), with about a third of the parents reporting that their age ranged between 35 and 44 years of age (36.6%). Parents' self-reported height and weight were used to calculate their body mass index (BMI, kg/m^2) and the mean BMI was 28.1 (*SD*= 7.64), suggesting that on average, these parents were classified as overweight. Most of the parents were Caucasian (75.2%), 11.1% Asian, 9.1% African Americans, 1.6% American Indian/Alaska Native, 1.0% Native Hawaiian/Pacific Islander, and 2.0% Other. Most of the parents reported that they were non-Hispanic (90.9%), with a minority reporting that they identified as Hispanic (8.8%). Parents' education level varied: 15.0% graduated from high school/received GED; 17.3% had some college courses; 14.0% had a 2-year college degree; 43% had a 4-year college degree; and 10.7% had more than a 4-year college degree. The majority of the parents were married (82.4%) and 17.6% were in a committed relationship with a partner; most parents (97.4%) were in a heterosexual relationship, 2.6% were in a same-sex relationship. Total family income ranged from less than $10,000 to more than $100,000; the majority of families (43.3%) had a household income range >$30,000 to $70,000. The age distribution of the index child (54.1% boys) was comparable across three age groups (37.5% were 3 years old; 38.8% were 4 years old; 32.8% were 5 years old).

Measures

Feeding Coparenting Scale (FCS)—We previously conducted a qualitative study with father-mother dyads of preschool-aged children (Tan, Domoff, Pesch, Lumeng, & Miller, under review), and found that: 1) Couples' division of labor regarding feeding tasks seemed to align with stereotypical gender roles; 2) Couples noted that they attempted healthier family eating habits in comparison to families of origin and recognized the influence of extended family on their attempts at healthier feeding; 3) Couples agreed on the importance of family mealtime, routines and healthy meals, yet disagreed on strategies to limit unhealthy foods and achieve harmonious family meals. Using Feinberg's framework addressing the division of labor and joint engagement in coparenting (Feinberg, 2002, 2003; Feinberg et al., 2012), and incorporating constructs such as division of labor, shared goals to

[1]A total of 322 parents participated, however 15 parents were not included in the analysis as they were ineligible (the participant did not have children between 3 and 5 years old or was not in a committed relationship).

eat healthy, and the importance of mealtimes and routines from our prior work and that of others (Guerrero et al., 2016; Khandpur et al., 2014; Khandpur, Charles, Blaine, et al., 2016; Khandpur, Charles, & Davison, 2016; Majee et al., 2017; Pratt et al., 2017; Watterworth et al., 2017), we developed a 16-item scale to assess the feeding coparenting (see Table 1). All items have a 5-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

Additional constructs related to Feeding Coparenting.—We measured various constructs that were hypothesized to relate to the FCS, in order to examine construct validity. Specifically, we measured parents' relationship satisfaction, traditional gender-role attitudes, general coparenting beliefs, and parents' perceived involvement in feeding tasks.

Relationship satisfaction: The Kansas Marital Satisfaction Scale is a 3-item measure that assesses parents' levels of satisfaction in their relationship (Schumm et al., 1986). We slightly modified the questions as we included parents who are married as well as parents who are cohabitating with a partner. The revised items are: 1) How satisfied are you with your marriage/relationship with your spouse/partner?; 2) How satisfied are you with your spouse/partner?; and 3) How satisfied are you with your relationship with your spouse/partner? Parents reported on their relationship satisfaction using a 7-point Likert scale ranging from Extremely Dissatisfied (1) to Extremely Satisfied (7). All 3 items were combined to reflect relationship satisfaction, with higher scores representing greater satisfaction. The internal reliability of relationship satisfaction score for the current sample was good, $\alpha = .97$.

Traditional Gender-Role Attitudes: To assess parents' gender-role attitudes, we used the marital roles subscale from the gender-role attitudes survey (Hoffman & Klaska, 1995). Parents responded to 6 items (e.g., A husband's job is more important than a wife's) using 4-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (4). Higher scores reflecting more traditional gender-role attitudes. The internal reliability of traditional gender-role attitudes score for the current sample was good, $\alpha = .93$.

