



Parent reports of eating behaviour and feeding practices: effects of parent and child sex

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ABSTRACT

Research on parental feeding practices has focused on mothers, often overlooking fathers' perspectives and the influence of child sex. This study examined (1) differences between fathers' and mothers' own eating behaviours, their use of feeding practices, and perceptions of their children's eating behaviours, and (2) the role of child sex in these perceptions and practices. Parents ($N = 784$; 145 fathers and 639 mothers) of preschoolers (3–5 years, 51.3 % female) from the UK completed an online survey assessing their eating behaviours and feeding practices, and their child's eating behaviours. There were significant sex differences in parents' eating behaviours, with mothers reporting more emotional overeating, hunger, satiety responsiveness, and slowness in eating. Mothers and fathers did not differ in their reports of children's eating behaviours. Girls were reported to have higher levels of satiety responsiveness than boys. When exploring the interaction of parent and child sex in reports of eating behaviour, fathers reported that girls had more desire to drink. Mothers and fathers differed in their reported use of some feeding practices. Both mothers and fathers reported greater use of food for emotion regulation with girls than boys. Fathers used more encouragement of balance and variety with boys. These findings highlight distinct patterns in feeding practices and eating behaviours, influenced by both parent and child sex, suggesting that girls may be at greater risk of receiving feeding practices that contribute to the development of emotional eating. These results emphasize the need to consider the role of sex in future research and the development of tailored feeding guidance.

1. Introduction

There is substantial evidence to support the fact that parents play a crucial role in the development of children's eating behaviours (Russell & Russell, 2018). Parents are the primary influencers of young children's eating habits, as they often decide what, when, or how their child eats. Evidence suggests that parental behaviours, such as their feeding practices, can contribute to the development of children's healthy eating behaviours (Haines et al., 2019). To date, most of the literature has focused on mothers, highlighting a need to include fathers in research

(Moura & Philippe, 2023). Recent studies have suggested that fathers and mothers have different influences on their child's eating behaviours (De-Jongh González et al., 2021; Vollmer, 2021). This may be due to the fact that men and women tend to report different eating behaviours themselves (Gritti et al., 2024; Jacob et al., 2022; Kuno et al., 2024), that fathers and mothers differ in their feeding practices (Lozano-Casanova et al., 2023; Philippe et al., 2021, 2022; Pratt et al., 2019), or that parents may also be influenced by their child's sex when deciding which feeding practices to use (Hyczko et al., 2021; Qiu et al., 2023).

Concerning the differences between parents' eating behaviours,

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descriptive studies indicate that, in most cases, women tend to score higher than men on various dimensions of eating behaviour, such as dietary restraint and emotional eating (Arhire et al., 2021; Dakanalis et al., 2013; Gritti et al., 2024; He et al., 2021; Jacob et al., 2022; Kuno et al., 2024). This may be a consequence of women being more likely to diet, having less trust in their body's signals, or because they have greater discomfort with food (Arhire et al., 2021; Dakanalis et al., 2013; Denny et al., 2013; Gritti et al., 2024). These differences between men and women in their eating behaviours are important to consider as they may have varying impacts on the development of children's eating behaviour, particularly through the use of specific feeding practices.

Research has shown that fathers and mothers differ in their feeding practices (e.g., Philippe et al., 2021, 2022; Pratt et al., 2019). Feeding practices are goal-directed behaviours which directly influence children's eating (Shloim et al., 2015) and can be classified into four broad groups (Loth et al., 2022; Vaughn et al., 2016): coercive control, which refers to "parents' pressure, intrusiveness and dominance over children's feelings, thoughts, and behaviours" (e.g., pressure to eat or the use of food to control emotions); structure, referring to "parents' organization of children's environment to facilitate children's competence" (e.g., modelling, or monitoring); supportive autonomy practices, which relate to "practices that promote children's psychological autonomy and encouragement of independence" (e.g., child involvement or reasoning) (Vaughn et al., 2016, p. 100), and indulgent, which refers to "allowing the child complete freedom over what, when, and/or how much to eat as well as involve catering to the child's preferences" (Loth et al., 2022, p. 2). In these terms, research has shown that fathers tend to use more coercive control practices than mothers (Lozano-Casanova et al., 2023; Philippe et al., 2021, 2022; Pratt et al., 2019). Parental feeding practices have been established as playing a key role in the development of childhood obesity (Hampl et al., 2023; Russell & Russell, 2019; Wood et al., 2020) and children's eating behaviours (Scaglioni et al., 2011, 2018). However, these studies either did not study fathers and mothers separately or did not include fathers, so the impact of fathers and their practices on children's eating behaviours remains to be fully explored.

