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Parental feeding behaviours and motivations: a qualitative study in mothers of UK pre-schoolers

S Carnell¹, L Cooke², R Cheng¹, A Robbins¹, and J Wardle²

¹New York Obesity Research Center, St Luke's-Roosevelt Hospital Center, Columbia University College of Physicians and Surgeons, New York, USA

²Cancer Research UK Health Behaviour Research Centre, Department of Epidemiology & Public Health, University College London, London, UK

Abstract

Parental feeding behaviours are considered major influences on children's eating behaviour. However, many questionnaire studies of feeding neglect subtle distinctions between specific feeding strategies and practices in favour of eliciting general feeding goals, and do not take account of the context provided by parents' motivations. These factors may be critical to understanding child outcomes and engaging parents in child obesity prevention. The present study obtained interview and diary data on specific feeding behaviours and underlying motivations from 22 mothers of predominantly healthy weight 3–5 y olds in the UK. Parents described a wide range of efforts to promote or restrict intake that were largely motivated by practical and health considerations and only rarely by concern about weight. There was also evidence for instrumental feeding, rules surrounding meal-time, child involvement, and parental flexibility in relation to feeding. Almost all parents described responding to children's appetitive traits, consistent with growing evidence for genetically-influenced individual differences in children's appetite. These findings suggest that in order to engage parents of currently healthy weight children, obesity prevention advice should aim to satisfy their primary motivations (practicality, health), and be framed as helping parents to respond sensitively and appropriately to different children's characteristics.

Keywords

parental feeding style; child eating behaviour; child obesity; parenting style; healthy eating; restriction; pressure to eat; instrumental feeding; weight concern; child-responsive feeding

Corresponding author: Susan Carnell, New York Obesity Nutrition Research Center, St Luke's-Roosevelt Hospital Center, Columbia University College of Physicians and Surgeons, New York, USA. sc2902@columbia.edu.

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Introduction

Parental feeding behaviours undoubtedly influence eating behaviour and weight, at least in young children. However, the literature paints a mixed picture of the degree and type of influence achieved, with some studies revealing potentially unfavourable relationships between parental attempts to influence children's eating and child outcomes (Ventura & Birch, 2008), and others finding either minimal effects (Carnell & Wardle, 2007; Robinson, Kiernan, Matheson, & Haydel, 2001), or more cause for optimism (Brown, Ogden, Vogege, & Gibson, 2008; Faith, et al., 2003; Gregory, Paxton, & Brozovic, 2010a; Patrick & Nicklas, 2005; Vereecken, Legiest, De Bourdeaudhuij, & Maes, 2009; Wardle, Sanderson, Guthrie, Rapoport, & Plomin, 2002).

One possible reason for these apparent discrepancies is that studies effectively tap qualitatively different types of feeding behaviour. Several of the more optimistic findings come from studies using scales that directly assess feeding *strategies* (goal-directed behaviours) or *practices* (behaviours that are not necessarily goal-directed) which are indicative of a subtle, *authoritative feeding style* (i.e. high demandingness, high responsiveness), where the term 'style' refers not to a specific behaviour but instead to a contextual variable that creates an emotional climate for expression of parents' behaviours and can moderate the relationship between those behaviours and developmental outcomes (Darling & Steinberg, 1993). E.g. Do you avoid having snack foods in the house? Do you reason with your child to get him/her to eat, for example, tell him/her about the benefits of certain foods? (Birch & Fisher, 2000; Brown et al., 2008; Patrick & Nicklas, 2005).

In contrast, many of the 'unfavourable' results are apparent when studies stop short of measuring specific behaviours and instead measure more general behavioural *goals* using rigid language indicative of a more *authoritarian feeding style* (i.e. high demandingness, low responsiveness). E.g. My child should eat everything on his plate; I have to be sure that my child does not eat too many high-fat foods (Birch & Fisher, 2000; Birch, Fisher, & Davison, 2003). It is therefore possible that while behaviours that reflect an authoritative feeding style produce good results, those reflecting an authoritarian style do not, at least in some populations.

A second explanation for the mixed findings could be that parental motivations for feeding behaviors differ between samples, and these motivations may provide context and nuance that can affect child outcomes. For example, parental concern about child overweight, which has been observed to be quite low in a number of populations (Campbell, Williams, Hampton, & Wake, 2006; Carnell, Edwards, Croker, Boniface, & Wardle, 2005; Lampard, Byrne, Zubrick, & Davis, 2008), predicts feeding behaviour in several published studies (e.g. Francis, Hofer, & Birch, 2001; Gregory, Paxton, & Brozovic, 2010b). Relationships between parental feeding and unfavourable child outcomes may be more likely in 'high concern' groups due to parents either transmitting unhelpful restrictive practices to their child in an effort to prevent weight gain, or responding forcefully to a child who is already overweight. In contrast, if parents are motivated primarily by ensuring their child's health (Goodell, Pierce, Bravo, & Ferris, 2008), or other shorter-term goals, such as managing busy family schedules, then child outcomes may be very different. Variation in motivations may also

partly explain why results differ across questionnaires: while the items from some scales could be seen to imply a concern about eating fattening foods (e.g. I have to be sure that my child does not eat too many high-fat foods), others are more transparently health-motivated (e.g. Do you reason with your child to get him/her to eat, for example, tell him/her about the benefits of certain foods?)

The idea that the consequences of parental feeding depend on subtle differences in specific feeding behaviours and their underlying motivations is related to Hughes et al's (Hughes, Power, Fisher, Mueller, & Nicklas, 2005) suggestion that the context of general parenting style influences the impact of specific feeding strategies, and these factors may have a combined effect. For example, a parent who adopts child-responsive, authoritative methods of restricting intake, and does so in order to encourage a flexible but healthy eating attitude, may have a more favourable impact on their child's eating behaviour than a parent who adopts rigid, authoritarian methods (e.g. verbal and physical coercion) in order to achieve a goal weight for their child, thereby imbuing parent-child feeding interactions with a negative emotional context. The notion of the importance of context is also consistent with growing recognition that parental feeding cannot be addressed in isolation from other aspects of parenting, and that child obesity interventions that additionally target global parenting style or family functioning may prove more effective (Hubbs-Tait, Kennedy, Page, Topham, & Harrist, 2008).

