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**Adolescents' level of eating psychopathology is related to perceptions of their parents' current feeding practices.**

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## Abstract

**Purpose:** This study aimed to examine the relationships between adolescents' eating disorder attitudes and their perceptions of the feeding practices that their parents/caregivers currently use.

**Methods:** Boys and girls (N=528) aged 13-15 completed self-report measures of their levels of eating psychopathology and their parents' current feeding practices and reported their own height and weight.

**Results:** For girls, greater perceived pressure from parents to eat food and lower perceived parental responsibility for food were significantly related to more unhealthy eating-related attitudes. Similar to girls, lower perceived parental responsibility for food was significantly related to greater levels of eating psychopathology in boys. Greater perceived parental restriction of foods was also significantly related to greater eating psychopathology in boys. **Conclusions:** These results suggest that adolescents' perceptions of their parents' use of more controlling feeding practices are related to greater prevalence of unhealthy eating-related attitudes. Such findings have potentially important implications for the prevention of disordered eating in adolescents.

**Keywords:** eating disorders; adolescents; eating attitudes; parental feeding practices; perceived feeding responsibility; pressure to eat; restriction; monitoring.

**Implications and contribution:** Adolescents' perceptions of their parents' food- and mealtime-related practices are related to their own unhealthy eating-related attitudes. Advising parents/caregivers to avoid using controlling feeding practices with their teens is recommended for promoting more positive eating behaviours and sustained behaviour changes within adolescents and their families.

## **Adolescents' level of eating psychopathology is related to perceptions of their parents' current feeding practices**

Parental use of controlling feeding practices has been shown to be related to children's inability to regulate their own food intake (1,2,3), to children's weight status (2,4,5), and to the later development of disordered eating behaviours (6). Specifically, the use of restrictive feeding practices has been found to relate to children's restrained eating (7) and pressure to eat has been associated with young girls' later dietary restraint and disinhibited eating (8). In addition, parental monitoring of their children's food intake has been associated with increased child weight (9), but also with children's food choices, with children making healthier food selections when they know that their parents are monitoring them (10). The degree of control exerted by parents with regard to child feeding provides a potential behavioural mechanism via which parental attitudes and beliefs may be transmitted to their children (9).

While research has tended to focus on parents' feeding practices with young children, when eating and feeding is primarily under parental control, parents/caregivers still maintain a degree of responsibility for feeding their child throughout childhood and into adolescence (11). Adolescence is a key time for the onset of eating disorders (12) and identifying modifiable factors associated with the development of eating psychopathology is a primary aim for health professionals. Engaging in family mealtimes, prioritising eating as a family and having more positive mealtimes have all been shown to be associated with lower levels of (13), and to be protective against (14), eating disordered behaviours among adolescents. However, given the established associations between parental control around feeding with both disruptions in children's appetite regulation (1-3) and with the development of disordered eating (6-8), it follows that parents' feeding practices may be linked to the eating attitudes and behaviours of their adolescent offspring. Indeed, previous work has begun to examine early adolescents' perceptions of parental feeding control, finding that perceived parental restriction of food was related to adolescents' dietary restraint (7). However, the impact of parental use of pressure,

monitoring of food intake and responsibility for food/meals has not been assessed previously in adolescents.

Much of the research into feeding practices has focused on parental reports, which have been shown to be valid and reliable indicators of parents' feeding practices (15,16), but adults and adolescents living in the same household have been found to differ in their perceptions of the family mealtime environment and adolescent eating patterns (17). Therefore, there is value in obtaining adolescents' views of their parents' feeding practices, given that these perceptions might be related to, or impact on, their eating attitudes and behaviours.

In summary, parental use of controlling feeding practices has been associated with disruptions in their offspring's ability to regulate their food intake and to the development of eating disordered attitudes and behaviours. These findings are primarily based on data provided by parents, meaning that adolescents' perceptions of their parents' mealtime practices have not been thoroughly explored. Moreover, while eating disorders are more prevalent in females, males experience eating disorder symptoms too and thus it is important that research considers both adolescent girls and boys (18). To date, research has not examined the relationships between adolescents' perceptions of a wide variety of their parents' feeding practices with reports of their eating psychopathology. This study aimed to address this gap. Based on previous findings (6-8), it was predicted that perceptions of more controlling feeding practices (more pressure to eat and restriction of foods) would be related to significantly greater eating disorder symptoms in both girls and boys.