General Coparenting: To assess general coparenting, parents completed the brief version of the Coparenting Relationship Scale (CRS; Feinberg, Brown, and Kan, 2012). The CRS consists of 35 items that assess seven dimensions, including parents' ratings of agreement, closeness, endorsement, support and cooperation, division of labor, undermining in their relationship with their partner within the context of coparenting, as well as the extent of exposing their child to conflict between parents. Parents responded to all dimensions using the 7-point Likert scale ranging from Not True of Us (0) to Very True of Us (6), except for the exposure of child to conflict dimension, in which parents responded using the 7-point Likert scale ranging from Never (0) to Very Often (6). For this study, we reversed scored items from the negative scales and averaged all of the items to obtain a total perception of general coparenting score. The internal reliability of general coparenting score for the current sample was good, $\alpha = .97$.

Parents' Perceived Involvement in Feeding Tasks: We also sought to determine whether the FCS associated with each parent's own perceived involvement in child feeding compared to their spouse. Thus, parents were asked to reflect on who in the household was responsible

for each of the following feeding tasks: meal planning, grocery shopping, meal preparation, cooking, and child feeding. For each task, parents were asked to specify the approximate percent that each person is responsible, with options ranging from 0 to 100%. Parents were encouraged to use the full scale, and were given a brief introduction that stated "For example, if you are entirely responsible for meal planning, enter 100% "me" and 0% "my spouse/partner." If you feel you split tasks approximately equally, enter 50% "me" and 50% "my spouse/partner." In addition, parents were also given the options to allocate the percent to others if other individuals (e.g., nanny, grandmother) are responsible for those feeding tasks. For this study, we were interested in how much each parent contributed compared to their spouse/partner, thus we only utilized and aggregated the percent allocated to self and spouse across feeding tasks to create a perceived involvement score. Specifically, we created a score for each feeding task where the percent allocated to self is divided by the total percent allocated to self and spouse (i.e., % self / (% allocated to self + % allocated to partner). After obtaining a score for each feeding task, we aggregated the score across feeding tasks to obtain an overall perceived involvement score for each partner that ranged from 0 to 100%. Higher values reflecting that the responding parent perceived that s/he contributed more than his/her spouse in their household on feeding tasks (whereas lower values reflected more shared contribution).

Analyses

To examine the psychometric properties of the FCS items, first, we used exploratory factor analyses. Specifically, we applied the principal axis factoring with promax rotation to examine whether subscales emerged and to identify whether items did not cohere. Although it has been recommended to utilize a cutoff of .40 for factor loading (Stevens, 1992), items below cutoff value might be retained upon close examination as those items may represent important factors that can be explored in future research (Osborne, Costello, & Kellow, 2008). We followed this more recent guideline as the FCS is the first scale to measure the feeding coparenting construct. Second, we calculated all FCS subscale scores by averaging all of the items comprising each subscale. Third, we calculated the reliability of the FCS subscales using Cronbach's alpha. Fourth, to assess construct validity, we examined correlations between the FCS subscales and related constructs, including relationship satisfaction, traditional gender-role attitudes, general coparenting, and parents' involvement in various feeding tasks relative to his/her partner.

Results

Factor Structure and Internal Consistency of the Feeding Coparenting Scale

To examine the psychometric properties of the 16-item FCS, we conducted exploratory factor analysis (EFA), in which the principal axis factoring with promax rotation was applied. Evaluation of the scree plot indicated a three-factor solution, with most items loading ≥ .40 on the factors (two items below .40 were retained as they pertained to the construct of Active Management in Child Feeding). These analyses identified items that did not cohere with other items, reducing the number of items to 13. Hence, the EFA yielded three factors. We next calculated subscale scores by averaging the items comprising each factor: 1) Shared Positive Views and Values in Child Feeding (27.25% of the variance; 5

