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Unpacking the relationships between positive feeding practices and children's eating behaviours: The moderating role of child temperament.

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Abstract

Evidence suggests that children's eating behaviours are influenced by the feeding practices which parents employ. Furthermore, parents may alter the feeding practices they use according to their child's temperament. However, there is a paucity of literature on how children's temperament moderates the relationship between parents' use of feeding practices and children's eating behaviours. One hundred and eleven mothers of 2 to 4-year-old children completed questionnaire measures of their feeding practices along with their child's eating behaviours and temperament. Two-tailed Spearman's correlations revealed that mothers' use of a range of positive (health promoting) feeding practices was associated with greater enjoyment of food and lower food fussiness among children. Moderation analyses found that relationships between mothers involving their children in food choice and preparation and children's eating behaviours were moderated by children's temperament. Involvement in food choice and preparation was no longer associated with higher enjoyment of food and lower fussiness for children who were either highly emotional or low in sociability. These findings suggest that while many previously identified positive feeding practices may be associated with more healthy eating for all children, some may be less helpful or less achievable with children who have particular temperamental traits. Future research should seek to develop interventions to promote healthy eating which are tailored towards children's individual characteristics.

Keywords: child; temperament; mother; feeding practices; eating behaviour; fussiness; enjoyment of food; healthy eating

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Introduction

With 28% of UK children estimated to be overweight or obese by the age of five, and just 16% meeting the recommended intake of fruits and vegetables (NHS Digital, 2018), the development of children's food intake and dietary patterns are increasingly of interest. Children's eating behaviours are defined as dimensions of their overall eating style, which have been implicated in the development of body weight (Wardle, Guthrie, Sanderson, & Rapoport, 2001). Evidence suggests that children's eating behaviours are associated with children's food preferences and dietary intake as well as their weight status. Two particular dimensions of children's eating behaviour have been identified as important. Food fussiness has been associated with a less varied diet with lower nutrient content (Dovey, Staples, Gibson, & Halford, 2008), with children higher in food fussiness typically consuming fewer vegetables (e.g., Galloway, Fiorito, Lee, & Birch, 2005), and fussiness associated with lower BMI (e.g. Webber et al., 2009). Meanwhile enjoyment of food has been associated with consumption of more vegetables (e.g., Cooke et al., 2004), and research suggests that enjoyment of food may play a role in children overcoming picky eating (e.g., van der Horst, 2012), although it has also been associated with higher BMI (e.g. Webber et al., 2009). Children's eating behaviours vary greatly between individuals. A recent model proposes that children's eating behaviours are shaped by a combination of biological factors (such as genetics and temperament) and psychosocial factors (such as parents cognitions, feeding styles, and feeding practices) (Russell & Russell, 2018). However, further research is needed to clarify these relationships.

Positive parental feeding practices are those which are theorised to promote healthy eating habits among children (Kaukonen et al., 2019). Several studies have explored the relationships between positive parental feeding practices and children's eating behaviours. Parents of children with healthy food preferences have been shown to use more positive feeding practices, such as modelling healthy eating, encouraging children to try new foods, and involving children in food choice and preparation (Russell, Worsley, & Campbell, 2015). Moreover, experimental research suggests that the use of positive feeding practices can lead to food acceptance in children (e.g. Allirot, Maiz, & Urdaneta, 2018; Caton et al., 2013; Holley, Haycraft, & Farrow, 2014; Remington, Anez, Croker, Wardle, & Cooke, 2012). However, longitudinal research suggests that parents may also adopt feeding practices in response to children's eating behaviours or dietary preferences (e.g., Farrow & Blissett,

2008). Together, these findings indicate that the relationships between positive feeding practices and children's eating behaviours are bidirectional.

The relationships between children's temperament and their eating behaviours have also been explored. Temperament is a biologically based pattern of relatively stable individual characteristics present from birth. One temperament trait which evidence suggests is related to children's eating behaviour is emotionality. Children with more emotional temperaments have been reported to display more food avoidant eating behaviours (Haycraft, Farrow, Meyer, Powell, & Blissett, 2011) and to consume more unhealthy foods (Vollrath & Stene-Larsen, 2012). Furthermore, those with more emotional and less sociable temperaments have been reported to be less willing to try new foods (Pliner & Loewen, 1997), whereas surgent (active, sociable) toddlers have been found to be substantially more likely to consume two portions of fruits or vegetables daily later in childhood (Vollrath & Stene-Larsen, 2012). Meanwhile, children with a difficult temperament (characterised by high emotionality and low sociability) have been found to exhibit more difficult mealtimes and greater food refusal (Farrow & Blissett, 2006).