A third reason for the variation within existing results could be the inherently bidirectional relationship between parental feeding and children's eating behaviour and weight. Because the majority of studies are cross-sectional, some findings may reflect the influence of the parent on the child, while others may be more reflective of the child influencing the parent. For example, a number of studies have now demonstrated that relationships between parent feeding and child weight depend on parental concern about weight, i.e., parents' cognitive, affective and ultimately behavioural responses to the child (May, et al., 2007; Spruijt-Metz, 2002, 2006; Webber, Hill, Cooke, Carnell, & Wardle, 2010). There is also longitudinal evidence that prospective associations between child weight and parental feeding are stronger than prospective associations in the reverse direction (Webber, Cooke, Hill, & Wardle, 2010). These findings are consistent with a growing body of studies demonstrating that appetite in children is heritable, and environmental influence relatively low, especially in terms of family-wide factors that are similar for children in the same household (Carnell, Haworth, Plomin, & Wardle, 2008; Carnell & Wardle, 2009; Llewellyn, van Jaarsveld, Boniface, Carnell, & Wardle, 2008; Wardle et al., 2008).

Although some take these reports of genetic influence to imply that parental feeding is unimportant, it should be noted that if 60–70% of the variance in children's eating behaviour is related to genes (Carnell & Wardle, 2009), 30–40% – not an insignificant proportion – is still attributable to environmental factors. Further, the environmental effect appears to be largely 'non-shared', emphasizing the importance of parents' unique responses to an individual child, and suggesting that modifying these responses could potentially limit the extent of the expression of genetically-influenced appetitive traits. If, as the data suggest, parents are naturally inclined to respond to their children's genetically-influenced, enduring tendencies, it may be more helpful to frame parental feeding advice in terms of encouraging

parents to respond to their children in the most helpful manner possible, rather than arguing that there are uniformly successful strategies that will produce good results in all children.

In conclusion, a more nuanced understanding of feeding behaviours and their motivational context is critical to understand the variety of outcomes in the parental feeding literature and to develop palatable and effective parental interventions for child obesity prevention. For the current study we obtained interview (n=14) and diary (n=22) data from mothers of predominantly healthy weight 3–5y olds which we used to chart the variety of feeding behaviours spontaneously described in the sample, and explore the underlying motivations for these behaviours. Our specific aims were: a) to confirm the presence of specific parental feeding behaviours already described in multiple questionnaire studies as well as the relatively small body of relevant qualitative literature (e.g. Moore, Tapper, & Murphy, 2007; Ventura, Gromis, & Lohse, 2010), and record and classify any newly emerging behaviors; 2) to chart and classify the different motivations for feeding practices reported by parents, including parents' perceptions that they are aware of or responding to the child's appetitive and other characteristics. Our overarching goal was to generate a comprehensive picture of parents' perspectives on feeding behaviours and motivations that could potentially be used to inform the development of parent-friendly interventions.

Methods

Participants

All parents who had participated in the first wave of a large community survey of parental feeding in 3–5y olds (i.e. their children attended the first four preschools to be surveyed of the 12 preschools ultimately included in the study) (Carnell & Wardle, 2007), completed forms indicating their interest in participating in either or both of a telephone interview or a two-day diary study about their child's eating. All parents were eligible for both the main survey and the interview/diary study, provided they had sufficient English language ability to participate. Of the 190 parents invited to complete an interview or diary, 74 (39%) parents expressed interest in the interview and 79 (42%) in the diary. Those volunteering for the diary or interview exclusively were allocated to their chosen condition, and those volunteering for both were split between both groups so as to achieve an equal number (n=45) in each group, with no overlap between conditions. Participants for the interviews were contacted in random order and interviewed until no additional information was yielded by the interviews (termed the saturation point; Ritchie, Lewis, & Elam, 2003). Of the 17 interview volunteers who were contacted, 14 granted interviews, giving an 82% rate of response. Of the 45 who were sent a diary (plus one reminder a month after initial contact), 22 (49%) were returned. Children were weighed and measured by trained researchers in school. Ethical approval was obtained from the UCL Research Ethics Committee of Non-NHS Human Research.

Procedure

Interview—Interviewees were telephoned after 5pm and invited to participate in a 30–60 minute interview about how they fed their 3–5y old that day. If it was not convenient to talk then, a later time for the interview was arranged. Following Ritchie et al.'s (2003) approach,

a topic guide including key questions and suggested follow-up probe questions was developed based on our main objectives and used to shape the course of the interview. Parents were first asked to give a brief account of their and their child's day (e.g. Can you tell me a bit about your day? What happened in general today? Were you working, or was your child with you?), then were asked to describe chronologically all food-related episodes involving the child, i.e., any occasion when foods or beverages were consumed, bought, requested or discussed (e.g. Let's go back to the first time food was mentioned, or the first time your child ate something. When was that and what happened? What about the next time food came up?). Additional probe questions elicited further detail about what and how much was eaten and what was said (e.g. Can you remember how much your daughter ate? Did he ask for those? When you've decided he's had enough, how do you convey that to him?), and prompted the parent for perceived reasons for their own and their child's behaviour (e.g. Can you remember how you arrived at those quantities? How was that chosen? What makes you decide to have one thing one day and not the other?).

In order to sample a range of experience parents were asked repeatedly if the events were typical, and to describe any occasion when things had happened differently (e.g. Does that happen most days? Are there any days when he's less fussy or more fussy?). Given the timing of the study, any deviations from normal child feeding practices that were planned for the Christmas vacation – traditionally a period of disrupted routine characterized by higher than normal availability of energy-dense 'treat' foods and an increased number of meals eaten outside the family home – were also discussed (e.g. How do you think things will be at Christmas in respect to food? How do you think things will be over the holidays?). Where the parent had more than one child, they were invited to make comparisons between children (e.g. How is he in comparison to your daughter? Does he eat a similar amount?) When parents began to make general statements they were refocused on specific situations by asking them to describe an example of the behaviour (e.g. Can you think of an example of when that happened? Can you tell me a little about the last time you did that?).