In addition to the relevance of parent sex in feeding interactions, some studies have suggested that parents may also differ in their feeding practices according to the sex of their children, with parents reporting more use of control over eating (Qiu et al., 2023) and pressure to eat (Hyczko et al., 2021) with boys than with girls. It is important to note that the studies by Qiu et al. (2023) and Hyczko et al. (2021) did not take both parents' and children's sex into account when analysing the interaction between feeding practices and children's eating behaviours. Whilst Haycraft and Blissett (2008) found no differences in the use of restriction or pressure by fathers and mothers, they found that mothers were more likely than fathers to engage in monitoring behaviours irrespective of their child's gender.

These discrepancies between mothers and fathers, both in their eating behaviours and their practices, are important to consider in the development of children's eating behaviour. Although findings in the literature remain inconclusive, some studies suggest that these sex differences emerge in childhood, showing different patterns between boys and girls from early ages, with some differences observed in toddlers as early as three years old (Keller et al., 2019; Remy et al., 2015). For example, across a range of studies, girls typically show greater acceptance of fruit and vegetables whereas boys often show greater pickiness and neophobia than girls. However, the literature in this area is equivocal regarding other eating behaviours including broader food avoidance (such as satiety responsiveness) and food approach behaviours (such as enjoyment of food) (Keller et al., 2019).

Consequently, understanding how the sex of both parents and children influences feeding and eating behaviours represents a crucial but relatively understudied aspect of parenting research. Examining this is essential for effectively designing public health strategies and parent education programmes aimed at promoting children's dietary health. Thus, the aims of this study were:

- (1) to analyse the sex invariance of the measurement instruments before performing comparisons, to ensure the exploration of differences between fathers and mothers was psychometrically robust.
- (2) to explore differences between fathers and mothers regarding their own eating behaviours, their feeding practices, and their perceptions of their children's eating behaviours
- (3) to explore if child sex affects parental perceptions of their children's eating behaviours and their feeding practices.

The literature suggests sex-based differences in eating behaviours and feeding practices, though the strength of evidence varies through the domain. While findings such as higher emotional eating in women and greater food pickiness in boys are well-supported, other aspects such as interactions between parents and children's sex remain less conclusive and require further research. Based on this, we formulated pre-registered hypotheses (available on the OSF platform: <https://osf.io/p87rx>) that align with prior evidence where available. However, for aspects examining parent-child sex interactions in feeding practices and children's eating behaviours, we adopted a more exploratory approach. Therefore, we hypothesised the following:

1. *Adults' eating behaviours*: There will be differences between mothers and fathers in their reports of their own eating behaviours. For example, based on previous evidence, we predict that mothers will report more emotional eating than fathers.
2. *Children's eating behaviours*:
 - a. There will be differences between mothers and fathers in their reports of their children's eating behaviour. For example, we predict that mothers will report greater food avoidance in their children than fathers.
 - b. There will be differences in parent reports of children's eating behaviour based on child sex. We predict that parents will report greater food avoidance behaviours in boys than in girls.
 - c. There will be an interaction between parent and child sex in the report of child eating behaviour.
3. *Parental feeding practices*:
 - a. There will be differences between mothers and fathers in their use of feeding practices. For example, we hypothesise that fathers will report using more coercive control feeding practices than mothers, while mothers will report more structure and autonomy support feeding practices than fathers.
 - b. There will be differences in parents' reports of feeding practices used by mothers and fathers based on the child's sex. For example, parents may use more coercive control feeding practices with boys than with girls.
 - c. There will be an interaction between parent and child sex in the use of feeding practices.

2. Methods

This study was pre-registered at <https://osf.io/p87rx>.