It is possible that the relationship between the feeding practices which a parent uses and their child's eating behaviour may vary as a function of a child's temperament, where some practices may be more successful or simply more achievable with children of a particular disposition. Indeed, child temperament has been associated with maternal use of feeding practices that have been shown to influence childhood overweight (Bergmeier, Skouteris, Horwood, Hooley, & Richardson, 2014). For example, mothers of infants with a more difficult temperament are more likely to use food to calm (McMeekin et al., 2013), and mothers of more emotional children are less likely to restrict their child's food intake (Farrow, Haycraft & Blissett, 2018). Moreover, children's temperament may influence the reciprocal relationship between children's eating behaviours and parental feeding practices. For example, children's negative affectivity at age 4 has been associated with an increased risk of emotional feeding by parents at ages 6 and 8, and increased risk of children's emotional eating at age 10 (Steinsbekk, Barker, Llewelllyn, & Fildes, 2017). A converse relationship has also been found, where negative affectivity at age 4 has been associated with an increased risk of emotional eating at ages 6 and 8 and emotional feeding at age 10 (Steinsbekk et al., 2017). Although this demonstrates that children's temperament is associated with both eating behaviours and feeding practices, as well as the reciprocal relationship they have to each other, little is known about how temperament might influence parents' use of positive feeding practices.

To our knowledge, only two published papers have explored the role of children's temperament in the interplay between positive feeding practices and children's eating, and these have focused on food choice. The first found that the success of an intervention which promotes the use of positive feeding practices (modelling and non-food rewards alongside repeated exposure) to increase children's liking and consumption of a disliked vegetable is dependent on children's sociability (Holley, Farrow, & Haycraft, 2016). The second found that the relationship of higher levels of children's surgency and effortful control with greater consumption of vegetables is mediated by parents' use of positive vegetable specific feeding practices, such as enhanced availability of vegetables and supporting autonomy around vegetable consumption (Kaukonen et al., 2019). However, there is no published literature which explores the role of children's temperament in the relationships between positive feeding practices and children's eating behaviours. This knowledge is important as it could inform the design of interventions to promote healthy eating among children, and the advice given to caregivers on the use of such feeding practices, with the potential to tailor these to better align with children's temperament.

The current study seeks to confirm whether maternal use of positive feeding practices evidenced in experimental research (e.g. Allirot et al., 2018; Caton et al., 2013; Holley et al., 2014; Remington et al., 2012) is related to their children's eating behaviours. Furthermore, with previous research indicating that temperament plays a role in the relationship between maladaptive feeding practices and children's emotional eating (Steinsbekk et al., 2017), this study also aims to further past research by investigating how the relationships between positive feeding practices and children's eating behaviour (food fussiness and enjoyment of food) are moderated by children's temperament. It is hypothesised that greater use of positive feeding practices by mothers will be associated with greater enjoyment of food and lower food fussiness among children. It is further hypothesised that these relationships will be moderated by children's temperament, and strongest for children who are more sociable, less shy and less emotional.

Methods

Design

The data for this paper came from an experimental study which included a questionnaire element. For the purposes of the current paper, only the baseline questionnaire data was utilised, therefore the study has a cross-sectional, questionnaire design.

Procedure

Loughborough University's Institutional Review Board provided full ethical clearance for this study. Toddler groups from across the East Midlands region of the UK were approached to offer attending mothers and children the opportunity to participate in a study to encourage their child to eat disliked vegetables. Consent was gained from 20 toddler groups. An opportunity sample of willing mothers of 2- to 4-year-old children at each toddler group were given an information sheet providing the full details of the study, which was advertised as a home-based study investigating methods which parents can use to help their children eat vegetables. Inclusion criteria included having a child aged between two and four years of age and mothers playing a primary role in feeding their child. Mothers with a child who had undergone treatment for a feeding related issue were excluded. Next, mothers were asked to provide informed consent and were advised of their right to withdraw themselves or their child at any point. Child assent was also sought prior to the onset of the study. Dyads participated in a trial of an intervention which sought to increase liking and consumption of a disliked vegetable over a two-week period, the full details of which have been published elsewhere (Holley et al., 2014). At baseline, mothers' and children's height and weight were measured by the researcher, with children's measurements converted into age and gender adjusted BMI z-scores (Cole, Freeman, & Preece, 1995). Mothers completed a questionnaire which comprised demographic questions about themselves and their child (e.g. age, ethnicity, education background, etc.) as well as validated measures of their feeding practices, their child's temperament and their child's eating behaviours. The baseline measures are the data utilised in the current study.