items); 2) Active Engagement in Child Feeding (9.63 % of the variance, 4 items) and 3) Solo Parenting in Child Feeding (18.62 % of the variance; 4 items; Table 1). Higher scores represented greater Shared Views, Active Engagement, and Solo Parenting. Next, we calculated a total score by taking the mean of all 13 items, thus creating a Total score for the FCS with higher values reflecting more coparenting (items on Solo Parenting were reverse scored). We calculated the reliability of the FCS total scale and subscales using Cronbach's alpha. The Total scale and subscales of Shared Views, Active Engagement, and Solo Parenting demonstrated adequate internal consistency, with Cronbach's alphas ranging from .60 to .83 for the whole sample (Table 1) and across mothers and fathers (Table 2). There were gender differences between men and women in their reports of the FCS subscales, except Shared Views. Men reported greater Total and Active Engagement scores in their families than women. Women reported greater Solo Parenting scores than men.

Correlations Between FCS Subscales

Table 3 presents correlations between the total and three subscale scores of FCS. Findings showed that the Total score was strongly correlated with the separate FCS subscale scores, respectively for men and women, with correlations ranging from .55 to .82. The Shared Views scores were positively associated with the Active Engagement for men and women, but negatively associated with the Solo Parenting for men only. The Active Engagement score was negatively associated with Solo Parenting for women only.

Construct Validity Analysis

Table 4 presents construct validity data by specifying the correlations between the total and subscale scores and several related constructs. Generally, the overall and subscale scores of FCS were associated with the related constructs in the manner hypothesized, and consistent with previous research and theory. For example, the Total scores were positively associated with relationship satisfaction, general coparenting, but negatively associated with parents' perceived involvement in child feeding tasks. Overall, the correlations were stronger for men than for women, especially with regard to relationship satisfaction, traditional gender-role attitudes, and general coparenting. However, gender differences were noted for some associations. For example, fathers who endorsed engaging in more solo parenting had lower relationship satisfaction, whereas mothers' endorsement of solo parenting was not associated with their relationship satisfaction. In general, fathers with less traditional gender-role attitudes endorsed more feeding coparenting.

Discussion

This study presents initial psychometric data on a new scale of feeding coparenting among parents with children between 3 and 5 years old. Our findings showed that the newly developed FCS yielded three subscales reflecting: Shared Positive Views and Values, Active Engagement, and Solo Parenting around child feeding. In addition, we found that these constructs can be reliably and validly assessed in fathers and mothers of preschool-aged children, suggesting that this newly developed scale could be useful in furthering our understanding of the roles of fathers and mothers in child feeding and pediatric obesity prevention efforts.

The FCS generated three subscales, each of which may be important in better understanding coparenting around child feeding at this age. First, Shared Positive Views and Values in child feeding represent how similarly a parent's positive views of child-feeding domain aligned with the views of his/her partner. This construct has also been shown to be important in other domains, as prior work has shown that parents who were similar in child rearing values had children with fewer externalizing behavior problems (Harvey, 2000; Panetta, Somers, Ceresnie, Hillman, & Partridge, 2014). As indicated in prior qualitative work, when couples have different values and views in child feeding, it may be a barrier to encouraging healthier eating habits in children (Lora et al., 2017). Second, Active Engagement represents how a parent, together with his/her partner, guides the degree of structure and cohesiveness regarding child feeding. It has been illustrated that parenting involvement is an important factor in understanding child outcomes across a broad range of domains (Arnold, Zeljo, Doctoroff, & Ortiz, 2008; McLean, Griffin, Toney, & Hardeman, 2003; Wysocki & Gavin, 2006; Zvara, Schoppe-Sullivan, & Dush, 2013), yet it is unknown how active involvement of both parents in child feeding may relate to child eating and weight outcomes. For example, involvement from both parents may be beneficial when both parents agree or have cohesive behaviors on healthy foods and routines, however, if parents disagree, these may be difficult to achieve. Indeed, qualitative work suggests that dissimilarities in feeding practices among fathers and mothers often resulted in child tantrums or refusal to eat (Khandpur, Charles, & Davison, 2016). Third, Solo Parenting represents how a parent views his/her own responsibility in child feeding compared to his/her partner, specifically the degree to which a parent perceives that s/he is the sole person responsible in managing child feeding tasks. If one parent is solely responsible for child feeding, there may be more consistency, yet perhaps also more challenges in providing regular healthy meals that require more preparation time. It is unknown how these three subscales relate to child eating and weight outcomes, thus it is important to explore these associations in future work.