2.1. Participants

Participants were parents or primary caregivers of children aged 3–6 years who participated in a previous study (Pickard et al., 2023). The 995 participants from the first wave were invited seven months later to take part in a second survey. A total of 838 parents completed the survey; however, 53 were excluded for the following reasons: lack of a known identifier ($n = 1$), incomplete survey responses ($n = 22$), or failure to pass the attention check questions included in the survey ($n = 30$), leaving a total of 785 eligible respondents living in England and Wales.

2.2. Procedure

The first data collection, in which children's eating behaviours and parental feeding practices were measured, took place early in 2022 and the collection of adults' eating behaviours was during the second wave, seven months later, between November and December 2022. We used the online research participant recruitment platform Prolific (<https://www.prolific.co/>) to contact and invite the previous participants to complete the survey. The survey included three attention-check questions where participants were asked to select a specific response to ensure data quality. The survey took approximately 20 min to complete, and participants received £3.00 upon completion.

2.3. Ethics

Aston University Health and Life Sciences Research Ethics Committee (HLS21003) provided ethical approval. Parents provided informed consent for their participation.

2.4. Measures

2.4.1. Sociodemographic

The sociodemographic variables included in this study were provided by participants through the online survey. They included their age, sex, ethnicity, and education, and their children's age and sex. (NB. Because parents were asked about their biological sex, and the biological sex of their child, we have retained this terminology in our descriptive statistics. We describe male parents as fathers, and female parents as mothers). Of the 785 participants who responded to the questionnaire, 510 provided their postcode which was used to measure the Index of Multiple Deprivation (IMD). The IMD deciles were calculated by ranking the residential areas in England from most deprived to least deprived into 10 equal groups. Areas in Decile 1 fall within the most deprived 10 % of areas nationally and areas in Decile 10 fall within the least deprived 10 % of areas nationally (Office for National Statistics, 2022).

2.4.2. Parents' eating behaviours

The Adult Eating Behaviour Questionnaire (AEBQ) (Hunot et al., 2016) assesses adults' eating behaviours. It is a 35-item self-reported measure with eight subscales: *Hunger* (H; 5 items): refers to the general physical hunger; *Food responsiveness* (FR; 4 items): captures eating in response to external food cues; *Emotional Overeating* (EOE; 5 items): refers to eating more in response to emotional stressors; *Enjoyment of food* (EF; 3 items): refers to the subjective pleasure from eating; *Satiety Responsiveness* (SR; 4 items): refers to the sensitivity to internal cues of fullness; *Emotional Undereating* (EUE; 5 items): refers to eating less in response to stressors; *Food Fussiness* (FF; 5 items): refers to the selectivity of accepted foods; and *Slowness in Eating* (SE; 4 items): refers to the speed of food consumption. The scoring range is from 1 = never to 5 = always. The confirmatory factor analysis for this sample was adequate ($X^2 = 1971.081$ (df = 499) $p < 0.001$; CFI = 0.96; TLI = 0.96; RMSEA = 0.067; CI 90 % = 0.064–0.070). The reliability was also adequate with omega 3 over 0.70 in all factors, except for slowness in eating which was 0.69.

2.4.3. Children's eating behaviours

The Children's Eating Behaviour Questionnaire (CEBQ) (Wardle et al., 2001) is a parent-reported questionnaire to assess children's eating behaviours. This questionnaire consists of 35 items across eight subscales, which can be divided into two broader groups: food approach *Food Responsiveness* (FR): children's drive to eat in response to fullness, *Enjoyment of food* (EF): subjective pleasure that is experienced from eating, *Emotional Overeating* (EOE) eating more in response to their emotions and *Desire to Drink* (DD): the persistent desire to consume fluids) and food avoidance (*Emotional Undereating* (EUE): eating less in response to their emotions, *Satiety Responsiveness* (SR): the capability of

detecting internal cues of fullness, *Slowness in Eating* (SE): the speed of eating, and *Food Fussiness* (FF): the pickiness regarding food acceptance. It is scored on a five-point Likert scale (1 = never to 5 = always). A higher mean score indicates a higher level of each behaviour. This questionnaire has been shown to have satisfactory reliability and validity in this sample, with Omega 3 values ranging from 0.72 to 0.94.