Measures

Comprehensive Feeding Practices Questionnaire (CFPQ; Musher-Eizenman & Holub, 2007)

The CFPQ is a 49-item questionnaire comprised of 12 subscales which measure parents' use of different feeding practices. Five subscales were utilised for the current study which reflect positive feeding practices (i.e., those previously theorised to promote children's healthy eating (Kaukonen et al., 2019)). These were: Encouraging balance and variety (e.g. *'I encourage my child to eat a variety of foods'*); Healthy environment (e.g. *'Most of the food I keep in the house is healthy'*); Involvement (e.g. *'I involve my child in planning family meals'*); Modelling (e.g. *'I model healthy eating for my child by eating healthy foods myself'*); and Teaching about nutrition (e.g. *'I discuss with my child why it's important to eat healthy foods'*). Items are responded to on a five-point Likert scale, and mean scores are calculated for each subscale, with higher scores indicating greater use of the feeding practice. This measure has demonstrated good internal validity (Musher-Eizenman & Holub, 2007).

Cronbach's alphas were acceptable for most subscales in the current study (0.60 to 0.83) with the exception of the involvement subscale (0.49).

Children's Eating Behaviour Questionnaire (CEBQ; Wardle, Sanderson, Gibson, & Rapoport, 2001)

The CEBQ is a 35-item questionnaire comprised of eight subscales which measure different dimensions of children's eating behaviour. For the current study, two subscales were utilised which measure the two eating behaviours which have been associated with children's food preference and dietary intake (for more information see Cooke et al., 2004; Dovey et al., 2008). These subscales were Food fussiness (e.g. *'My child refuses new foods at first'*) and Enjoyment of food (e.g. *'My child loves food'*). Items are scored on a five-point Likert scale (with responses ranging from never to always) and mean scores are generated for each subscale. A higher mean score is indicative of greater prevalence of the eating behaviour. Previous research has demonstrated that the CEBQ has good internal validity as well as good test-retest reliability (Wardle, Guthrie, et al., 2001). Cronbach's alphas were 0.88 for food fussiness and 0.87 for enjoyment of food, demonstrating good reliability in the current sample.

Emotionality, Activity, and Sociability Temperament Survey (EAS; Buss & Plomin, 1984)

The EAS is a 20-item questionnaire which measures four aspects of child temperament. Three of its subscales which have been the focus of previous research were included in the current study: Emotionality (e.g. *'Child cries easily'*); Sociability (e.g. *'Child likes to be with people'*); and Shyness (e.g. '*Child tends to be shy'*). Statements are scored in relation to how characteristic each is of their child on a five-point Likert scale (with responses ranging from not characteristic or typical to very characteristic or typical). Subscales are mean scored, with a higher score indicating a stronger presence of that trait. The EAS has good internal and test-retest validity (Buss & Plomin, 1984), with the emotionality and shyness subscales demonstrating good reliability (α 0.90 and α 0.75 respectively) and the sociability subscale demonstrating acceptable reliability (α 0.63) in the current sample.

Data analysis

Data were analysed using SPSS version 23. Kolmogorov-Smirnov tests indicated that the majority of the study variables were non-normally distributed and so non-parametric (Spearman's) preliminary correlations were undertaken to explore relationships between the study variables, mother and child age and BMI. Child age was significantly associated with mothers' use of teaching about nutrition (r= .23, p=.001) and involvement in food choice and preparation (r=.30, p=.008). Child BMI z-score was significantly associated with enjoyment of

food (r= .23, p=.007). Therefore, child age and child BMI-z score were controlled for in all analyses using these variables. Maternal BMI and age were not significantly associated with any of the study variables.

Two-tailed Spearman's correlations (or Spearman's partial correlations, where appropriate) were performed to explore relationships between maternal use of positive feeding practices and children's eating behaviours (food fussiness and enjoyment of food). Due to multiple comparisons being made, and to minimise the likelihood of type-two error, a more stringent alpha of p<.01 was imposed. Where significant relationships were found between a feeding practice and an eating behaviour, moderation analysis was conducted using PROCESS version 3.3 (Hayes, 2019), which produces linear interaction models. These moderation analyses were used to determine whether children's temperament traits significantly moderated the identified relationships, whilst controlling for confounding variables identified through the preliminary correlational analyses. Where moderation effects were detected, linear interactions were calculated by PROCESS for low (16^{th}), medium (50^{th}) and high (84^{th}) percentiles of the moderator. These percentiles map on to +/_1 standard deviation around the mean in a normally distributed variable.