Overall, mothers generally perceived lower feeding coparenting than fathers, suggesting that mothers perceive that they are still the primary caregiver in the food parenting domain. This finding is consistent with findings in prior qualitative work (Jabs et al., 2007). Upon closer examination, we noted that this difference could be driven by mothers' reported lower Active Engagement and more Solo Parenting. In other words, even though a parent can have a partner who shares similar values and views in child feeding, it seems that it is not sufficient to successfully engage in feeding coparenting. Nonetheless, it is important to acknowledge that perceptions of feeding responsibility and food parenting vary widely and it is difficult to capture this construct. Similarly, expectations for active engagement might be perceived very differently by mothers and fathers and these differences might have influenced the study findings. More work is needed to examine gender differences in feeding coparenting, as well as elucidate the mechanisms that predict these differences. In addition, future work could consider how parent or family factors, for example work schedules or cooking skills, may shape the strength of the association between Shared Views and Active Engagement (or Solo Parenting).

Solo Parenting was associated with different constructs depending on parent gender. For instance, Solo Parenting was negatively associated with fathers' Shared Views, but the association was not significant for mothers. One possible interpretation is that fathers who

held different food parenting beliefs than their partner (i.e., lower shared positive views) would want to act on these beliefs by actively participating in child feeding, rather than leaving it to the partner (i.e., the mother). We also found that for mothers, Solo Parenting was negatively associated with Active Engagement, but no association was found for fathers. It is possible that when a mother perceives that her partner is as involved as she is in the child feeding domain, her role as the primary caregiver in feeding may be reduced. That said, it is important to note that the subscale assessing Active Engagement included 2 items that loaded below 0.40 and was also less internally consistent for fathers than for mothers. Thus, it is also possible that this dimension is less cohesive or salient in the minds of fathers and may warrant additional development work.

The FCS total score was moderately to strongly associated with the related constructs in expected directions. These findings contribute to the construct validity of the scale and are consistent with past research linking coparenting to the general quality of the couple relationship and attitudes about gender-roles (Boričević Maršanić & Kušmić, 2013; Feinberg, 2003; Feinberg et al., 2012; Le et al., 2016). However, it is important to note that although mothers' relationship satisfaction was not associated with Solo Parenting, fathers who were more satisfied with their relationship tended to report more Shared Views. It is possible that fathers view Solo Parenting as more central to relationship satisfaction, whereas mothers view Solo Parenting as an independent, separate element which does not contribute to relationship satisfaction. Indeed, we found that mothers' traditional gender-role attitudes were positively associated with Solo Parenting, suggesting that a mother who holds more traditional views of gender roles may perceive child feeding tasks as her "duty", or as falling within her domain. Mothers may also be able to compartmentalize the issue of relationship satisfaction from coordination of food parenting more than fathers can. Although prior studies have also identified gender differences in how perceptions of coparenting relate to other parenting behaviors, no studies have done so in the feeding domain (McHale & Rotman, 2007). Such gender differences require further investigation.

There were a few limitations in this study including the fact that the data were collected online through MTurk which may be subject to selection bias. Self-reported measures limit the capabilities of capturing the dynamics of feeding coparenting, which one could measure by observing how fathers and mothers simultaneously interact with their child. Nonetheless, it would be challenging to observe parents' perceptions of shared positive views and values in feeding coparenting, so it is important to have self-reported measures to assess these constructs. There were also some limitations with regard to our Solo Parenting items, in that some items regarding cooking and planning reflected enjoyment and skill in these areas, but these elements may not necessarily go together (e.g., someone may be good at cooking, but not enjoy it). Unpacking this construct may thus be important in future iterations of the FCS. Finally, this study examined individuals with a preschool-aged child, instead of couples, which prevents us from assessing the degree of agreement between fathers and mothers on the feeding coparenting scale and subscales. Considering the dyadic nature of feeding coparenting more directly will be important in future work in order to articulate the complexity of the construct in more detail.