Diary—Diary participants were given a blank diary to be completed on one weekday and one weekend day. Diary instructions read: "Please use the diary to record all food- or drink-related interactions you have with your child on two days: one during the week, and one during the weekend. These might include your response to your child's request for a snack, an overall account of how a particular mealtime proceeded, or an occasion where you gave your child some food. Remember we are interested in all food- or drink- related interactions, so please record any time food was eaten or mentioned by your child. Please try to record each event as soon as it has happened, as this will help you to remember it more accurately."

Each of the diary pages included two columns to fill in (i) 'Time of day', and (ii) 'Food/drink involved', and two further columns entitled (iii) 'What happened?' and (iv) 'Why do you think you and your child behaved this way?' The following example was given: (i) '18:00'; (ii) 'Roast chicken, peas, carrots and chips'; (iii) 'We were having our evening meal. Ben left his vegetables on his plate so I asked him to finish them. He ate a few then refused to eat any more'; (iv) 'He left the vegetables because he doesn't like them. I asked him to finish his vegetables because I think they are good for him.'

Data analysis

Theme extraction and coding—Interviews were transcribed and a thematic framework in which to enter summaries of both the interview and the diary data (Ritchie et al., 2003) was developed by SC, RC and AR. In framework analysis, each case corresponds to one line so data can be analysed either by case (by reading across) or by theme (by reading down). Broad framework themes were guided by the categories of parental feeding behaviour emerging from the general parental feeding literature, namely, promotion of eating (pressuring the child to eat), restriction of intake (limiting access to unhealthy foods), instrumental feeding (using one food to reward consumption of another), emotional feeding (using food to influence the child's mood), and imposing rules about meal-times, as well as the motivations for feeding behaviour already explored in the literature (e.g. concern about weight). However, because our intention was not to conduct a theoretically-driven analysis, more differentiated sub-themes were generated in a 'bottom-up' fashion based on in-depth analysis of a sub-set of five interview transcripts. The emerging structure encapsulated a variety of feeding behaviours and feeding motivations, as well as parents' explicit mentions of their awareness of children's general eating behaviour traits and conceptions of their behaviour as responsive to those traits (see Themes and Examples). In general, instances of behaviours were classified in the most appropriate single category (exclusive coding), while accounts of parental motivations and awareness/responsiveness often appeared in more than one category. For example, a parent's account of promoting intake due to a child's small appetite and low weight might be classified as an example of a weight-related motivation and also as an instance of parental responsiveness (non-exclusive coding).

Scoring system—When deciding on a method of scoring we initially considered the possibility of counting the frequency of mentions for each behaviour and motivation category. However we felt this would be misleading as, although interviews were sufficiently probing that if a mother 'ever' displayed a particular feeding strategy or motivation this would be evidenced at least once in the transcript, mothers varied widely in how forthcoming they were during the interviews, and interviews were not strictly structured but instead followed the topic guide format described above. For example, some mothers re-expressed themselves several times over when responding to a question, combining general statements (e.g. "Yeah, I've tried [exposure] a couple of times") with more specific statements (e.g. "When we went on holiday in Spain in the summer I took that as a good platform to start introducing different things"). If each statement was counted as a separate instance, a frequency system may have led to an artificial inflation of instance count for particularly talkative mothers. In addition, as described above, some instances fell under more than one sub-theme, and a frequency system may have created the false impression of exclusive scoring categories. We therefore chose to calculate 'all-or nothing' scores for each sub-theme for each participant for both the interviews and the diaries, allocating a score of '1' where there was at least one instance of that sub-theme in the text, and '0' where there was not.

Reliability testing—To test inter-rater reliability for the framework analysis of the interview transcripts, the raters (RC and AR) therefore calculated 'all-or nothing' scores for each sub-theme for each participant for the first five transcripts. The 'all-or-nothing' scores

for each participant were then compared between raters allocating a score of 1 where they agreed (i.e. both scored '1' or both scored '0'), and a score of 0 where they disagreed (i.e. one scored '1' and the other '0'). This method produced a mean level of 87% agreement between raters, which exceeded our target agreement of 80%. After reviewing the data some further changes to the coding scheme were made and all 14 transcripts were recoded according to the revised scheme. The overall reliability for the total number of transcripts was 88%. Given that the diaries provided a different level of information, reliability for these codings was calculated separately. A reliability check of the first three diaries produced a satisfactory mean agreement (88%), so the rest of the diaries were coded using the same scheme, producing an overall reliability of 81% for the total 22 diaries.

Results

Sample characteristics

The majority (69%) of our total 36 participants (14 interview, 22 diary) were between 31 and 40y, with 22% aged 41y or over, and 8% under 30y. Most (86%) were white and there was a wide spread of educational backgrounds with 25% educated up to 16y or younger, 31% up to 18y, and 31% possessing a university degree. Most (78%) of the participants were married, and 94% were the mother of the child. Children were all 3–5y, with 47% in nursery (3–4y) and 55% in reception class (4–5y), 61% female, and 17% overweight or obese by IOTF criteria (Cole, Bellizzi, Flegal, & Dietz, 2000), based on direct height and weight assessment performed by trained research staff at the children's schools.