Results

Descriptive statistics

One hundred and eleven mother-child dyads participated in this study. Mothers had an average age of 35.11 years (SD = 4.85, range 22.50 to 46.08 years). Children's average age was 37.86 months (SD = 7.76, range 24 to 55 months) and 56.8% of the children who took part were female (n=63). Children's BMI z-scores ranged from -3.07 to 1.73, and the mean was 0.16 (SD=0.77) which indicates a healthy weight. Mothers' BMI (kg/m^2) ranged from 18.71 to 38.44 (M=25.25, SD=5.58). A similar proportion of mothers were educated at university level or above (50.45%) and below university level (48.65%), with missing data for one mother. The sample was predominantly of White/Caucasian ethnicity (92.8%), with a small proportion of participants reporting a Black (5.4%) or Asian (1.8%) ethnicity.

Descriptive statistics for the study variables can be seen in Table 1. The mean scores for the feeding practices measured by the CFPQ are in line with previous research with similar samples (e.g., Holley et al., 2017; Musher-Eizenman, de Lauzon-Guillain, Holub, Leporc, & Charles, 2009). Encouraging balance and variety was the most frequently performed feeding practice, while teaching about nutrition was the least frequent. On average, children in the current sample had higher levels of enjoyment of food than food fussiness, with average

scores in line with previous research with 2 to 5 year old children (Haycraft & Blissett, 2012). Sociability was the most evident temperamental trait in the current sample, while emotionality was the temperament trait which appeared to vary the most between children.

Table 1: Mean and standard deviation (SD) of measures used to assess maternal feeding practices, children's eating behaviours and child temperament in a sample of 111 mother-child dyads.

Measure	Mean (SD)	Min/Max
Maternal feeding practices		
Encouraging balance and variety	4.31 (0.53)	2.50/5.00
Healthy environment	3.65 (0.68)	2.25/5.00
Involvement	3.43 (0.87)	1.33/5.00
Modelling	4.06 (0.80)	1.50/5.00
Teaching about nutrition	3.60 (0.82)	2.00/5.00
Children's eating behaviours		
Food fussiness	3.03 (0.75)	1.17/5.00
Enjoyment of food	3.63 (0.70)	1.00/5.00
Child temperament		
Emotionality	2.74 (1.02)	1.00/5.00
Sociability	3.53 (0.70)	1.00/5.00
Shyness	2.64 (0.76)	1.20/4.60

Exploring the relationships between positive feeding practices and children's fussiness and enjoyment of food

Spearman's correlations, controlling for confounding variables where identified, detected a number of associations between maternal feeding practices and children's eating behaviours. Mothers' reports of encouraging balance and variety, providing a healthy home environment, involving children in food choice and preparation, and teaching their child about nutrition were significantly associated with lower food fussiness among children. Moreover, mothers' reports of encouraging balance and variety, involving children in food planning and preparation, and teaching their child about nutrition were significantly associated with higher enjoyment of food among children.

Table 2: Spearman's correlations (and partial correlations where appropriate) between maternal feeding practices and children's eating behaviours among a sample of 111 mother-child dyads in the UK

Maternal feeding practice	**Child eating behaviour**			
	Food Fussiness		Enjoyment of Food [a]	
	R	p	R	p
Encourage Balance and Variety	**-.43**	**.00**	**.30**	**.00**
Healthy Environment	**-.30**	**.00**	.23	.02
Involvement [b]	**-.29**	**.00**	**.27**	**.00**
Modelling	-.19	.05	.24	.01
Teaching about Nutrition [b]	**-.31**	**.00**	**.28**	**.00**

Significant findings are displayed in bold; [a] partial correlation controlling for child BMI z-score; [b] partial correlation controlling for child age

Determining the moderating role of children's temperament

Moderation analyses were performed to determine whether the significant relationships identified between maternal feeding practices and children's eating behaviours were moderated by aspects of child temperament, while controlling for any identified confounding variables. These analyses are reported according to the eating behaviour they refer to in the following sections. For brevity, non-significant findings are presented in the supplementary material (supplementary Table 1).