In addition, this study is limited as we only examined individuals with a preschool-aged child who were married/cohabitating and that we did not obtain information regarding whether the child had a feeding issue or chronic disease or duration of the child had lived with the family. Although it is possible that feeding coparenting quality might differ between parents with and without a child feeding issue/chronic disease, findings from the general coparenting literature found no differences in the quality of general coparenting between parents with or without a child with disability (Norlin & Broberg, 2013). Given that this study sample consisted of primarily Caucasian, non-Hispanic parents, it precluded us from examining the similarities and differences between groups. This is important, as both feeding and parenting styles may differ systematically across cultural groups (Hughes et al., 2006; Hughes, Power, Fisher, Mueller, & Nicklas, 2005), for example. In addition, in future research it will be important to administer and validate this measure in more diverse samples, including populations who have a higher-risk of obesity (e.g., Hispanic, African American populations, (Hales, Carroll, Fryar, & Ogden, 2017) to investigate whether the FCS factor structure remains similar across populations. In the current sample, there was a wide range of income and education levels, which was important as prior work found differences in food parenting practices depending on fathers' education and residential status (Khandpur, Charles, Blaine, et al., 2016). Further, we only examined constructs such as relationship satisfaction, traditional gender roles, general coparenting and perceived parental involvement in feeding in relation to FCS, but not other parent characteristics (e.g., eating behaviors, perceptions of healthy eating, weight status). Future work should consider examining parents' eating behaviors or health-related values as prior qualitative work found that fathers' and mothers' own eating habits were associated with their feeding styles (Lora et al., 2017). Lastly, we focused on feeding coparenting during the preschool years, which has been proposed as a developmental period that requires more cooperation and interactions between fathers and mothers in the feeding domain compared to infancy (Bailey, 1994; Hook & Wolfe, 2011). Nonetheless, it would be important to examine other ages in future work, as the salience of feeding coparenting and the level of active engagement about child feeding may change as children get older.

Conclusions

The feeding coparenting scale is an initial first step to quantitatively capture the beliefs of feeding coparenting among fathers and mothers with preschool-aged children. In general, the present study indicates that feeding coparenting can be reliably assessed in a sample of fathers and mothers with preschool-aged children. The dimensions of feeding coparenting illustrated by prior work are also supported by three internally consistent subscales that are correlated with the total score as well as with constructs hypothesized to be associated. These findings allow for more precise measurement of feeding coparenting dimensions. Future studies are warranted to validate FCS among father-mother dyads across developmental periods other than preschool-age. Future research could also examine whether FCS associates with children's eating and weight outcomes. With further validation, the FCS has the potential to identify individual differences in parents' beliefs about feeding coparenting.

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References

Arnold DH, Zeljo A, Doctoroff GL, & Ortiz C (2008). Parent involvement in preschool: Predictors and the relation of involvement to preliteracy development. School psychology review, 37(1), 74.

Bailey WT (1994). A longitudinal study of fathers' involvement with young children: Infancy to age 5 years. The Journal of Genetic Psychology, 155(3), 331–339. [PubMed: 7964659]

Berinsky AJ, Huber GA, & Lenz GS (2012). Evaluating online labor markets for experimental research: Amazon. com's Mechanical Turk. Political Analysis, 20(3), 351–368.

Boričević Maršanić V, & Kušmić E (2013). Coparenting Within the Family System: Review of Literature. Collegium antropologicum, 37(4), 1379–1384. [PubMed: 24611362]

Buhrmester M, Kwang T, & Gosling SD (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality, data? Perspectives on psychological science, 6(1), 3–5. [PubMed: 26162106]

Casler K, Bickel L, & Hackett E (2013). Separate but equal? A comparison of participants and data gathered via Amazon's MTurk, social media, and face-to-face behavioral testing. Computers in Human Behavior, 29(6), 2156–2160.