Themes and examples

Although interview data was more detailed than diary data, we applied the same coding schemes in order to give a coherent picture of the feeding strategies described. The themes that emerged were organised into nine categories, each containing several sub-categories: 1) strategies to promote intake [a-food preparation, b-food presentation, c-verbal encouragement, d-physical encouragement, e-repetition and exposure, f-structuring food environment]; 2) motivations for promoting intake [a-practical, b-health/balance/variety, c-weight], 3) strategies to restrict intake [a-limiting availability/accessibility, b-verbal discouragement, c-bargaining/negotiation], 4) motivations for restricting intake [a-practical, b-health/balance/variety, c-weight, d-cost, e-personal beliefs], 5) instrumental feeding practices [a-means-end feeding, b-emotional feeding, c-food to please, d-food to avoid food-related conflict], 6) meal-time rules, 7) child involvement, 8) flexibility, and 9) parental engagement with children's eating behaviour [a-awareness of child's eating behaviour and weight, b-responsiveness to child's eating behaviour and weight]. Sample frequencies for each sub-category were calculated first for interviews and then for diaries, using the 'all or nothing' scoring method described in the Data Analysis section, and are reported below, together with a discussion of the types of behaviours or attitudes exemplifying each category. Illustrative example quotes can be found in Boxes 1–9 of Table 1, with participant ID (I denoting interview participants D denoting diary participants). The full coding scheme is available from the authors on request.

1) Strategies to promote intake—Parents frequently reported using strategies to encourage or pressure their child to eat by either modifying food preparation methods (72% I, 23% D), presenting food in an attractive way (54% I, 20% D), verbal encouragement (86% I, 61% D), physical encouragement (54% I, 27% D), repetition or exposure to certain foods (54% I, 20% D), or providing a structured feeding environment (54% I, 11% D). For example, increasing the taste appeal of target foods by combining them with liked foods, presenting them in the form of soup or sauces, or preparing foods in the child's favourite way (e.g. peeling and cutting up fruit, warming rather than toasting bread), were reported frequently (Box 1a). Parents also increased the appeal of foods in ways which were not directly related to taste, e.g. by playing eating games, or arranging the food into pictures (Box 1b). Verbal encouragement was very common and ranged from direct exhortations and instructions to eat, to more subtle methods such as telling children that the target food was good for them or explaining the benefits the food conferred (e.g. healthy bones) (Box 1c). Several parents, especially those with younger children, described spoon-feeding their child to encourage eating (Box 1d). Similar proportions of mothers reported repeatedly exposing children to foods without forcing them to eat (Box 1e), and providing structure in the feeding environment, e.g. by insisting that the child sits down to eat, or forbidding television while eating (Box 1f).

2) Motivations for promoting intake—Motivations for these food-promoting behaviours included practical reasons (57% I, 27% D), trying to promote a healthy and nourishing, balanced and/or varied diet (82% I, 34% D), and, only infrequently, trying to maintain or increase the child's weight (10% I, 0% D). Practical reasons related to time pressures (e.g. needing to finish dinner in order not to delay bedtime) or short-term management of appetite, with some parents applying pressure to ensure that their child ate enough energy to feel full or to prevent hunger until the next meal (Box 2a). Health-related goals included ensuring adequate vegetable consumption, fibre intake and calcium intake (generally via dairy products) to insure healthy growth and development. This type of food promotion was frequently accompanied by the restriction of less healthy foods – a profile of feeding behaviours intended to achieve a balanced diet. A number of parents also emphasised the importance of teaching their child to try and enjoy a variety of foods (Box 2b). Only one mother, who had underweight children, one of whom had an underlying medical condition (sickle cell anemia), reported pressuring her children to eat to promote weight gain (Box 2c).

3) Strategies to restrict intake—Strategies to restrict intake included limiting the availability or accessibility of certain foods (100% I, 57% D), verbal discouragement (50% I, 27% D), and bargaining or negotiating with the child regarding acceptable eating (32% I, 30% D). Limitations were enacted by keeping certain foods out of reach or only available with permission, serving only small amounts, or limiting their intake to certain times (e.g. after dinner, at weekends, on holidays or birthdays). Parents also made attempts to impose restrictions at an earlier stage, e.g. by buying 'junk foods' in small portions (Box 3a). Although parents reported verbal discouragement in the simple form of telling their child to stop eating or refusing a request for food, some also offered reasons, e.g. discussing the child's previous intake that day and reasoning that they didn't need the requested item (Box

3b). Few parents reported discussing negative health effects of certain foods with their children. This may have been because they simply thought of the foods as ‘bad’ without focusing on the reason why. Notably, some parents also described negotiating a compromise with their child, e.g. offering a healthy substitute when a less healthy food was requested (Box 3c).

4) Motivations for restricting intake—Motivations for attempts to restrict foods included practical reasons (61% I, 27% D), reasons relating to health, balance or variety in the diet (71% I, 36% D), weight concerns (25% I, 2% D), cost (7% I, 0% D), and personal beliefs about what is acceptable to eat (54% I, 11% D). The predominant practical reason for limiting intake was time-related, e.g. not enough time to prepare a certain food, or not enough time for the child to eat it. Some mothers also talked about restricting foods in order to make sure the child would be hungry enough to eat at a subsequent mealtime (Box 4a). Mothers occasionally mentioned specific health-related reasons for restrictions, e.g. protection of teeth, but more often it was implicit in mothers’ language (e.g. junk, rubbish) that they limited certain foods that they felt were unhealthy. Alternatively they would mention specific dietary elements with the implicit assumption that they were undesirable (e.g. salt, preservatives). A striving for long-term balance was notable, with many parents deciding whether to grant their children’s requests on the basis of their overall food consumption that day (Box 4b). Concern about weight gain was only rarely cited as a reason for restriction, although weight concerns may have been implicitly included in expressed concerns about long-term health (Box 4c). References to cost were also rare, with only one mother reporting refusing children’s requests for food because they were too expensive (Box 4d). Others applied restriction based on personal ideas about culturally-acceptable or conventional eating practices; for example, avoiding cold food in the winter and disallowing unusual combinations of food (Box 4e).