Food Fussiness

Children's temperament did not significantly moderate the relationships between encouraging balance and variety, providing a healthy home environment or teaching about nutrition with children's food fussiness. However, children's emotionality significantly moderated the negative relationship of involvement in meal choice and preparation food fussiness (B= .32, t=3.78, p<.001), as shown in Figure 1. Greater involvement was associated with lower fussiness when children were low (16^{th} percentile: B = -.63, t= -5.15, p <.001) or average in emotionality (50^{th} percentile: B = -.31, t= -3.99, p <.001), but not when children were high in emotionality (84^{th} percentile: B = .09, t= .73, p =.470). Moreover, children's sociability significantly moderated the negative relationship between involvement in meal planning and preparation and food fussiness (B=-.42, t = -3.80, p<.001), as shown in Figure 2. Greater involvement was associated with lower fussiness when children were high

(84th percentile: B= -.60, t= -5.14 p<.001) or average in sociability (50th percentile: B = -.35, t= -4.41, p<.001), but not when children were low in sociability (16th percentile: B = -.01, t= -0.15 -.01, p=.886). Shyness did not significantly moderate the relationship between involvement in meal choice and preparation and food fussiness.

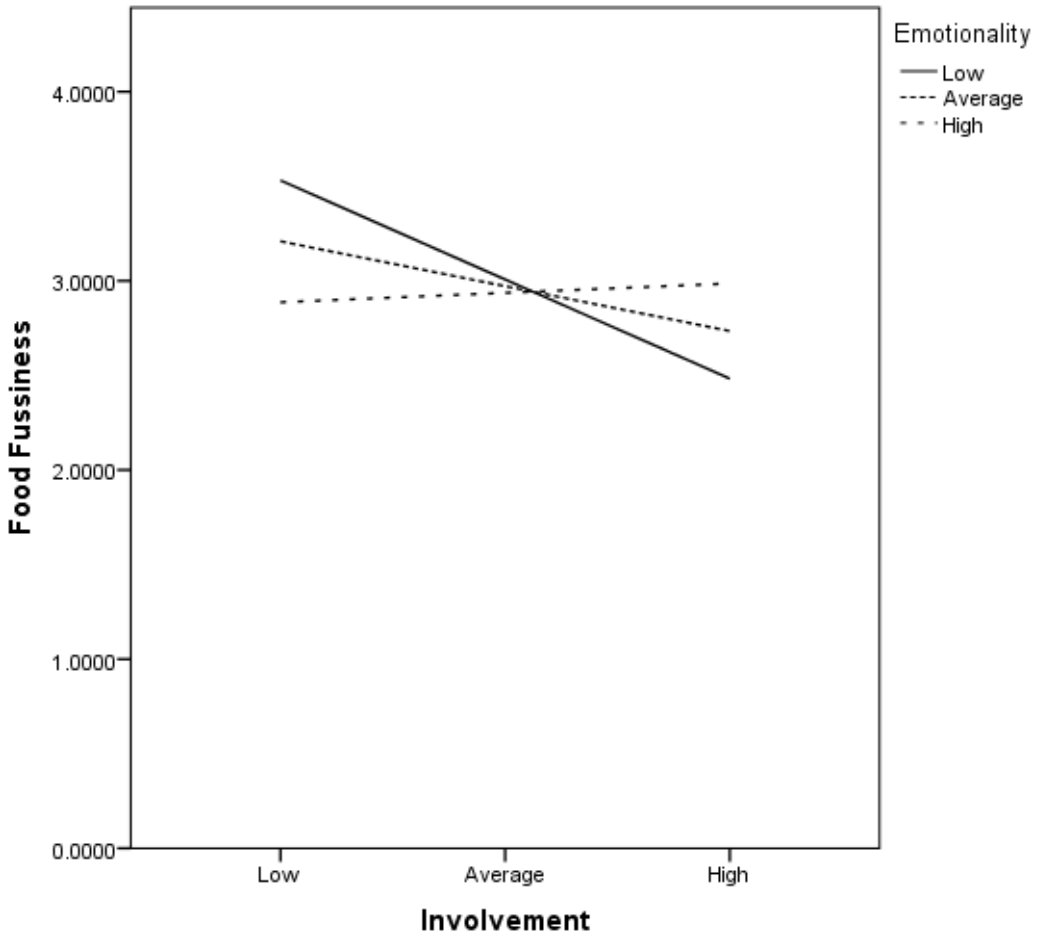


Figure 1. Simple slopes equations of the relationship between involvement in food choice and preparation and children's food fussiness when children's emotionality is low, average or high

