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COMMONS DEED

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6 PREDICTORS OF PATERNAL AND MATERNAL CONTROLLING FEEDING
7 PRACTICES WITH 2 TO 5-YEAR-OLD CHILDREN
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10 Emma Haycraft, PhD.^a

11 Jackie Blissett, PhD., C.Psychol.^b
12

13 ^aLoughborough University Centre for Research into Eating Disorders,
14

Loughborough University, Leicestershire LE11 3TU, UK

15 ^bSchool of Psychology, University of Birmingham, Birmingham B15 2TT, UK
16
17
18

19 Address correspondence to: Dr. Emma Haycraft, Loughborough University Centre for
20

Research into Eating Disorders, School of Sport, Exercise and Health Sciences,
21

Loughborough University, Leicestershire LE11 3TU, UK.
22

Email: E.Haycraft@lboro.ac.uk;
23

[Not for publication] Tel. +44 (0)1509 228160; Fax. +44 (0)1509 223940
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ABSTRACT

Objective: This study aimed to identify predictors of controlling feeding practices in both mothers and fathers of young children.

Design: Cross-sectional, questionnaire design.

Setting: Nursery schools within the United Kingdom recruited participants.

Participants: Ninety-six mothers and fathers, comprising 48 mother-father pairs of male and female children aged 2 to 5 years.

Main outcome measures: Parents' child feeding practices, eating psychopathology, general mental health symptomology, and their children's eating behaviors and temperament.

Analysis: Preliminary correlations; stepwise regressions.

Results: Maternal controlling feeding was predicted by children's eating behaviors (emotional over- and under-eating), child temperament (sociability), and maternal general mental health symptoms. Paternal reports of children's eating behaviors (slow eating and emotional under-eating) were the only significant predictors of fathers' controlling feeding practices.

Conclusions and implications: Mothers' and fathers' feeding practices seem to be better linked to child characteristics than to the presence of eating psychopathology symptoms. Children's emotional eating predicted all three controlling feeding practices in mothers and warrants further study to elucidate the causal nature of this relationship.

[Abstract word count = 165]

Key words: child feeding; eating; temperament; pressure to eat; restriction.

53 PREDICTORS OF PATERNAL AND MATERNAL CONTROLLING FEEDING
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56 Over-controlling child feeding practices may contribute to the development of
57 childhood obesity, particularly in white, middle class samples (1,2). Practices such as
58 excessive overt restriction of children's food intake may promote childhood overweight by
59 inhibiting the child's development of self-regulatory processes in appetite regulation (3,1).
60 Researchers must endeavour to discover what circumstances might lead parents to use these
61 feeding practices with the aim of reducing practices which may unintentionally promote
62 childhood obesity.

63 Recent research has found children's temperament, feeding behaviors, and maternal
64 mental health to predict mothers' controlling feeding practices with their 1 and 2-year-old
65 children (4). In addition, the use of controlling feeding practices is thought to be fairly stable
66 (4,5). What is not known, however, is whether these same factors are predictive of the
67 controlling feeding practices used by mothers of children aged 2 to 5 years, and whether
68 fathers' feeding practices have similar predictors.

69 Symptoms of eating psychopathology in parents have been commonly associated with
70 the use of overly controlling feeding practices in both non-clinical and clinical samples. For
71 example, mothers with eating psychopathology or with their own eating and weight issues
72 have been found to be less sensitive and more coercive during mealtime interactions with
73 their children (6), use more restrictive child feeding practices with their daughters (7), and
74 carry out high levels of monitoring of their daughters' food intake (8). Fathers' dieting
75 attitudes and behaviors have also been shown to be important in predicting their sons' and
76 daughters' later weight concerns and dieting behaviors (9).

77 Other types of parental psychopathology have also been related to controlling feeding
78 interactions. Symptoms of anxiety and obsessive-compulsive disorder (OCD) have both been

79 related to greater maternal restriction of children's food intake (7,10). Depression has been
80 associated with increased application of pressure to eat in mothers of 5-year-old girls (7); a
81 practice which can also impair children's recognition of their internal responses to hunger and
82 satiety (3). Although studies examining fathers' psychopathology and feeding interactions are
83 scarce, a range of mental health symptoms have been shown to relate to fathers' use of more
84 pressuring and restrictive feeding practices with their young children (11).