5) Instrumental feeding—The term ‘instrumental feeding’ was used here to include instances of using food in any kind of means-end contingency (64% I, 39% D), and explicit emotional feeding (7% I, 4% D). We also included two separate categories for milder examples of emotion-related feeding, such as giving the child food to please him or her (82% I, 41% D), or giving food to avoid food-related conflict (29% I, 18% D). The term ‘means-end’ feeding was used to describe the use of a liked food to reward the consumption of less liked food; using liked foods to reward behaviours unrelated to eating; or using non-food rewards (e.g. activities such as watching cartoons or opening gifts at Christmas) to reward intake of target foods. Some alerted their child to the contingency, explicitly using foods or non-foods as bribes for intake or good behaviour; some simply administered or withheld the reward in question without alerting the child to the existence of a contingency (Box 5a). Using food explicitly to alter the child’s mood (e.g. to comfort or to relieve boredom), also known as emotional feeding, was uncommon in this sample (Box 5b), but many mothers reported giving children treats that they enjoyed (Box 5c) and some talked about giving children foods they requested in order to prevent the child getting upset or having a tantrum (Box 5d).

6) Meal-time rules—Notably, a large number of parents (100% I, 55% D) described regimented routines within the family that were related to eating and perceived as important to maintain, but did not seem to be necessarily driven by attempts to manipulate intake. Instead, the motivation might be to socialize the child into a normal or acceptable way of eating or to establish or reinforce discipline. For example, the requirement for children to sit down while eating was mentioned by several parents, and others talked about making special efforts to eat certain meals together as a family, or to eat dinner at a consistent time every day (Box 6).

7) Child involvement—Many parents reported giving their son or daughter a choice about what to eat (93% I, 43% D). For example, the child was allowed to select which cereal to have for breakfast, or what he or she wanted to eat for lunch from a range of possible options. Children were allowed to exercise choice both at the stage of buying the food and when deciding what to eat from foods that had already been purchased. One parent also reported her child helping to prepare food. Few parents explicitly described their motivations when involving their child in feeding decisions but implicit in the words used (e.g. it's their favourite, whatever he wants) was the desire to please their child. One mother also specifically mentioned the importance of giving the child some control over her environment – a goal that is consistent with the tenets of authoritative parenting (Box 7).

8) Flexibility—Another very common theme was flexibility relating to feeding goals (96% I, 55% D). For example, many parents described making exceptions from usual restrictions or encouragements to eat healthy foods at weekends, on special occasions such as parties or holidays, or when their child was outside the parent's direct care (e.g. with grandparents or other parents). One mother also talked about becoming more flexible as her children grew older, although she wasn't able to identify why her attitude had changed (Box 8). This theme of acceptance of variability and tolerance of incomplete control over the child's diet was consistent with and related to parents' efforts to achieve a balanced – rather than a rigidly healthful – pattern of intake for their child (see Box 2b and Box 4b).

9) Parental engagement with children's eating behaviour—Finally, perhaps the most common thread running through both the interview transcripts and diaries was a conscious awareness of children's characteristic appetitive styles and/or food preferences (and sometimes how these related to their body weight) (96% I, 80% D). Explicit responsiveness to the child's weight and eating behaviour was also frequently reported (100% I, 98% D). For example, some parents expressed awareness in their descriptions of how siblings' eating styles or preferences compared to one other, or how eating styles had changed with age (Box 9a). Others described limiting access to less healthy foods because their child would eat excessive amounts if left to decide him or herself, or reminding a child with a smaller appetite to eat (Box 9b).

Discussion

The results of this study confirm the diversity in feeding behaviours and underlying motivations among UK mothers, provide a rich picture of feeding interactions, and underscore the dynamic, interactive relationship between mother and child. Mothers

reported a wide variety of overt and covert feeding strategies to influence children's intake and behavior, but overall the focus on balance and verbal explanations of actions were suggestive of an authoritative feeding style (Hughes et al., 2005). Feeding behaviours were motivated most frequently by concerns for the child's health or by practical considerations that the child's feeding patterns should fit into family life and accommodate other demands on the parent's time. Mothers often deliberately involved their child in the feeding interaction, giving them choice over what to eat. They also reported being flexible in their feeding goals, accepting that their child would not eat healthily all of the time, but a certain degree of balance could be achieved. There was clear evidence that almost all respondents perceived their feeding behaviours to be at least partly a response to their child's current hunger state or enduring appetitive characteristics.

The results confirm and expand existing findings from other qualitative studies of parental feeding behaviour. For example, similar to Ventura, Gromis, & Lohse (2010) in their study of low-income minority mothers of preschoolers, we observed a variety of strategies to promote and restrict intake – some illustrative of an authoritative style of feeding and others more representative of an authoritarian style. Our findings also overlapped with those of Moore, Tapper, & Murphy (2007) in their more directly comparable study of 12 mothers of 3–5 y olds in the UK. Like these authors we observed use of pressure, restriction, rewards and attempts to influence attitudes and norms, as well as modelling and repeated taste exposure. However, in our study we additionally found evidence for mothers promoting intake by providing a structured food environment (e.g. no TV, sitting down as a family), and for situational flexibility in achieving feeding goals – two subtle feeding themes that may have more beneficial effects than the exertion of rigid control. We also noted a consistent pattern of the parent involving the child in the feeding interaction (e.g. giving him/her choice over what to eat). Another interesting feature of our study was the diversity we noticed within the instrumental feeding category. Although most parental feeding discussions treat emotional feeding as a single construct, our data suggested that although feeding the child explicitly to manipulate emotion (e.g. calm the child, stop boredom) was rare, giving the child food to avoid an argument relating to a requested food, or simply to please him or her (i.e. a treat) was much more common. It is not clear from the existing literature whether these strategies would have similar or different effects.