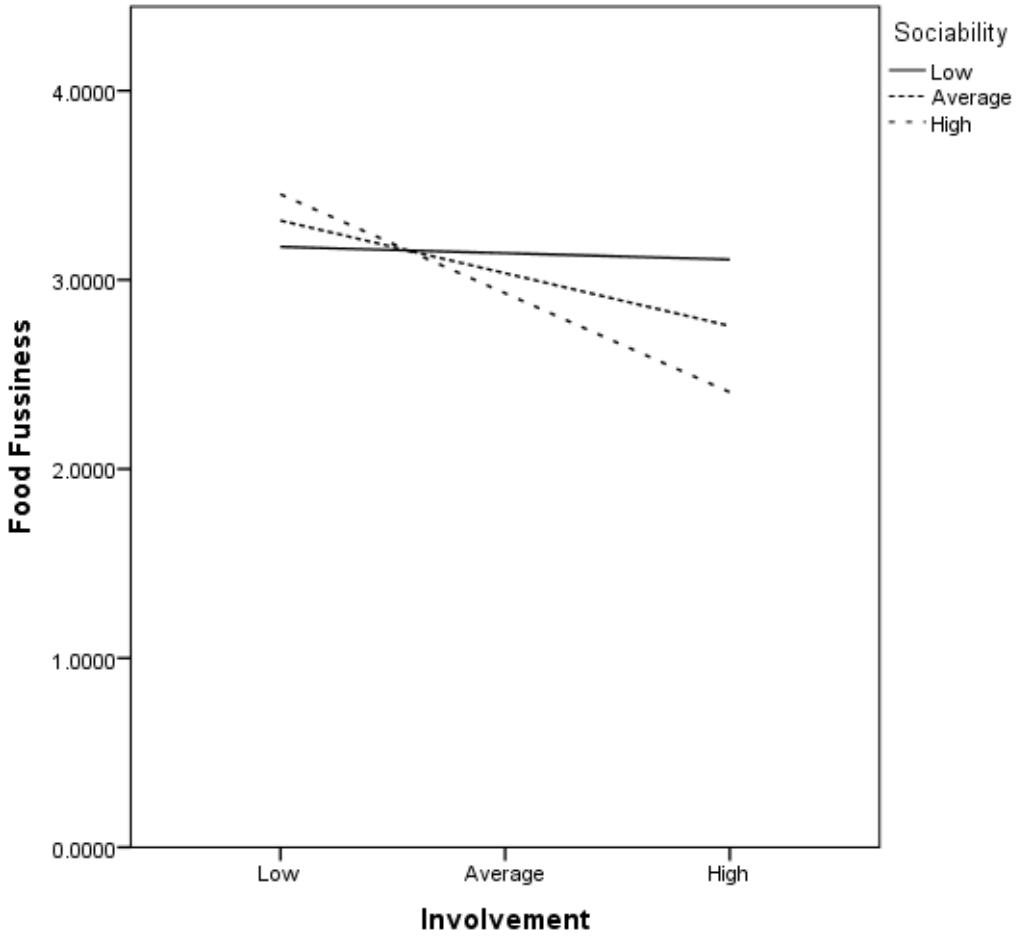
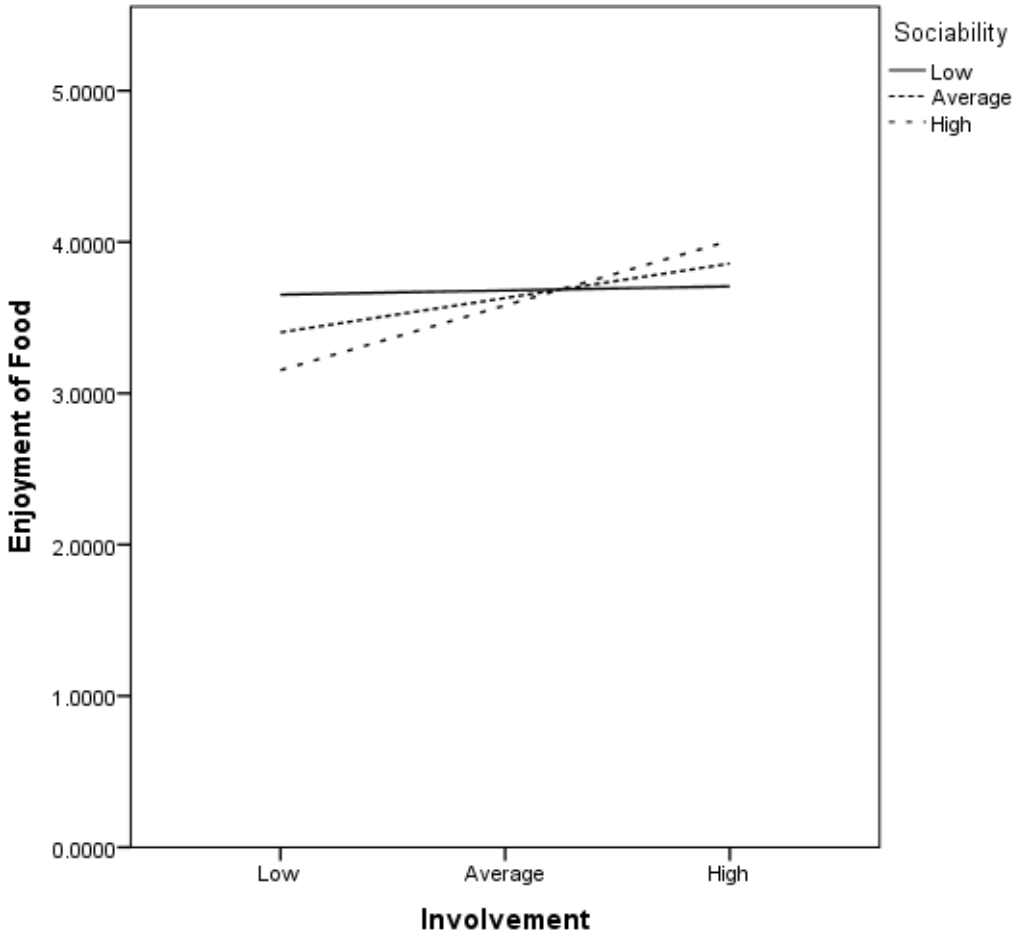