85 While considerable effort has been devoted to identifying the parental factors that
86 predict maladaptive feeding practices, it is likely that there is an interaction between child
87 characteristics and parental practices. Much of the literature implies a causal relationship
88 between feeding practices and children's subsequent eating behavior and weight gain, but
89 parents are also likely to moderate their feeding practices according to their children's eating
90 behavior. For example, previous research (4) has found children's eating behaviors to be
91 important predictors of maternal controlling feeding practices with children at both one and
92 two years of age. It is likely that there is a multidirectional interaction between children's
93 eating behavior, weight status and parents' feeding behaviors. It has been suggested that
94 factors such as fussiness can be problematic for parents to manage (see 12) and children's
95 picky eating has been associated with parents applying pressure on their children to eat (13).
96 Hence, children's eating behaviors are expected to be good predictors of mothers' and fathers'
97 feeding practices with their 2 to 5-year-old children.

98 Difficult infant temperament can be related to problematic feeding interactions
99 between mother and child (14), and to children's unwillingness to try novel foods (15). The
100 role of infant temperament in non-clinical feeding difficulties has been widely established,
101 while its role in determining parents' feeding practices is less well understood. Infant
102 temperament, specifically maternal perceptions of infant dullness and unpredictability, has
103 previously been found to predict maternal control with 1- and 2-year-old infants (4), but no
104 work to date has examined temperament as a predictor of controlling feeding practices in a

105 sample of older children, or as a potential predictor of fathers' feeding practices.

106 The majority of research in the child feeding domain has considered mothers, yet
107 research suggests that fathers play important roles in child feeding (16-18). It is widely
108 accepted that mothers tend to have more responsibility than fathers for feeding a child and for
109 deciding on the types of food that the child eats. This difference has been reflected in the
110 literature with studies finding that mothers report having significantly greater feeding
111 responsibility than fathers, even in dual income families (16). Hence the current study aims
112 to further examine differences between mothers and fathers; this time examining which of a
113 series of factors might best predict mothers' and fathers' controlling feeding practices.

114 In summary, this study will examine whether measures of children's eating behaviors,
115 children's temperament, and parents' psychopathology will contribute to the explanation of
116 monitoring, pressure to eat and restrictive child feeding practices, in both mothers and fathers
117 of preschool children. Children's less adaptive eating behaviors (e.g., slowness, emotional
118 eating, and fussiness), difficult child temperament (e.g., less sociable, more emotional), and
119 greater reported levels of parental psychopathology were all hypothesised to predict more
120 controlling maternal and paternal feeding practices. In this exploratory, cross-sectional study,
121 reference to 'prediction' and 'predictors' refers to statistical prediction and does not imply
122 assumptions about causal relationships. Furthermore, differences in the predictors contained
123 within final models for mothers and for fathers were expected, in light of factors such as
124 mother-father differences in child feeding responsibility.

125

126

METHOD

Participants

128 Ninety-six parents constituting 48 mother-father pairs of children aged between 2 to 5
129 years took part in this study. The participants were recruited with the assistance of private
130 and Local Education Authority Nursery Schools from the West Midlands and

131 Cambridgeshire, UK. Approximately 2000 questionnaires were sent to nurseries and,
132 presuming that all of these were distributed, this suggests a response rate of 9.4%. Pairs of
133 returned questionnaires were matched up using an identifier code and participants were
134 excluded if they were not part of a pair of returned questionnaires or if they were not
135 cohabiting with their partner (n=72). Respondents were also excluded if the child they
136 reported on was under 24 or over 60 months of age (n=10 pairs). The mean age of the
137 mothers was 35 years (*SD* 4.28, range 23 to 46 years) and the mean age of the fathers was 37
138 years (*SD* 5.00, range 26 to 49 years). The mean age of the children was 42 months (*SD* 9.00,
139 range 24 to 59 months). Eighty percent of mothers and 83% of fathers had
140 managerial/professional occupations, as assessed by the National Statistics Socio-Economic
141 Classification self-coded method (NSSEC; 19). The NSSEC comprises four questions which
142 ask: 1. Whether the individual is (or was, when last in employment) an employer, self-
143 employed or an employee; 2. The size of organisation in which they work(ed); 3. Supervisory
144 status; and, 4. Current or most recent occupation. Responses to these questions lead to one of
145 the following five classifications: managerial/professional occupations; intermediate
146 occupations; small employers and own account workers; lower supervisory and technical
147 occupations; semi-routine and routine occupations. Ethnicity data were not collected, but the
148 nurseries involved in this study served primarily white neighbourhoods. Seventy-nine percent
149 (n=38) of the parents were married and 21% (n=10) were cohabiting.