Results similar to our motivational findings were reported in a questionnaire survey of UK mothers of 5–11 year olds, in which the primary consideration in choosing foods for children was nutritional value and long-term health (St John & Ogden, 1999). There was also some overlap with a qualitative study of French mothers regarding child feeding (Fischler, 1986), in which their main concerns were to provide filling food, to avoid too much sugary or artificial food, and to achieve a 'balanced diet'. Our exploration of feeding motivations confirmed that mothers attempt to control their children's intake sometimes for reasons of health and balance. However the finding that, even in the context of the burgeoning obesity epidemic, parents rarely report exerting control as an attempt to regulate their child's weight, is novel. This may have been because weight motivations were implicit in the more openly expressed motivations regarding health and dietary balance, and further probing may have brought these concerns to the surface. But given the considerable depth of exploration in our interviews we believe that the absence of these reports could also reflect a

genuine absence of weight-related motivations. In fact, our results suggest that it could be more common to exert control for short-term practical reasons such as appetite control, and that some of the rules applied around mealtimes are to maintain a consistent family routine, or teach the child a socially-acceptable way of eating. Underlying motivations are important because it is possible that feeding control practised in the context of weight control has a stronger relationship with adverse eating and weight outcomes than restriction practised for other reasons.

Another novel finding from the current study was that most of these parents of pre-schoolers expressed their behaviours as responses to individual child characteristics or temperament, e.g. a lack of interest in food, or a heightened enthusiasm for energy-dense, nutrient-poor foods and drinks. Sometimes they also described taking different approaches to feeding siblings – for example in situations where one had a good appetite and the other had little interest in food – and reported that these differences in eating styles emerged soon after birth. This ‘child-responsivity’ story is consistent with correlational evidence from questionnaires finding associations between parental feeding and children’s eating behaviour as assessed by the CEBQ (Webber, Hill, Saxton, Van Jaarsveld, & Wardle, 2009), and with qualitative data from interviews with mothers of 6–15 y olds with siblings (Webber, Cooke, & Wardle, 2010). A similar phenomenon was found by Moore, Tapper, & Murphy (2010), who reported that mothers’ motivations for feeding behaviours depended on their perceptions of children’s consumption: for ‘bad’ eaters, a short-term goal of consuming any food (rather than no food) was adopted, while for ‘good’ eaters, a long-term goal of consuming a varied, well-balanced diet was favoured. The ‘child responsivity’ interpretation has implications for understanding the causal relationship between parental feeding and child outcomes.

It should be noted that while the semi-structured interview encouraged a more general discussion of feeding behaviour and elicited longer responses, the diary – in which specific example responses were provided – elicited more concise accounts of actual interactions. This difference in the level of information obtained may underlie the discrepancies between mean frequencies of behaviors and motivations reported in interviews and diaries. It was also apparent that there were substantial individual differences in the detail given within both interview and diary data. Both of these factors prevent us from drawing firm conclusions about population frequencies of our specified behaviors and motivations. Further, since both modes of investigation were focused on specific feeding situations rather than questions about general attitudes, it is possible that participants were more likely to reveal proximal, situational motivations than distal motivations such as concern about weight. The resulting descriptions of feeding interactions cannot be assumed to be an entirely comprehensive reflection of general behaviour or attitudes. However, we achieved our goal of generating ecological illustrations of parental feeding behaviours, motivations and conceptions that were grounded in ‘real life’ exchanges between parents and children rather than in researcher-driven theories.

A more significant limitation of this study was the volunteer sampling strategy, which may have attracted better-educated parents with a particular interest in feeding, who may therefore exhibit more ‘desirable’ feeding strategies and health-related motivations. Nearly a

third of parents were university-educated, which is above the national average. In addition, only four parents (11%) had children who were overweight and obese (compared with a UK population average for 2–10 year-olds of 29%, Health Survey for England, 2007), and feeding strategies for these children may therefore have been under-represented. Education level has been shown to influence feeding scores (Saxton, Carnell, van Jaarsveld, & Wardle, 2009; Vereecken, Keukelier, & Maes, 2004), and mis-reporting is always possible, especially where the issues are subject to social desirability – although most parents gave the impression of offering honest responses. Useful additional insights may be obtained by using similar methods in a more representative sample including more parents of overweight children. It would also be informative to conduct similar studies in non-English speaking participants – although specialist knowledge of the populations in question would be required to develop culturally-specific research hypotheses and topic guides for interviews, as well as to analyse and interpret the data. It should additionally be noted that our data was collected in 2002 at a time when, although child obesity rates were high and climbing, the storm of media attention had not reached its full force. Conducting a similar study might could reveal greater concern about overweight.

It is unclear how well the results would generalize to non-UK populations. For example, questionnaire studies of white American populations have tended to suggest high levels of rigid restriction and pressure to eat (Birch et al., 2003; Carper, Fisher, & Birch, 2000; Fisher, Mitchell, Smiciklas-Wright, & Birch, 2002), which may be less present in the UK. There may also be within-country ethnic variation in feeding strategies. For example, American studies of minority groups have observed higher scores on indulgent feeding in Hispanic mothers and uninvolved feeding in African-American mothers (Hughes et al., 2005). Further, the impact of each feeding strategy may differ depending on cultural factors – one multi-ethnic study of low income mothers found that children of authoritarian parents had higher consumption of nutrient-rich foods (e.g. fruits, vegetables, dairy), and lower overall dietary energy-density, when their evening intake was compared to that of children with permissive (indulgent or uninvolved) parents (Hoerr et al., 2009). Similar variation may also exist within the UK population.

Despite these caveats, our findings paint a picture of UK mothers working within a complex set of child influences and situational pressures to try to provide their child with a generally healthy diet within the constraints of a happy family life. Future research into risk factors may benefit from a more subtle and detailed assessment of food-specific parenting (Hoerr et al, 2009), and the use of longitudinal and experimental methods, genetically-sensitive designs, and bidirectional path modelling in order to represent the bidirectional influence flowing from child to parent. Meanwhile, research on parent-focused interventions should focus on finding ways to provide caregivers with good advice on managing a child who is either overweight or shows tendencies towards over-eating, taking care to emphasise the need to respond as appropriately as possible to enduring child characteristics.