2.4.4. Parental feeding practices

The Comprehensive Feeding Practices Questionnaire (CFPQ) (Musher-Eizenman & Holub, 2007) assesses parental feeding practices. It comprises 49 items across 12 subscales; *Child Control* (5 items): extent to which parents allow their child control over his/her eating behaviour and parent-child feeding interactions, *Emotion Regulation* (3 items): the use of food to regulate the child's emotional states, *Encourage Balance and Variety* (4 items): promoting well-balanced food intake, including the consumption of varied food and healthy food choices, *Environment* (4 items): parents' provision of healthy foods in the home, *Food as a Reward* (3 items): the use of food as a reward for child behaviour, *Involvement*: parents' encouragement of the child's involvement in meal planning and preparation, *Modelling* (4 items): actively demonstrating healthy eating for the child, *Monitoring* (4 items): keeping track of the child's intake of less healthy food, *Pressure* (4 items): pressuring the child to consume more food at meals, *Restriction for Health* (4 items): parents controlling the child's food intake for the purpose of limiting less healthy food and sweets, *Restriction for Weight Control* (8 items): parents controlling the child's food intake to decrease or maintain the child's weight, *Teaching about nutrition* (3 items): the use of explicit didactic techniques to encourage the consumption of healthy foods. The CFPQ uses a 5-point Likert scale, with response scores for the frequency items ranging from never (1) to always (5) and response scores for item agreement ranging from disagree (1) to agree (5). The confirmatory factor analysis for this sample presented adequate values ($X^2 = 6792.935$ (df = 1061) $p < 0.001$ CFI = 0.89; TLI = 0.87; RMSEA = 0.074; CI 90 % = 0.072–0.075). The reliability for this sample was adequate, presenting omega 3 values ranging from 0.68 to 0.90, except for child control which was 0.59 and teaching about nutrition, being 0.68.

2.5. Data analysis

SPSS version 29.0 was used to perform the statistical analysis. The analysis followed the pre-registered analytic plan. Descriptive analysis of the sociodemographic variables of the participants included percentages, means and standard deviations. To determine covariates, students' t-tests were performed among fathers' and mothers' age and BMI, and Chi-square tests for parents' education, and index of multiple deprivation (IMD). These demonstrated only parent age differences were necessary to include as a covariate (see [Supplementary material 2](#)). Multiple MANCOVAs, including adult age as a covariate, were performed with each subscale of the CEBQ, CFPQ and AEBQ to explore possible discrepancies and interactions in these variables considering parents' and children's sex. Statistical significance was set at $p < 0.05$.

3. Results

3.1. Participants

Table 1 shows the socio-demographic characteristics of the sample of parents (145 fathers and 639 mothers). Most participants were of White ethnicity (approximately 85 % of mothers and fathers). The mean age of fathers was 38.70 years old and 35.46 years old for mothers. Over half of the sample reported a having a degree level education (a higher education qualification obtained at a university or college) (fathers = 55.9 % and mothers = 53.7 %). The Index of Multiple Deprivation of the sample was 5.66 ± 2.94 , indicating a moderate level of deprivation of this sample.

Table 1
Sociodemographic characteristics of the sample by parent sex.

	Total (n = 784) n (%)	Fathers (n = 145) n (%)	Mothers (n = 639) n (%)	Fathers and mothers' differences
Age	36.05 ± 5.50	38.70 ± 5.98	35.46 ± 5.21	t(782) = 6.533 p < 0.001
Child sex		145 (100.0)	639 (100.0)	
Boy	382 (48.7)	76 (52.4)	306 (47.9)	
Girl	402 (51.3)	69 (47.6)	333 (52.1)	
Parents Ethnicity		145 (100.0)	639 (100.0)	
Asian or Asian British	27 (3.4)	6 (4.2)	21 (3.3)	
Black, Black British, Caribbean, or African	21 (2.7)	1 (0.7)	20 (3.1)	
Mixed or multiple ethnic	61 (7.8)	13 (9.0)	48 (7.5)	
White	671 (85.6)	123 (84.8)	548 (85.8)	
Another ethnic group	4 (0.5)	2 (1.4)	2 (0.3)	
Education		145 (100.0)	639 (100.0)	
No degree	360 (45.9)	64 (44.1)	296 (46.3)	Chi ² = 0.227 p = 0.634
Degree	424 (54.1)	81 (55.9)	343 (53.7)	

Note: We did not find differences between mothers' and fathers' Index of multiple deprivation Decile, see [supplementary material 2](#) (Chi-square test = 10.128; p = 0.339).