150

151 *Measures and procedure*

152 Following institutional review board ethical approval, informed consent was obtained
153 from mothers and fathers and the following self-report questionnaires were administered via
154 nurseries. Questionnaires were returned via post to the researchers.

155 Child Feeding Questionnaire (CFQ) (20): The CFQ is a valid, reliable measure (20)
156 which assesses parental beliefs, attitudes and practices regarding child feeding, and examines

157 parental concerns about childhood obesity. The measure is suitable for use by mothers and
158 fathers. Parents reported on the following feeding practices: Monitoring (keeping track of
159 children's unhealthy food intake); Pressure to Eat (encouragement to eat more food); and
160 Restriction (limiting consumption of certain foods; using food as rewards). Responses are
161 indicated using a 5-point scale with response options ranging from "never" to "always" for
162 monitoring and from "disagree" to "agree" for the pressure to eat and restriction subscales.
163 Mean scores are calculated for each subscale with possible mean scores ranging from 1 to 5.
164 Higher scores indicate greater reports of each feeding practice.

165 Child Eating Behaviour Questionnaire (CEBQ) (12): The CEBQ assesses children's
166 eating styles based on parental reports of their child's behavior and has been shown to be
167 valid and reliable (12). Seven subscales which examine children's positive and negative
168 reactions to food were used: Food Responsiveness; Enjoyment of Food; Satiety
169 Responsiveness; Food Fussiness; Slowness in Eating; Emotional Over-Eating; and Emotional
170 Under-Eating. The Desire to Drink subscale was excluded from this study. The questions are
171 rated on a 5-point scale (1=never to 5=always), and five items are reverse scored. Mean
172 scores ranging from 1 to 5 are calculated for each subscale and higher scores indicate a
173 greater prevalence of that particular eating behavior.

174 EAS Temperament Survey for Children: Parental Ratings (EAS) (21): The EAS is a
175 parental self-report measure of children's temperament, comprising four subscales:
176 Emotionality; Activity; Sociability; and Shyness. Twenty statements are responded to on a 5-
177 point scale, ranging from 1 (not characteristic of your child) to 5 (very characteristic of your
178 child). Six items are reverse-scored. Mean scores from 1 to 5 are calculated for each
179 subscale. The EAS has previously demonstrated adequate psychometric properties (22).

180 Eating Disorder Inventory-2 (EDI-2) (23): The EDI-2 is a self-report measure of
181 eating disorder symptoms. It has been validated for use with non-clinical samples of men as
182 well as women (24) and has been found to display good reliability and validity (23). Only

183 questions pertaining to the three eating subscales were administered in this study: Drive for
184 Thinness; Bulimia; and Body Dissatisfaction. Each item is scored on a 6-point scale, with
185 options ranging from “always” to “never”. Six items are reverse-scored. A total EDI score
186 was calculated by summing the responses to all 23 questions. Possible scores ranged from 0
187 to 69. Higher scores indicate greater levels of pathology.

188 Brief Symptom Inventory (BSI) (25): The BSI is a measure of current, point-in-time,
189 psychological symptom status which is widely used and has good levels of reliability and
190 validity (26). The BSI consists of 53 questions and response options range from 0 (not at all)
191 to 4 (extremely). Higher scores indicate a greater experience of the symptom. As per
192 recommendations in the BSI manual (25), raw scores were converted to T-scores with
193 possible T-scores ranging from 33 to 80. For the purposes of this study, only the overall
194 measure of current level of symptomology (the Global Severity Index) will be used. The
195 Global Severity Index (GSI) is the most sensitive single indicator of the respondent’s distress,
196 and combines the number of symptoms reported with information about intensity of distress
197 (25).