Additionally, it should be noted that rapid changes in the food environment over recent decades make it increasingly difficult for parents to ensure that children eat a healthy diet. Feeding behaviours may have remained relatively constant but the food environment has transformed, demanding new adaptations for contemporary parents. The results of the

present study attest to the high levels of motivation among parents to limit access to unhealthy foods and encourage consumption of healthy foods. Government policy should therefore act as an ally for parents, making it easier for them to achieve their goals and raise healthy children, thereby reducing the economic and social burden of childhood obesity.

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Highlights

- We analyze interview and diary data on maternal feeding behaviours and motivations.
- Mothers used various overt and covert methods to promote or restrict eating.
- Mothers also gave treats, applied meal rules, allowed choice, and showed flexibility.
- Almost all mothers described awareness of or responsiveness to appetitive traits.
- Mothers reported being motivated by health and practicality, but rarely weight.

Table 1

Illustrative example quotes for themes and sub-themes

Box 1: Strategies to Promote Intake	
<i>A) Food Preparation</i>	I used to chop all the fruit up and they used to pretend they were in their nursery or whatever and pass it round and they love it! (I5) They have porridge for breakfast, and normally I stir in a bit of dried fruit, raisins and things...it encourages them to eat the porridge... (I11) I make toast but not crunchy, so warm bread. (D5)
<i>B) Food Presentation</i>	You have to pretend that the animals are coming to eat the food and sometimes he can eat a bit more that way...with A. you have to pretend you're not looking and someone's come and eaten her food for her. (I1) J's mouth was a gate and I had to get the yogurt in before the gate shut. (D23) I made the food into pictures on her plate. She ate well and was persuaded to sample one or two new things: baby spinach leaves, red pepper and a sliver of vegetable tart. (D2)
<i>C) Verbal Encouragement</i>	He will try and leave the table before he's finished and I will have to say no come on finish this. (I10) I've said to her...that it's very important that she eats certain things to have healthy bones. (I4) J said "I don't like cheese" but I told him it was good for him. So he carried on eating it. (D23)
<i>D) Physical Encouragement</i>	I'll put the food on his fork and lay it back down on this plate so he hasn't got that to do. (I2) ...or I start spoon-feeding her. Um she quite likes that! She eats tonnes if I feed her, funny that! (I6) She...left the beans saying she didn't like them. I fed her them and that way she ate them without a fuss. (D5)
<i>E) Repetition and Exposure</i>	They just both refused...they weren't going to eat a thing and I just ignored it and then they got over it and just carried on eating. (I5) If I ever found that she wouldn't eat something, first of all, I would never give up on that, I would try again a few days later. (I9) The older two won't eat Brussels sprouts but I normally just put a couple on there. And eventually they will try them and like them. I think it's just the learning isn't it? (I13)
<i>F) Structuring Food Environment</i>	The boys sit down every night together and I do try and sit down with them--but if I can't do that then I won't let the others leave the table until he's finished, because he won't his dinner otherwise. (I2) That's why I don't have the telly on at dinner-times...because it'll get cold and he won't eat it. (I2) I like to sit with them even though I'm not eating...if I ever walk off and do washing up or something, I. will start mucking about. (I5)
Box 2: Motivations for Promoting Intake	
<i>A) Practical</i>	[I feed him breakfast] because otherwise he won't eat anything at that time in the morning and it does worry me if he went to school without eating anything. (I7) I do that once in a while - I feed them to make sure, so that I can be happy that they've eaten, they're not going out without no food. (I8) I offered...more pasta as I didn't want her to say she was hungry later at bedtime. (D21)
<i>B) Health/Balance/Variety</i>	I've said to her in the past I suppose that it's very important that she eats certain things to have healthy bones. (I3) I would like them to eat more varied food. (I3) It's that critical age...when you really want them to eat as well because they're growing up. (I5)
<i>C) Weight</i>	When my daughter was little she was a very very fussy eater, she wouldn't eat, and she was very slim and I wanted her to put a little bit of meat on her bones!... I'm happy for her to eat anything she can eat to make her put on some weight! (I8) My younger boy he was underweight, he has sickle cell disease so he was underweight so I get very worried if he doesn't eat as well and any time he eats I'm very happy, I let him eat anything he wants. (I8)
Box 3: Strategies to Restrict Intake	
<i>A) Limiting Availability/Accessibility</i>	I put crisps in the cupboard where they can't reach! (I8) D. is aware what's in the house, but she's not allowed to just take something. (I1) Rather than keeping the packet on the table I just give him whatever I think he should have. (I1) Sweets are restricted to the afternoon; they can only have yogurt or fruit after dinner. (I4) I will limit them to buying one or two things they want [from the supermarket] at Christmas. (I8) I got an advent calendar with the smallest chocolates possible! (I5)
<i>B) Verbal Discouragement</i>	I said to him you're being greedy - don't put too much on your plate. (I5) He does open the fridge and look. And if he sees something he wants, I'll say if he can or can't (I7) C. asked for a biscuit but I said no...I said that he'd had a good dinner today plus sweets so he really didn't need anything more. (D19)
<i>C) Bargaining/Negotiation</i>	They accept it. I think I've always been like that really with them, so they just go for something else. I say, "Go on, pick something else!" (I5)

A lot of times she'll ask for something sweet like "Can I have a biscuit?" and I'll say, "No, but you can have a yoghurt or an apple or a banana," and she's just as happy with that. (I14)
I told her that a sandwich with marmalade is not possible. I offered a banana or a sandwich with cream cheese. (D10)

Box 4: Motivations for Restricting Intake

A) Practical

You've really got to be on top of him every morning to get him out the door. He's so "Oh in a minute" so to have that on top of his milk, no I wouldn't give it to him. (I2)
If I've got an extra 5 or 10 minutes then I'll say do you want a boiled egg. If we're a bit more rushed, we'll have cereal and some bread...it depends if we have the time. (I1)
We've got a busy weekend coming up and they're gonna be starving and I try to avoid cooking something that I'm really unsure whether they're going to take, or when I know we've got a busy time coming up, or when I know I'm going to want them to eat some sort of substantial dinner. (I4)
I do find with C. that if I give him a biscuit or a bag of crisps before dinner he won't eat his dinner... So I tend to not give him anything. (I2)