Davison K, Kitos N, Aftosmes-Tobio A, Ash T, Agaronov A, Sepulveda M, & Haines J (2018). The forgotten parent: Fathers' representation in family interventions to prevent childhood obesity. Preventive medicine, 111, 170–176. [PubMed: 29499214]

Domoff SE, Miller AL, Kaciroti N, & Lumeng JC (2015). Validation of the Children's Eating Behaviour Questionnaire in a low-income preschool-aged sample in the United States. Appetite, 95, 415–420. [PubMed: 26247701]

Feinberg ME (2002). Coparenting and the transition to parenthood: A framework for prevention. Clinical child and family psychology review, 5(3), 173–195. [PubMed: 12240706]

Feinberg ME (2003). The internal structure and ecological context of coparenting: A framework for research and intervention. Parenting: Science and Practice, 3(2), 95–131.

Feinberg ME, Brown LD, & Kan ML (2012). A multi-domain self-report measure of coparenting. Parenting, 12(1), 1–21. [PubMed: 23166477]

Feinberg ME, & Kan ML (2008). Establishing family foundations: intervention effects on coparenting, parent/infant well-being, and parent-child relations. Journal of Family Psychology, 22(2), 253. [PubMed: 18410212]

Follmer DJ, Sperling RA, & Suen HK (2017). The role of MTurk in education research: Advantages, issues, and future directions. Educational Researcher, 46(6), 329–334.

Guerrero AD, Chu L, Franke T, & Kuo AA (2016). Father involvement in feeding interactions with their young children. American journal of health behavior, 40(2), 221–230. [PubMed: 26931754]

Hales CM, Carroll MD, Fryar CD, & Ogden CL (2017). Prevalence of obesity among adults and youth: United States, 2015–2016.

Harvey EA (2000). Parenting similarity and children with attention-deficit/hyperactivity disorder. Child & Family Behavior Therapy, 22(3), 39–54.

Hook JL (2006). Care in context: Men's unpaid work in 20 countries, 1965–2003. American sociological review, 71(4), 639–660.

Hook JL, & Wolfe CM (2011). New fathers? Residential fathers' time with children in four countries. Journal of family issues, 0192513X11425779.

Hughes SO, Anderson CB, Power TG, Micheli N, Jaramillo S, & Nicklas TA (2006). Measuring feeding in low-income African–American and Hispanic parents. Appetite, 46(2), 215–223. [PubMed: 16504340]

Hughes SO, Power TG, Fisher JO, Mueller S, & Nicklas TA (2005). Revisiting a neglected construct: parenting styles in a child-feeding context. Appetite, 44(1), 83–92. [PubMed: 15604035]

Jabs J, Devine CM, Bisogni CA, Farrell TJ, Jastran M, & Wethington E (2007). Trying to find the quickest way: employed mothers' constructions of time for food. Journal of nutrition education and behavior, 39(1), 18–25. [PubMed: 17276323]

Kalinowski A, Krause K, Berdejo C, Harrell K, Rosenblum K, & Lumeng JC (2012). Beliefs about the role of parenting in feeding and childhood obesity among mothers of lower socioeconomic status. Journal of nutrition education and behavior, 44(5), 432–437. [PubMed: 21724469]

Khandpur N, Blaine RE, Fisher JO, & Davison KK (2014). Fathers' child feeding practices: A review of the evidence. Appetite, 78, 110–121. [PubMed: 24667152]

Khandpur N, Charles J, Blaine RE, Blake C, & Davison K (2016). Diversity in fathers' food parenting practices: A qualitative exploration within a heterogeneous sample. Appetite, 101, 134–145. [PubMed: 26930383]

Khandpur N, Charles J, & Davison KK (2016). Fathers' Perspectives on Coparenting in the Context of Child Feeding. Childhood Obesity.