198 Additional information: Parents were asked to report height and weight data for their
199 children. In addition, researchers completed height and weight measurements for 33% (n=16)
200 of the children in the current sample who were visited at home. Pearson’s one-tailed
201 correlations showed excellent concordance between parents’ reports of their children’s
202 heights and weights and those obtained by the researcher, suggesting reliability in these data
203 (*r* values .791 to .856, *p* values .001 to <.001). Children’s Body Mass Index (BMI) scores
204 were calculated and then converted into BMI standard deviation scores (BMI SDS) using the
205 Child Growth Foundation Reference Curves Disc (27), which standardises BMI for child age
206 and gender. The mean child BMI SDS was 0.02 (*SD* 1.73, range -3.46 to 3.04). Using the
207 international definitions for overweight and obesity in children aged over 2-years-old
208 established by Cole, Bellizzi, Flegal and Dietz (28), four children in this sample (8%) were at

209 risk of overweight in adulthood (i.e. having a BMI \geq 25 at age 18+) and five children (10%)
210 were classified as at later risk of obesity (i.e. a BMI \geq 30 in adulthood). Information was
211 requested about breastfeeding duration and, using the NSSEC, about mothers' and fathers'
212 socio-economic status (SES) (19), in addition to child BMI data, because these factors have
213 previously demonstrated relationships with eating, child BMI and controlling feeding
214 practices (4,20,29,30). Mothers and fathers were also asked to indicate the number of meals,
215 during a typical week, that they ate with their child.

216

217 *Data analysis*

218 The majority of the data were identified as being non-normally distributed and so non-
219 parametric tests were used where possible. Significance levels were set at $p < .05$ for all
220 analyses.

221 There were no significant differences in parents' feeding practices dependent on the
222 gender of the child. Therefore, child gender was not examined further in this study.

223 Two-tailed Spearman's correlations were conducted to examine the relationships
224 between potentially confounding variables (child BMI SDS, child and parent age, parents'
225 SES, and breastfeeding duration) with mothers' and fathers' child feeding practices. There
226 were no significant correlations between any of these factors with maternal or paternal
227 reported feeding practices and so these factors were not entered into any of the subsequent
228 regression analyses. It is particularly noteworthy that child BMI SDS was not related to either
229 maternal or paternal child feeding practices and so was not controlled for in any of the
230 following regressions.

231 As the sample size was modest, and in order to maintain power when using
232 regressions, a series of two-tailed Spearman's correlations were initially conducted to identify
233 significant correlates for entry into the regression equations.

234 A series of stepwise multiple linear regressions were then run to test the hypothesis
235 that children's maladaptive eating behaviors (e.g., slowness, emotional eating, and fussiness),
236 difficult child temperament, and greater reported parental psychopathology were likely to
237 predict more controlling parental feeding practices. Mothers' reports were used to predict
238 their feeding practices and fathers' feeding practices were predicted from paternal reports, in
239 order to examine how each parent's perceptions of their child are related to their reported
240 child feeding practices. The distribution of the CFQ subscales is noteworthy, being a mixture
241 of normally (maternal reports of pressure to eat and restriction) and non-normally (all paternal
242 CFQ subscales and maternal monitoring) distributed. There is no non-parametric equivalent
243 of regression analysis, but the use of multiple regression analyses was deemed suitable on
244 these data as Field (31) has stated that "predictors do not need to be normally distributed"
245 (p.170), rather it is the normal distribution of the errors which is important. Hence, the data
246 were screened for violations to the regression assumptions as outlined by Tabachnick and
247 Fidell (32). Stepwise regressions were chosen in view of the exploratory nature of these
248 analyses. Six regressions were conducted to examine the predictive value of children's eating
249 behaviors, children's temperament and parent mental health on mothers' and fathers' feeding
250 practices.

251 RESULTS

252
253 --- TABLE 1 ABOUT HERE ---
254

255 *Descriptive statistics*

256 The data obtained from mothers and fathers in the current study (Table 1) are broadly
257 in line with data obtained in other studies which have used the CFQ (16), CEBQ (12), EAS
258 (22), EDI-2 (11) and BSI (25). The reliability of these measures with the current sample
259 ranged from acceptable to excellent (Table 1). Nine mothers (19%) and 8 fathers (17%) had a

260 GSI score of 63 or more, which is the cut-off for clinical concern or “caseness” (25, p.32).
261 Four mothers (8%) but no fathers had scores on the EDI-2 that indicated potential clinical
262 caseness in their reports of their drive for thinness. This difference in EDI-2 scores is in line
263 with findings from another sample of parents of preschoolers (16), where mothers reported
264 more eating disorder symptoms than fathers. No participants’ scores reached a clinically
265 significant level of bulimia symptoms. Mothers reported eating a mean of 15 meals (*SD* 4.06)
266 per week with their child and for fathers, the mean was 11 meals (*SD* 3.51). This is in
267 accordance with previous work which has found both fathers and mothers in two parent
268 families to eat frequently with their children (17).