3.2. Sex invariance of the questionnaires

All three questionnaire, AEBQ, CEBQ and CFPQ achieved strict sex invariance, indicating that the instrument works equally for mothers and fathers (See [supplementary material 1 Tables S1 and S2 and S3](#) for the full details of sex invariance analyses for AEBQ, CEBQ and CFPQ).

3.3. Parents' eating behaviours

Hypothesis. There will be differences between mothers and fathers eating behaviours

After adjusting for parent age, we found significant differences between fathers' and mothers' own eating behaviours: mothers reported more emotional overeating (p < 0.001), hunger (p = 0.028), slowness in eating (p < 0.001), and satiety responsiveness (p < 0.001) than fathers ([Table 2](#)).

Table 2
Comparison between fathers' and mothers' eating behaviours.

Dimension	Fathers (n = 145) M (SD)	Mothers (n = 639) M (SD)	F	p-value	Effect (Eta partial square)
Model	$\Lambda = 0.912$; $F(8, 774) = 9.330$; $p < 0.001$; $\eta^2 = 0.088$				
Enjoyment of food	4.37 (0.62)	4.41 (0.67)	0.290	0.590	0.000
Emotional overeating	2.68 (0.95)	3.04 (1.06)	13.328	<0.001	0.017
Emotional undereating	2.87 (0.98)	2.90 (1.00)	0.141	0.708	0.000
Food fussiness	1.98 (0.79)	2.02 (0.86)	0.251	0.616	0.000
Food responsiveness	3.29 (0.74)	3.40 (0.75)	2.636	0.105	0.003
Hunger	2.99 (0.75)	3.13 (0.72)	4.846	0.028	0.006
Slowness in eating	2.15 (0.86)	2.58 (0.92)	25.048	<0.001	0.031
Satiety responsiveness	2.16 (0.72)	2.56 (0.78)	30.659	<0.001	0.038

Note: The covariate of parental age in the model was established as 36.05 years. Box plot value was $M = 80.952$, $F(36, 232944.15) = 2.203$, $p < 0.001$. Data obtained from the Adult Eating Behaviour Questionnaire.

3.4. Children's eating behaviours

Hypothesis. There will be differences between parents' perceptions of their children's eating behaviours

After adjusting the data for parents' age, mothers and fathers did not significantly differ in how they perceived their child's eating behaviour ([Table S4 supplementary material 1](#)).

Hypothesis. There will be differences between boys' and girls' eating behaviours

When considering child sex, the overall model was not significant, but parents reported less satiety responsiveness in boys than in girls (p = 0.022) ([Table S5 supplementary material 1](#)).

Hypothesis. There will be an interaction between parents and children's sex and children's eating behaviours

As above, the model examining interactions between the parent's and child's sex in reports of children's eating behaviour was not significant ([Table S6 supplementary material 1](#)), but fathers reported that girls had more desire to drink than boys, and by contrast, this trend was inverse in mothers (p = 0.044) ([Fig. S1 supplementary material 1](#)).

3.5. Parental feeding practices

Hypothesis. There will be differences between mothers and fathers in their feeding practices

After adjusting for parent age, we found that mothers and fathers differed in reports of their feeding practices, with mothers reporting more child control than fathers (p = 0.003), who reported greater use of food as a reward (p < 0.001), pressure to eat (p < 0.001), and restriction for weight (p < 0.001) ([Table 3](#)).

Hypothesis. There will be differences in parent-reported feeding practices based on the child's sex

The model examining differences between boys and girls in parent-reported feeding practices was not significant overall (p = 0.294). However, we observed one significant difference: using food for emotion regulation was more common among parents of girls than boys (p = 0.035) ([Table S7 supplementary material 1](#)).