Figure 2. Simple slopes equations of the relationship between involvement in food choice and preparation and children's food fussiness when children's sociability is low, average or high

Enjoyment of Food

Children's temperament did not significantly moderate the relationships between encouraging balance and variety or teaching about nutrition with children's enjoyment of food. Although emotionality and shyness did not moderate the positive relationship between involvement and enjoyment of food, sociability did (B=.34, t=3.30, p=.001), as shown in Figure 3. Greater use of involvement was associated with greater enjoyment of food when children were high (84th percentile: B=.49, t=4.49, p<.001) or average in sociability (50th percentile: B=.29, t=3.87, p<.001), but not when children were low in sociability (16th percentile: B=.01, t=.13, p=.900).



318

319 **Figure 3.** Simple slopes equations of the relationship between involvement in food choice
320 and preparation and children's enjoyment of food when children's sociability is low, average
321 or high

322

323 **Discussion**

324 This study sought to confirm whether positive maternal feeding practices are related to
325 children's eating behaviours, and how these relationships are moderated by children's
326 temperament. It was hypothesised that greater use of positive feeding practices by mothers
327 would be associated with greater enjoyment of food and lower food fussiness among
328 children. It was further hypothesised that these relationships would be moderated by
329 children's temperament and would be strongest for children who are more sociable, less shy
330 and less emotional. These hypotheses were partially supported. The majority of positive
331 feeding practices were associated with greater enjoyment of food and lower food fussiness.
332 Furthermore, although moderation was limited, where these relationships were moderated
333 by temperament, they were strongest for children who were more sociable and less shy.

Mothers who reported encouraging balance and variety, providing a healthy home environment, involving children in food choice and preparation, and teaching their child about nutrition also reported lower levels of food fussiness and greater enjoyment of food in their children. This builds on previous qualitative research in which parents of children with healthy food preferences reported using more positive feeding practices like encouraging children to try new foods and involving children in food choice and preparation (Russell, Worsley, & Campbell, 2015). It also confirms a previous quantitative finding where lower levels of children's food fussiness was associated with greater maternal encouragement of balance and variety (Powell, Farrow, & Meyer, 2011). Previous longitudinal research from Gregory, Paxton, and Brozovic (2010) has found that parental modelling predicted lower child food fussiness and higher interest in food one year later. This finding was not replicated in our cross-sectional study, suggesting that modelling may need to be implemented over a period of time in order to have positive impacts of fussiness and enjoyment of food.

Previous research suggests that enjoyment of food may play an important role in children's healthy eating. For example, van der Horst (2012) found that enjoyment of food was strongly inversely related to fussy eating, and that enjoyment of food was a mediating factor between maternal use of pressure and children's fussy eating, whereby pressure to eat was only associated with higher fussiness through lower enjoyment of food (van der Horst, 2012). In the current study, mothers encouraging balance and variety, providing a healthy home environment, involving children in food choice and preparation, and teaching their child about nutrition was associated with greater enjoyment of food in their children. Taken alongside the findings from van der Horst (2012), this suggests that the use of feeding practices such as encouraging balance and variety, involving children in food choice and preparation, and teaching children about nutrition - which are associated with enjoyment of food, are positive for children's health and have the potential to reduce fussy eating - should all therefore be promoted to parents and caregivers alike.