269

270 --- TABLE 2 ABOUT HERE ---

271

272 Significant correlates shown in Table 2 were selected for entry into regression
273 analyses to identify predictors of mothers’ and of fathers’ feeding practices. It is noteworthy
274 that maternal and paternal reports on the CEBQ were all positively and significantly
275 associated ($p < .05$) with the exception of emotional under-eating, for which there was
276 evidence of a trend ($p = .075$) (data not shown), suggesting similarity in parental judgement of
277 children’s eating behaviors.

278

279 --- TABLE 3 ABOUT HERE ---

280

281 **Predictors of maternal and paternal monitoring:** Greater maternal monitoring was
282 predicted by lower levels of children’s emotional over-eating and lower child sociability
283 (Table 3). Higher levels of paternal monitoring were predicted by lower levels of children’s
284 emotional under-eating. Child temperament did not predict paternal monitoring and neither
285 eating disorder symptoms nor general mental health predicted maternal or paternal

286 monitoring.

287 **Predictors of maternal and paternal pressure to eat:** The significant predictors of
288 higher levels of maternal pressure to eat were mothers' reports of their children emotionally
289 under-eating and higher levels of maternal general mental health symptoms (GSI). Children's
290 temperament and maternal eating disorder symptoms did not predict maternal use of pressure.
291 Children's slowness in eating was the only significant predictor of greater paternal use of
292 pressure to eat. Paternal mental health symptoms and children's temperament did not
293 significantly predict fathers' pressuring feeding practices.

294 **Predictors of maternal and paternal restriction:** Maternal restriction was solely
295 predicted by higher levels of children's emotional over-eating. Children's temperament and
296 maternal mental health did not predict mothers' restrictive feeding practices. For fathers, their
297 use of restriction was predicted by children's slowness in eating. Fathers' own mental health
298 scores and children's temperament were not significant predictors of their use of restriction.

299

300

DISCUSSION

301 The current study aimed to identify parent and child variables which best predicted
302 controlling child feeding practices in a sample of mothers and fathers of 2- to 5-year-old
303 children. It also aimed to highlight differences between mothers and fathers in the patterns of
304 significant predictors of their feeding practices. Different patterns of predictors were found
305 for mothers and fathers, and child factors were recurrent predictors of parental feeding
306 practices. Fathers' feeding practices were predicted entirely by their children's slow or under-
307 eating behaviors. In contrast, maternal feeding practices were predicted by a more complex
308 set of predictors, including children's emotional eating behavior, child sociability and
309 maternal mental health symptoms.

310 For mothers, monitoring behavior was best predicted by their reports of their child's
311 sociability and emotional over-eating. Having a less sociable child predicted greater

312 monitoring of children's snack or junk food intake. Previous studies have associated difficult,
313 unsociable child temperaments with negative mealtimes and difficult feeding interactions
314 (14,15). Hence, it is possible that increased monitoring is a response to eating difficulties in
315 children with unsociable temperaments. Additionally, mothers tended to monitor their
316 children's food intake more when their children were less likely to emotionally over-eat.
317 Moderate levels of monitoring can be adaptive (2). Therefore, this finding may indicate that
318 these mothers are implementing appropriate covert control over their children's eating, by
319 monitoring their food intake, and that these children have healthier eating attitudes, as
320 illustrated by them being less likely to emotionally over-eat.

321 Lower reported levels of children's emotional under-eating predicted more paternal
322 monitoring of their children's food intake. These findings also accord with the suggestion
323 that appropriate levels of monitoring can relate to healthier eating behaviors, as fathers who
324 keep track of their children's food consumption have children who are less likely to
325 emotionally under-eat.