B) Health/Balance/Variety

He wouldn't be able to have sweets or a cake or biscuit, because I don't like him to have too many sweet things really. Because of his teeth I suppose. (I10)
She doesn't get to choose in that sense, no, because I don't want her eating just things like Coco-pops and stuff like that, general purpose rubbish. (I6)
I don't really like them eating too much processed stuff with a load of preservatives. (I4)

D) Cost

They're always asking "Can we have this, can we have that?"...They might look at a particular yogurt which I think is too expensive and I'll say "No you're not having that, it's 60p for a yoghurt, choose something else." (I2)

E) Personal beliefs

I don't like her having cold food in the winter. (I3)
Well milk and oranges don't normally sit well together do they? You don't tend to give them at the same time. (I2)
I have to take away the houmous or he would put the houmous on the plate and the rice on the plate and he would mix it in! (I7)

Box 5: Instrumental Feeding

A) Means-end-feeding

She then asked for a chocolate from the Christmas tree. I said she could have one if she ate a satsuma first, which she did. (D21)
Because she'd eaten all [of her food], I said do you want some ice-cream. (I14)
If he tells me half an hour or an hour after that he's hungry and "Can I have a biscuit?" or "Can I have a bag of crisps?" or something then he won't get them because he hasn't eaten his breakfast. (I2)
I felt it was hard on S. to be dragged round on my errands, and that a couple of small sweets after a good breakfast wouldn't hurt. (D2)
They're not going to open their presents until they've had some breakfast. (I2)

B) Emotional Feeding

One tiny chocolate. J. was hungry and had hurt his eyes. I was cooking for six and the chocolate kept him quiet. (D5)
H.'s brother...fell over and got very upset. To distract him, I said he could open his [chocolate] advent calendar. (D21)
We were meeting friends in a pub. The children were getting bored and we bought crisps to calm things down. (D21)
The treat is a chocolate bar and a packet of crisps just for something more interesting to keep her occupied while I shopped I suppose (I13)

C) Food to Please

Well they like the fromage frais so these ones come with no additives and no nothing although to be honest it's not why they're bought, it's cos they like the taste. (I3)
I'm if it's not a sandwich it'll be a cake or something like that. Or just a little treat of some sort. (I5)
At night-time they have a sandwich and normally they have like crisps and that down the Rugby club which is a bit of a treat. (D4)

D) Food to Avoid Food-related Conflict

There's normally a big tantrum if we can't have what we've asked for regardless of whether we've eaten or not. I mean if she's asked for something and she hasn't eaten and I know she might be hungry then fine, I would never stop her from eating and going hungry. But eating for the sake of eating I tend to allow, as probably lots of mothers do, for an easier life. (I9)
I'm not going to start arguing because... I don't want to make him unhappy saying he can't have things and other children can, I don't think it would be very nice. It's not worth fighting it is it, it's one time of the year and that's it! (I7)
I wanted to avoid a tantrum if I had taken 'her' sweets from them. (D4)

Box 6: Meal-time Rules

[We eat dinner] no later than 6 really. I try not to feed them after 6 o'clock because it's a bit too late then really. (I5)
On a weekend we all sit down and have our breakfast each Saturday and Sunday. And you know we'll have a proper dinner together on the Sunday always. (I5)
Even just manners wise, if we got out anywhere then we don't leave the table until other people have finished. (I2)

Box 7: Child Involvement

I might say to her [while shopping] what sort of crisps do you like? Or what type of fruit. She tends to have a choice of what special treat, what packet of cakes she would like. (I9)
So we have the basic ones but they get a choice, they usually have a Cookie Crisp or they have like Rice Krispies or Coco Pops. (I2)
R. likes making little cakes and jellies and things and she'd made some jelly frogs and we put some cubes of pineapple into that and some cake and things so it wasn't just pure jelly. (I11)

Box 8: Flexibility

We're not as strict ... on a Friday. On a Friday [we might eat] a lot later and we'll have a takeaway and it could be 8 o'clock at night. (I2)
 Obviously when there's guests here and there's other kids eating [chocolate bars] I don't say to her Oh no you can't have nothing because you've had your quota for the day'. She will be allowed to eat a bit more...but it's only for one day. (I3)
 I used to worry about it when they were younger but I'm not too worried now. I mean the parties I used to think oh god they're eating so much rubbish, and they're not going to have their dinners. But to be honest it don't bother me now, I don't know why [referencing Christmas]. (I5).

Box 9: Parental Engagement with Children's Eating Behavior*A) Awareness of Child's Eating Behavior and Weight*

I feel C. is more of a challenge with his food than the others were. (I2)

He's a lot less fussy than A. Well no that's not really fair, she's a more predictable eater whereas J. will always have pickle and salad cream with his lunch. (I1)

I mean one thing I could say is probably you don't need to know this but I found with both of them when they got to two [years old], they really didn't want to eat. (I5)

B) Responsiveness to Child's Eating Behaviors and Weight

I keep an eye on what she actually is eating because I'm sure if I put...a big tin of Quality Street out in front of her, she'd quite happily demolish as many as possible. (I3)

If you gave her the coke she would drink it...[She has coke] about once a week...I keep it to that because she would probably sit there and drink 2 liters if I let him. (I3)

It's only a packet (of crisps) a day because if I did let him he will have three or four packets a day, so I always put it in a cupboard where they can't reach it. (I8)

If I were to leave the packet there, there'd be tears so what I usually do is open a packet and put some in a bowl when I make his lunch or even when he's sat up at the table, and it doesn't really dawn on him that it's not a whole packet. Rather than keeping the packet on the table, I just give him whatever I think he should have. (I1)

With C., it's always pushing him that much further – "Come on, you can do three more mouthfuls." And he will do it. It's just laziness – it's a chore to him to be eating. (I2)

The only thing I can do really is to say, "Come on, S, try and eat up'&...and I do tend to do that quite a lot. Because otherwise, he wouldn't eat anything. (I7)