Uniquely, this study explored children's temperament as a moderator of the associations between positive feeding practices and children's eating behaviours. Although only a small number of relationships were moderated by temperament, some significant interactions were evidenced. The relationship between involving children in food choice and preparation and children's food fussiness was moderated by children's temperament, where use of involvement was not associated with lower fussiness when children were highly emotional or low in sociability. This furthers previous research which has indicated that parents may use different feeding practices with children of difficult temperaments (characterised by low sociability, high shyness and high emotionality). For example, mothers of children with a difficult temperament have been found to be more likely to use food to calm (McMeekin et

al., 2013). The current study extends these findings by providing new insights into how parents' use of positive feeding practices may vary according to children's temperamental traits.

In the current study, the relationship between involving children in food choice and preparation and greater enjoyment of food was moderated by children's sociability, where involvement was not associated with greater enjoyment of food for children low in sociability. This builds on previous research which suggests that the use of positive feeding practices may be most effective for highly sociable children, where high child sociability was associated with greater success of an intervention aimed at increasing children's consumption of a disliked vegetable (Holley et al., 2016). In light of this, while overall trends suggest that involvement might be a beneficial feeding practice, use of this practice may be less beneficial or less achievable with some children, such as those who are low in sociability or highly emotional. Further research should explore which practices might be most beneficial for more and less sociable children (who may well be more difficult to involve in food choice and preparation) in order to produce effective interventions and parental advice which can be tailored towards children's individual characteristics.

Children's temperament did not moderate the majority of the relationships between positive feeding practices and children's eating behaviours, specifically encouraging balance and variety, providing a healthy home environment, or teaching about nutrition and children's food fussiness or enjoyment of food. This suggests that the relationships between use of these practices and children's eating behaviours are more direct than those influenced by children's temperament. It is plausible that use of these practices is more strongly driven by parent/caregiver beliefs, rather than child factors, although the use of such feeding practices might also be similarly achievable or beneficial for all children. With this in mind, such practices should be promoted to parents and caregivers as potentially beneficial feeding practices for promoting healthy eating and reducing food fussiness. A recent systematic review into methods of increasing vegetable consumption in early childhood found that although scant research has explored the utility of nutrition education among early years, those interventions which have provide promising results (Holley, Farrow, & Haycraft, 2017). In combination with the novel findings from the current study, this suggests that the utility of interventions which promote encouraging balance and variety, providing a healthy home environment, or teaching about nutrition should be explored in future research. Such interventions may be appropriate for a wide population, with the current study suggesting that these may be beneficial to children regardless of their temperament.

Strengths of this study include its focus on positive feeding practices, the inclusion of objective height/weight measurements, the use of psychometrically sound measures of feeding practices and eating behaviours, and a good sample size of dyads. Due to the cross-sectional nature of the current study, it is not possible to determine causality in the relationships detected. It should therefore be noted that it is likely that as well as mothers' feeding practices influencing children's eating behaviours, some of the relationships detected in this study may be driven by children's eating behaviours, as suggested in previous research with controlling feeding practices (Farrow & Blissett, 2008). In the current study it may be that some positive feeding practices are easier to implement with children who are less fussy or enjoy food more. In order to further clarify the relationships between feeding practices and eating behaviours and the role that temperament plays, longitudinal research should be conducted. It should also be noted that the study recruited mothers who wanted to learn how to encourage their child to eat a disliked food, which may have led to an oversampling of picky eaters. However, the mean food fussiness and enjoyment of food values were similar to the means in previous research. The sample in the current study was predominantly of White ethnicity and more educated than the general UK population (Office for National Statistics, 2017), and therefore the results may not be generalisable to other populations. Finally, the strongest moderation effects were found for involvement in food choice and preparation, which had low reliability in the current study. With this in mind, these findings should be interpreted with caution and replicated in future research.

This study presents novel insights into the relationships between positive feeding practices and children's eating behaviours, where previous research has focused on maladaptive feeding practices such as pressure to eat and restriction. Moreover, this research provides unique information on the moderating role of children's temperament in the relationships between maternal feeding practices and children's eating behaviours. This adds to the growing body of literature which suggests that while the majority of previously identified positive feeding practices may be beneficial for all children, the success of parents' use of certain feeding practices may be dependent on individual differences in their children. What's more, it suggests that interventions which seek to tackle healthy eating in children should take children's temperament into account, with a more tailored approach to promoting healthy eating needed in future research.

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