Kiefner-Burmeister AE, Hoffmann DA, Meers MR, Koball AM, & Musher-Eizenman DR (2014). Food consumption by young children: a function of parental feeding goals and practices. Appetite, 74, 6–11. [PubMed: 24275668]

Le Y, McDaniel BT, Leavitt CE, & Feinberg ME (2016). Longitudinal associations between relationship quality and coparenting across the transition to parenthood: A dyadic perspective. Journal of Family Psychology, 30(8), 918. [PubMed: 27183188]

Lora KR, Cheney M, & Branscum P (2017). Hispanic mothers' views of the fathers' role in promoting healthy behaviors at home: focus group findings. Journal of the Academy of Nutrition and Dietetics, 117(6), 914–922. [PubMed: 28238895]

Majee W, Thullen MJ, Davis AN, & Sethi TK (2017). Influences on infant feeding: Perceptions of mother-father parent dyads. MCN: The American Journal of Maternal/Child Nursing, 42(5), 289–294.

Mallan KM, Daniels LA, Nothard M, Nicholson JM, Wilson A, Cameron CM, . . . Thorpe K (2014). Dads at the dinner table. A cross-sectional study of Australian fathers' child feeding perceptions and practices. Appetite, 73, 40–44. [PubMed: 24511617]

Mallan KM, Nothard M, Thorpe K, Nicholson J, Wilson A, Scuffham P, & Daniels L (2014). The role of fathers in child feeding: Perceived responsibility and predictors of participation. Child: Care, health and development, 40(5), 715–722.

McHale JP, & Rotman T (2007). Is seeing believing?: Expectant parents' outlooks on coparenting and later coparenting solidarity. Infant Behavior and Development, 30(1), 63–81. [PubMed: 17292781]

McLean N, Griffin S, Toney K, & Hardeman W (2003). Family involvement in weight control, weight maintenance and weight-loss interventions: a systematic review of randomised trials. International Journal of Obesity, 27(9), 987–1005. [PubMed: 12917703]

Norlin D, & Broberg M (2013). Parents of children with and without intellectual disability: couple relationship and individual well<dummy_junk>being. Journal of Intellectual Disability Research, 57(6), 552–566. [PubMed: 22533701]

Osborne JW, Costello AB, & Kellow JT (2008). Best practices in exploratory factor analysis. Best practices in quantitative methods, 86–99.

Panetta SM, Somers CL, Ceresnie AR, Hillman SB, & Partridge RT (2014). Maternal and paternal parenting style patterns and adolescent emotional and behavioral outcomes. Marriage & Family Review, 50(4), 342–359.

Pratt M, Hoffmann D, Taylor M, & Musher-Eizenman D (2017). Structure, coercive control, and autonomy promotion: A comparison of fathers' and mothers' food parenting strategies. Journal of health psychology, 1359105317707257.

Schumm WR, Paff-Bergen LA, Hatch RC, Obiorah FC, Copeland JM, Meens LD, & Bugaighis MA (1986). Concurrent and discriminant validity of the Kansas Marital Satisfaction Scale. Journal of Marriage and the Family, 381–387.

Stevens J (1992). Applied multivariate statistics for the social sciences: Lawrence Erlbaum Associates, Inc.

Walsh AD, Hesketh KD, van der Pligt P, Cameron AJ, Crawford D, & Campbell KJ (2017). Fathers' perspectives on the diets and physical activity behaviours of their young children. PloS one, 12(6), e0179210. [PubMed: 28604810]

Watterworth JC, Hutchinson JM, Buchholz AC, Darlington G, Randall Simpson JA, Ma DW, . . . Study GFH (2017). Food parenting practices and their association with child nutrition risk status: comparing mothers and fathers. Applied Physiology, Nutrition, and Metabolism, 42(6), 667–671.