326 Mothers' reports of emotional under-eating in their children and symptoms of mental
327 health problems best predicted maternal reports of applying pressure for their children to eat.
328 Pressure to eat often occurs when parents feel that their child is eating insufficient food
329 (7,13). If mothers perceive their children to be under-eating, albeit in response to emotional
330 situations, then it is unsurprising if this predicts them pressuring their children to eat.
331 However, it could also be that it is the mothers' pressuring feeding behaviors which lead to
332 their children refusing food or under-eating, due to the creation of a negative environment
333 surrounding eating and mealtimes. The association between negative mealtimes and food
334 refusal has been found in previous research (33). Maternal mental health symptoms also
335 predicted maternal use of pressure. Mental health symptoms have previously been related to
336 the use of pressuring (7,11) and restrictive (7,10) feeding practices. It is suggested that these
337 symptoms may impair parents' sensitivity and responsiveness to their children, which may

338 extend into the feeding domain, with feeding interactions being more controlling. It is
339 noteworthy that this finding accords with that of a previous study (4), where mental health
340 symptoms also predicted pressure to eat in a sample of mothers with 2-year-old children.

341 Children's slowness in eating predicted fathers' application of pressure for their
342 children to eat. Children who are slow eaters may elicit parental pressure to finish the meal,
343 or alternatively, paternal pressure may create a negative mealtime, leading to children eating
344 more slowly. Previous literature has suggested that children's slow eating can be an indicator
345 of heightened responsiveness to satiety (34). Pressuring children who parents perceive are
346 slow eaters may suggest that these parents are encouraging their children to eat beyond
347 satiety.

348 Children's emotional over-eating was the only predictor of restrictive feeding
349 practices in mothers. Mothers who use restrictive feeding practices may be particularly
350 sensitive to their children's eating behavior in response to emotion. If mothers feel that their
351 children tend to eat more in response to emotional situations, then they may restrict their
352 children's unhealthy food intake as a way of ensuring that their child eats more healthily. It is
353 also possible that maternal tendencies to impose restriction may be teaching children
354 emotional responses to food, rather than allowing children autonomy in their food choices.

355 Paternal restriction was predicted by children's slowness in eating. Children may eat
356 slowly as a response to higher levels of paternal restriction; mealtimes may be more
357 controlling, less enjoyable, constituted of less palatable or preferred foods, potentially leading
358 to greater conflict and to children eating more slowly. Alternatively, it is possible that fathers
359 who perceive their children to be slow eaters are more likely to impose restrictive feeding
360 practices upon their children. Slow eating is often associated with smaller appetites (34), and
361 fathers may perceive that slow eating during meals may be due to snacks that they have eaten
362 prior to the mealtime. Greater restriction of snack and junk foods may thus follow.

363 The regression analyses presented in this paper have supported and extended previous

364 findings (4). This study has shown that similar factors to those found with mothers of 1- and
365 2-year-old children are predictive of both parents' controlling feeding practices with a group
366 of preschool children. Furthermore, this study has shown that these parental feeding practices
367 were frequently predicted by children's eating behaviors. As expected, the factors predicting
368 maternal and paternal use of controlling feeding practices differed, with children's emotional
369 eating significantly predicting mothers' feeding practices and children's slow eating being a
370 recurrent predictor of fathers' feeding practices. There is a tentative suggestion from these
371 data that fathers' feeding practices may be predicted by less complex factors than mothers'
372 feeding practices, with fathers' practices predicted by children's eating behaviors and
373 mothers' practices predicted by their own mental health, their child's emotional eating
374 behaviors, and their child's temperament. While we have demonstrated that practices
375 performed by mothers and fathers are associated with different predictors or correlates, it is
376 important to note that we do not believe that a particular practice performed by a father is
377 necessarily different from the same practice performed by a mother, or that the potential
378 impact of a practice delivered by a mother rather than a father will be necessarily different.
379 Paternal practices may be more clearly, and perhaps more simply, related to the child's eating
380 behaviors, whereas maternal practices may be related to a broader spectrum of factors related
381 to both child and maternal characteristics. These characteristics may not be limited to eating
382 but are perhaps linked to mothers' wider relationships, interactions or mental states. It is
383 possible that each parent's parenting style or emotional tone might moderate the relationship
384 between practice and outcome. For example, paternal pressure to eat may be delivered with a
385 different emotional context than maternal pressure to eat, which in turn may have different
386 effects on children's eating. This remains speculative because our self-report study was
387 unable to examine such factors and as yet no studies have examined these potential
388 differences.