Hypothesis. There will be an interaction between parent and child sex in the use of feeding practices

Interactions between parent and child sex in reported feeding practices were not significant, apart from an interaction between the parent's and child's sex in the practices of encouraging balance and variety (p = 0.048) and the use of food for emotion regulation (p = 0.008) ([Table S8 supplementary material 1](#)). Fathers reported using more encouragement of balance and variety with boys than with girls, and

Table 3
Differences between fathers and mothers feeding practices.

Dimension	Fathers (n = 145) M (SD)	Mothers (639) M (SD)	F	p-value	η^2
Model		$\Lambda = 0.818$; $F(12, 768) = 1.178$; $p < 0.001$; $\eta^2 = 0.182$			
Balance Variety	4.39 (0.50)	4.43 (0.48)	0.639	0.424	0.012
Child control	2.47 (0.54)	2.65 (0.64)	9.133	0.003	
Emotion regulation	2.05 (0.63)	2.08 (0.67)	0.205	0.651	
Healthy Environment	3.52 (0.70)	3.48 (0.74)	0.293	0.589	0.055
Food as a reward	3.43 (0.95)	2.74 (1.13)	45.351	<0.001	
Restrict for health	3.59 (0.86)	3.39 (0.96)	4.861	0.028	
Involvement	3.55 (0.91)	3.69 (0.92)	2.427	0.120	0.043
Modelling	4.12 (0.72)	4.15 (0.73)	0.155	0.694	
Monitoring	3.88 (0.87)	3.82 (0.84)	0.607	0.436	
Pressure to eat	3.42 (0.77)	2.92 (0.93)	35.276	<0.001	
Teaching	3.99 (0.75)	4.06 (0.77)	1.029	0.311	
Restrict for weight	2.40 (0.79)	1.78 (0.60)	105.746	<0.001	

Note: The covariate of parental age in the model was established in 36.05 years. The box plot value was $M = 301.369$, $F(234, 163229.39) = 1.227$, $p = 0.001$. Λ = Lambda de Wilks; η^2 : Partial eta square. Data was obtained from the Comprehensive Feeding Practices Questionnaire.

more use of food for emotion regulation with girls (Fig. S2 and S3 supplementary material).

4. Discussion

This study aimed to investigate differences between fathers and mothers regarding reports of their own eating behaviours, their perceptions of their children's eating behaviours, and the feeding practices they use with their child, while also exploring how the child's sex may influence these parental perceptions and practices. We found support for our first hypothesis that mothers and fathers differ in their eating behaviours. This difference was observed in emotional overeating, hunger, slowness in eating, and satiety responsiveness. Similar tendencies for women scoring higher than men have been reported in previous studies (e.g., Arhire et al., 2021; Dakanalis et al., 2013; Gritti et al., 2024; He et al., 2021; Jacob et al., 2022; Kuno et al., 2024). Most discussions have focused on the fact that women exhibit more emotional eating and behaviours aimed at controlling their food intake. Our findings extend previous research, showing that mothers reported greater hunger and satiety responsiveness than fathers. Since women are often more focused on monitoring what they eat (Dakanalis et al., 2013), they may experience, or notice, stronger feelings of hunger and present more sensitivity to internal cues of fullness. The disparity between women and men in their eating behaviours could be influenced by social and cultural norms, for example, women could be more likely to adhere to societal pressures than men (Higgs, 2015). Moreover, in Western societies, in women there is a major concern about body image and physical appearance, with greater emphasis being placed on thinness (Carbonneau et al., 2023). This, along with other factors such as hormonal fluctuation (Culbert et al., 2021), could explain why women tend to report more behaviours aimed at controlling their body shape and those resulting from food restriction, such as hunger. As for emotional eating, some research has found that women may be more prone to this behaviour because they tend to be more aware of and attentive to their emotions than men, and are more likely to engage in deliberate efforts to modify their emotional states (Nolen-Hoeksema, 2012), with food being used as a common strategy to manage negative emotions (Gritti et al., 2024).