Wong MS, Jones-Smith JC, Colantuoni E, Thorpe RJ Jr, Bleich SN, & Chan KS (2017). The Longitudinal Association Between Early Childhood Obesity and Fathers' Involvement in Caregiving and Decision-Making. Obesity, 25(10), 1754–1761. [PubMed: 28634995]

Wysocki T, & Gavin L (2006). Paternal involvement in the management of pediatric chronic diseases: Associations with adherence, quality of life, and health status. Journal of Pediatric Psychology, 31(5), 501–511. [PubMed: 16002481]

Zvara BJ, Schoppe-Sullivan SJ, & Dush CK (2013). Fathers' involvement in child health care: associations with prenatal involvement, parents' beliefs, and maternal gatekeeping. Family relations, 62(4), 649–661. [PubMed: 26405366]

Table 1

Feeding Coparenting Scale (FCS) Items and Final Factor Loadings

Item	1	2	3
Shared Positive Views and Values in Child Feeding (α=0.83)			
7. My spouse/partner and I tend to agree on the brands of food we buy.	.47		
8. My spouse/partner and I both see family mealtime as important.	.86		
9. My spouse/partner and I both see family mealtimes as a time to feed our child healthy food.	.88		
10. My spouse/partner and I both see family mealtimes as a time to spend quality time together.	.79		
15. My spouse/partner and I handle child eating behavior (e.g., picky eating, snacking) similarly.	.54		
Active Engagement in Child Feeding (α=.70)			
1.In my household, my spouse/partner and I frequently discuss how we manage feeding tasks.		.75	
2.In my household, both my spouse/partner and I work together to manage feeding tasks.		.83	
14. It is important for me to be involved in feeding tasks with my spouse/partner.		.34	
16. Having a spouse/partner to manage feeding tasks is important to me		.25	
Solo Parenting in Child Feeding (α=0.82)			
3. I am responsible for all feeding tasks in my family.			.61
4. I manage feeding tasks because my schedule is more flexible than my spouse/partner.			.64
5. I enjoy cooking and am good at cooking, so I cook more than my spouse/partner does.			.78
6. I enjoy meal planning, so I plan meals more than my spouse/partner does.			.88
Total Score (13 items; α=0.78)			
5-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5)			

Items that were dropped:

11. I am satisfied with how my spouse/partner and I divide the responsibility of managing feeding tasks.

12. Busy schedules make it difficult for us to work together in managing feeding tasks

13. If I had a choice, I would prefer my spouse/partner to manage all feeding tasks in my household

Table 2

Means, Standard Deviations, and Internal Reliabilities (Alphas) for the Feeding Coparenting Scale (FCS) Total and Subscales by Gender

	Father		Mother		*t*-value
Scale	**M(SD)**	**α**	**M(SD)**	**α**	
Total	3.69 (0.56)	.77	3.28 (0.60)	.78	−6.01**
Shared Views	3.98 (0.71)	.82	4.05 (0.80)	.84	.42
Active Engagement	3.63 (0.69)	.60	3.32 (0.93)	.73	−3.17**
Solo Parenting	2.62 (0.99)	.78	3.73 (0.92)	.74	10.15**

** $p < .01$

Table 3.

Intercorrelations between the Total and Subscales of Feeding Coparenting Scale (FCS)

Scale	1	2	3	4
1. Total	--	.82**	.63**	−.66**
2. Shared Views	.67**	--	.51**	−.25**
3. Active Engagement	.85**	.47**	--	.02
4. Solo Parenting	−.55**	.12	−.29**	--

** $p < .01$

Fathers are above the diagonal and Mothers are below the diagonal

Table 4.

Concurrent Correlations Between the Feeding Coparenitng Scale (FCS) and Related Measures

	Total		Shared Views		Active Engagement		Solo Parenting	
	Father	**Mother**	**Father**	**Mother**	**Father**	**Mother**	**Father**	**Mother**
Relationship Satisfaction	.58**	.33**	.68**	.39**	.29**	.29**	−.25**	.00
Traditional Gender-role	−.34**	−.05	−.24**	−.01	−.19*	.09	−.27**	.18*
General Coparenting	.72**	.40**	.67**	.53**	.31**	.23**	−.50**	−.04
Perceived Involvement	−.40**	−.57**	−.23**	−.10	−.04	−.53**	.51**	.58**

* $p < .05$

** $p < .01$