389 That children's BMI SDS did not correlate with any parental feeding practices is in

390 line with some previous findings (35). It is possible that, as most of the children in the current
391 sample were neither overweight nor obese, these parents' feeding practices may be more
392 responsive to their children's eating behaviors and temperament than their child's BMI. It
393 would be interesting to see if the same findings occurred between child BMI SDS and feeding
394 practices in parents of obese or overweight children.

395 The current study failed to find evidence of eating disorder symptoms as significant
396 predictors of mothers' or fathers' use of controlling feeding practices with their young
397 children. This is contrary to other findings (11) but may be because of the low prevalence of
398 eating psychopathology in this sample, so should not be interpreted as evidence that parental
399 eating psychopathology does not relate to maladaptive feeding practices in clinical groups.

400 The fact that completed questionnaires were required from cohabiting pairs of mothers
401 and fathers in order to be included in this study, and the fairly high levels of SES and years of
402 education after the age of 16, limits the generalisability of this study's findings to middle
403 class, well-educated parents residing in the same household. Despite this fact, this study is
404 the first to examine predictors of maternal and paternal feeding practices, and research with
405 fathers within the child feeding domain is sparse and has been called for in previous literature
406 (16,18). The non-clinical sample limits the clinical implications of our findings but further
407 work with clinical samples might find psychopathologies to be stronger predictors of feeding
408 practices in parents with clinically significant psychopathology. A strength of this study is
409 the inclusion of cohabiting mother-father pairs, but a by-product of this is the study's
410 relatively small sample size. A lack of prior research with a similar sample and the same
411 measures prevented us from carrying out a prospective power calculation. However,
412 retrospective power analyses suggest that the effect sizes in our (relatively small) sample
413 range from large (predicting maternal pressure) to small (predicting maternal restriction).
414 Although the self-report nature of this study is not ideal, it was considered suitable for this
415 study and previous work has demonstrated reliability in parental self-reports regarding child

416 feeding (36) and the CEBQ has been shown to correlate well with children's food intake (34).
417 Furthermore, the cross-sectional nature of this study means that causality cannot be inferred
418 and so future longitudinal work would help to elucidate the direction of some of the feeding
419 relationships seen in this study.

420 Implications for research and practice

421 Predictors of mothers' and fathers' feeding practices were examined for an
422 amalgamated sample of boys and girls and, although there were no significant differences
423 between boys' and girls' outcome variables in this study, the study's sample size was not
424 large enough for an examination of the potentially different models of feeding practices
425 dependent on child gender. However, in view of the literature which states the importance of
426 considering child gender when examining feeding interactions (8,11,16,37), future work
427 should continue to examine the role of child gender in the prediction of parental feeding
428 practices.

429 The inclusion of pairs of mothers and fathers will broaden the potential implications of
430 this work for professionals working within the fields of nutrition, dietary behaviors and
431 obesity. Given that appropriate levels of control over children's feeding have been suggested
432 to link to more adaptive child feeding outcomes (2,16,13), professionals can advise families
433 who have concerns about their children's eating regarding appropriate monitoring of food
434 intake and the reduction of excessively restrictive and pressuring feeding practices. Although
435 the participants in our study were a non-clinical sample, our findings suggest that, where
436 possible, professionals should attempt to establish both maternal and paternal concerns about
437 children's eating behaviors, given that both mothers and fathers are engaged in frequent
438 eating interactions with their children, and that their concerns relate to more controlling
439 practices in both parents. Furthermore, practitioners should pay attention to child
440 temperament and maternal mental health issues when assessing maternal feeding practices.

441 Engaging and educating both parents about the importance of sensitive feeding practices may
442 add to the efficacy of prevention and intervention programs.