Contrary to our expectations, we did not find strong evidence of differences in parents' perceptions of male versus female children's

eating behaviours. Findings showed that parents perceived girls as having higher satiety responsiveness than boys, mirroring the sex pattern observed in adults. This may be linked to the gendered norms and parenting practices which underpin children's expression of satiety, through differential socialisation of boys and girls, often because of increased concerns about weight gain in girls (DuPuy et al., 2021; Keller et al., 2019). Moreover, we also found a parent-child sex interaction effect for the desire-to-drink subscale, with fathers reporting that girls had more desire to drink than boys, and mothers reporting the opposite. Since this result is contrary to our predictions and difficult to interpret, further research is needed to examine other factors, such as the type of beverage that is being consumed, which is not assessed by the CEBQ. The fact that no strong associations were observed between sex and eating behaviours in these children may be attributed to their young age (3–6 years). It is possible that as children's eating behaviours evolve with age (e.g., increasing food-approach and decreasing food-avoidant eating behaviours) (Ashcroft et al., 2008; Delahunt et al., 2024; Jansen et al., 2023), the influence of their sex may become more pronounced, driven by environmental factors such as parental feeding styles, practices, and socio-cultural norms.

Our findings confirmed expected differences in parental feeding practices, with fathers using more coercive practices than mothers. In our sample, fathers used more food as a reward, applied greater pressure to eat, and restricted their child's food intake due to weight concerns, while mothers used more responsive practices, giving their children greater autonomy and support in their eating decisions. Although our findings support previous research (De-Jongh González et al., 2021; Lozano-Casanova et al., 2023; Philippe et al., 2021, 2022; Pratt et al., 2019), a recent review shows mixed results (Davison et al., 2020). These discrepancies among studies may be due to various social and methodological factors. From a social perspective, these sex differences between studies could arise from variations in the participants' socioeconomic and cultural background, from age differences among the children, or from the measures used to assess feeding practices. Methodologically, we found no other previous studies that analysed gender or sex invariance in the instruments used to assess parents' feeding practices. Achieving this invariance is key to allowing true comparisons between sexes in their reports. Therefore, conclusions from studies that have not demonstrated sex invariance should be interpreted with caution. Within our study, we have confirmed that the measures used perform equally for mothers and fathers, leading to greater confidence in the sex differences we have found. Nonetheless, it is important to highlight that fathers remain significantly understudied in this field (Moura & Philippe, 2023). Consequently, we encourage researchers to continue including fathers in studies about feeding practices and to also explore differences between fathers and mothers, as this area requires deeper investigation. This is especially relevant because, as recent studies focused on fathers suggest, in Western societies, mealtimes are increasingly important for them to build connections with their children (Harris et al., 2020), and more fathers are taking a more active role in the feeding of their children (Moura & Philippe, 2023; Philippe et al., 2021). Based on existing evidence, it is suggested that mothers and fathers often feed their children differently. With this in mind, identifying whether tailored support for feeding practices is necessary for mothers and fathers could be particularly beneficial, for designing and implementing effective parenting interventions.

On the other hand, we did not find a strong interaction effect between the child's sex and the parents' use of different feeding practices, supporting the conclusion that child sex effects may not yet be pronounced in this age group. Our findings showed that parents of girls were more likely to report using food to regulate their daughters' emotions and that fathers were particularly more likely to use this practice with daughters. The use of this practice is especially concerning given previous research linking the use of food for emotion regulation as a predictor of future food-approach behaviours, including emotional eating (Steinsbekk et al., 2018; Stone et al., 2022). Detecting these

tendencies early in life presents a valuable window of opportunity to develop interventions aimed at guiding parents, especially fathers of daughters, toward alternative strategies for supporting their child's emotional regulation. Therefore, we recommend more targeted support, specifically among fathers, to reduce this practice. Reducing the use of food as a soothing mechanism could help mitigate long-term risks associated with emotional eating and promote healthier long-term relationships with food.