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534 *Table 1: Descriptive and reliability statistics for mothers and fathers on the Child Feeding*
 535 *Questionnaire, Children’s Eating Behaviour Questionnaire, EAS Temperament Survey,*
 536 *Eating Disorder Inventory-2, and Brief Symptom Inventory*

	Mothers (n=48)		Fathers (n=48)	
	Mean (SD)	Cronbach’s alpha	Mean (SD)	Cronbach’s alpha
Child Feeding Questionnaire				
Monitoring	4.44 (0.75)	.94	3.44 (0.97)	.94
Pressure to Eat	2.97 (0.81)	.58	3.07 (0.88)	.54
Restriction	3.43 (0.79)	.76	3.50 (0.76)	.74
Child Eating Behaviour Questionnaire				
Food Responsiveness	2.33 (0.58)	.74	2.23 (0.60)	.69
Enjoyment of Food	3.63 (0.62)	.88	3.61 (0.67)	.90
Satiety Responsiveness	3.17 (0.56)	.74	3.09 (0.54)	.74
Food Fussiness	3.07 (0.72)	.88	2.92 (0.73)	.90
Slowness in Eating	3.05 (0.63)	.78	3.06 (0.64)	.76
Emotional Over-Eating	1.77 (0.55)	.66	1.81 (0.52)	.68
Emotional Under-Eating	3.26 (0.77)	.72	3.27 (0.76)	.78
EAS Temperament Survey				
Shyness	2.48 (0.78)	.82	2.52 (0.85)	.81
Emotionality	2.91 (0.84)	.88	2.88 (0.84)	.84
Sociability [†]	4.14 (0.51)	.60	3.85 (0.67)	.74
Activity	4.15 (0.68)	.81	4.01 (0.77)	.85
Eating Disorder Inventory-2				
EDI total	16.29 (12.35)	.94	7.19 (6.63)	.80
Brief Symptom Inventory				
Global Severity Index	53.08 (9.82)	.96	52.15 (11.16)	.93

537 [†] Analyses revealed that the Cronbach’s alpha coefficient for the EAS improved if question 18
 538 was removed (part of the Sociability subscale). Thus, question 18 was removed and all
 539 analyses were conducted without it contributing to the Sociability subscale.

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542 *Table 2: Two-tailed Spearman’s correlations between controlling feeding practices (CFQ)*
 543 *and children’s eating behaviors (CEBQ), children’s temperament (EAS), parental eating*
 544 *disorder symptoms (EDI-2), and parental mental health (BSI) for mothers and for fathers.*

	Mothers (n=48)			Fathers (n=48)		
	Mon	PtE	Rest	Mon	PtE	Rest
Child Eating Behaviour Questionnaire						
Food Responsiveness	.012	-.039	.275	-.274	-.056	.083
Enjoyment of Food	-.046	-.361*	.001	.059	-.254	.033
Satiety Responsiveness	-.210	.138	.182	-.266	.188	.124
Food Fussiness	-.040	.332*	.011	-.248	.304*	.132
Slowness in Eating	.068	.387**	.106	-.221	.397**	.287*
Emotional Over-Eating	-.357*	.300*	.385**	-.217	.049	.091
Emotional Under-Eating	-.023	.403**	.299*	-.397**	.067	.059
EAS Temperament Survey						
Shyness	.158	.039	.188	-.273	.241	.259
Emotionality	-.059	.254	.197	-.122	.173	.316*
Sociability	-.354*	.042	.011	.347*	-.161	-.260
Activity	-.153	.085	.129	.228	-.096	-.126
Eating Disorder Inventory-2						
EDI total	-.167	.210	.113	-.231	.071	.140
Brief Symptom Inventory						
Global Severity Index	.016	.376**	.256	-.263	.248	.227

545 *p≤.05, **p≤.01 Mon: Monitoring; PtE: Pressure to Eat; Rest: Restriction.

546 Table 3: Stepwise regression analyses to predict monitoring, pressure to eat and restriction in mothers (n=48) and in fathers (n=48)

Feeding practice predicted	Maternal predictors				Paternal predictors					
		Model R ²	Model F	t for individual predictors	β for individual predictors		Model R ²	Model F	t for individual predictors	β for individual predictors
Monitoring	Sociability	22.2	6.41**	-2.77**	-.36**	Emotional	21.6	12.11***	-3.48***	-.347***
	Emotional Over-Eating			-2.35*	-.31*	Under-Eating				
Pressure to Eat	Emotional Under-Eating	26.5	8.12***	2.70**	.36**	Slowness in eating	19.6	11.24**	3.35**	.44**
	Global Severity Index			2.12*	.28*					
Restriction	Emotional Over-Eating	10.1	5.15*	2.27*	.32*	Slowness in eating	15.7	8.18**	2.86**	.40**

547 *p≤.05, **p≤.01, *** p≤.001, ****p≤.0001