4.1. Strengths and limitations

Strengths of our study include the relatively large sample size of parents from England and Wales, with a diverse range of ethnic and socioeconomic backgrounds which are representative of the UK population. Moreover, the sample included enough fathers to allow for comparisons between both parents in terms of feeding practices and eating behaviours, as well as examine the sex of the children in our analysis. Our demonstration of sex invariance in all questionnaires used (AEBQ, CEBQ, CFPQ) further adds to confidence in the differences we have shown. However, there are some limitations to highlight. First, the data were reported by parents, making it inherently subjective which could induce a measurement bias influenced by participants' social desirability. Second, most of the sample identified as White British; therefore, caution should be exercised in generalizing these results to other populations. Future research should examine these aspects in other populations to deepen our understanding of parental roles and sex as well as child sex on feeding practices and eating behaviour development. Additionally, we considered that all female sex participants assumed a "mother" role. Furthermore, it is important to note that the children's eating behaviours were collected eight months prior to the assessment of parental eating behaviours. Moreover, research has demonstrated reciprocity between parent feeding practices and child eating behaviours (Kininmonth et al., 2023), however, we were not able to examine the causal pathways for the differences observed in this study due to the cross-sectional design (for example, whether differences observed in mothers' and fathers' feeding practices might be driven in part by differences in eating behaviours or whether they will cause greater differences in the longer term). Lastly, while the effect size estimates were generally small, our findings are meaningful, particularly considering the lack of studies directly comparing mothers and fathers in their feeding practices. Whilst at an individual level, the differences in outcomes based on parent or child sex may be small, these may still have an important effect at a public health level. Furthermore, some effects in our study were medium to large: for example, the difference between fathers and mothers in their use of food as reward, and the use of restriction for weight reasons. Given that we know the detrimental effects of these feeding practices, and they are more likely to be used by fathers than mothers, our findings importantly suggest that intervention programs, which have been based primarily on findings about mothers, may need to be adapted to better support fathers to reduce their use of these practices.

Given that we observed very few eating behaviour differences based on child sex at this age, we can be relatively confident that this was not a major driver of differences in feeding practices for boys and girls in the preschool phase. Due to the novelty of incorporating both parents' and children's sex in these analyses, we propose that future research should also incorporate these variables in longitudinal analyses to examine the causal processes of children's eating behaviour development.

5. Conclusion

This study contributes to the literature on children's eating behaviours and parental feeding practices by incorporating a sex perspective. Our findings indicate that fathers and mothers differ in reports of their own eating behaviours. Interestingly, a similar trend seems to be emerging in young children, with higher satiety responsiveness being

reported in girls. Regarding feeding practices, we also observed distinct trends between fathers and mothers. Fathers tended to use more coercive practices, while mothers were more likely to encourage practices that promote child autonomy. When considering the child's sex, parents generally reported using food for emotion regulation more often with girls. Specifically, fathers tend to use this strategy more with daughters, while with sons they were more likely to encourage balance and variety. This highlights sex differences in parental feeding practices and suggests that girls are at greater risk of receiving feeding practices that may contribute to the development of emotional eating. We would therefore recommend that future research accounts for the sex of parents and children, as this appears an important influence on the development of children's eating behaviours and parental feeding practices. Ultimately, our findings suggest that parent sex should be considered in the development of tailored feeding guidance.

CRediT authorship contribution statement

Mar Lozano-Casanova: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Katie L. Edwards:** Writing – review & editing, Project administration, Methodology, Investigation. **Abigail Pickard:** Writing – review & editing, Project administration, Methodology, Investigation. **Emma Haycraft:** Writing – review & editing, Methodology, Funding acquisition. **Alice R. Kininmonth:** Writing – review & editing, Methodology. **Miguel Richart-Martinez:** Writing – review & editing, Supervision. **Isabel Sospedra:** Writing – review & editing, Supervision. **Claire Farrow:** Writing – review & editing, Supervision, Methodology, Funding acquisition. **Jackie Blissett:** Writing – review & editing, Supervision, Resources, Methodology, Funding acquisition.

Ethical statement

Aston University Health and Life Science Research Ethics Committee provided ethical approval (#HLS21053). Participants provided informed consent for their participation.

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Ethical statement

The study was conducted in accordance with the Declaration of Helsinki and local statutory requirements. Aston University Health and Life Sciences Research Ethics Committee (HLS21003) provided ethical approval. This statement is present in the manuscript.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.appet.2025.108281>.

Data availability

Data will be made available at <https://osf.io/p87rx>.

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