## **Method**

### *Participants*

Adolescents (N=828) aged 13-15 years were recruited via schools within the UK as part of an on-going study into eating and exercise. Participants completed self-report measures (see below) and also reported their age, gender, height and weight. Many participants did not know their height and/or weight, resulting in a significant amount of missing data. As body mass index (BMI) is frequently associated with eating disorder symptoms (19) and feeding practices (20), and therefore needed to be controlled for in our analyses, only participants for whom complete BMI data were available were retained<sup>1</sup>. This left a final sample of 528 adolescents (275 females and 253 males). BMI z-scores (BMIz), accounting for age and gender (21), were calculated for the sample. The average BMIz score for girls was -0.00 (SD = 1.13) and for boys was 0.37 (SD = 1.37), indicating generally healthy weights.

### *Measures and procedure*

Following Institutional Review Board ethical approval, five schools were recruited to take part in this study. After providing written informed consent, participants completed two self-report measures during a designated lesson at school. Class teachers in each school administered the survey and were provided with a 'script' in order to standardise the procedure. No incentives were provided to pupils for taking part in this study and participants not wishing to take part completed an alternative task.

### Child Feeding Questionnaire-Adolescents (CFQ-A (20,22))

The CFQ (22) assesses parents' reports of their child feeding practices. It was adapted by Kaur and colleagues (20) for use by parents of adolescents and we made further minor modifications to those adapted questions so that they were suitable for adolescents to complete about their perceptions of their parents' feeding practices. For example, "How often do you keep track of the high fat food that your teen eats?" was rephrased to "How often do your parents keep track of the high fat foods that you eat?". The 5-point Likert scale response options and scoring remained the same. Four of the CFQ subscales were of relevance to this study, namely those which tap feeding practices and responsibility:

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<sup>1</sup> In comparison to individuals who provided BMI data and were retained in the sample, individuals for whom BMI data were not available did not differ significantly on any of the CFQ-A subscales but had significantly higher EDI total scores ( $z = -2.53$ ,  $p = .011$ ).

perceived feeding responsibility (e.g., "How often are your parents responsible for deciding if you have eaten the right kind of foods?"); monitoring (e.g., "How often do your parents keep track of the sugary beverages that you drink?"); pressure to eat (e.g., "If you say "I'm not hungry", your parents try to get you to eat anyway"); and, restriction (e.g., "If my parents did not guide or regulate my eating, I would eat too many junk foods."). Average scores are calculated for each subscale and higher scores indicate greater use of each feeding practice. The CFQ has been widely used as a measure of feeding practices and both versions have demonstrated adequate reliability (20,22). The Cronbach's alphas for the CFQ-A in this sample were satisfactory (perceived responsibility  $\alpha$  0.68; monitoring  $\alpha$  0.90; pressure to eat  $\alpha$  0.63; restriction  $\alpha$  0.85).

#### Eating Disorder Inventory-II (EDI (23))

Questions from the three eating-related subscales of the EDI, which assess drive for thinness, bulimic symptoms and body dissatisfaction, were included in this study. Participants responded to each of the 23 items on a 6-point Likert scale and responses were summed to create a total EDI score, where higher scores correspond to greater eating disorder symptoms (score range 0-66). The EDI is valid for use with adolescents (24) and has been used successfully with non-clinical adolescent samples (25). In the current sample, the Cronbach's alpha for the EDI total was 0.92.

#### *Data analysis*

Kolmogorov-Smirnov tests identified the data to be non-normally distributed and therefore non-parametric tests were used, where possible. Preliminary Mann Whitney U tests confirmed significant differences between boys and girls on several of the study's variables (see Table 1), so subsequent analyses were run for boys and girls separately. Furthermore, Spearman's correlations were conducted between adolescents' age and BMI z-scores with the EDI and CFQ-A subscales. BMIz was significantly and positively associated with EDI total for both girls ( $r = .304$ ,  $p < .001$ ) and boys ( $r = .244$ ,  $p < .001$ ) and to restriction for girls ( $r = .156$ ,  $p < .05$ ), and was negatively correlated with pressure for

boys ( $r = -.159, p < .05$ ). BMIz was therefore controlled for in the analyses. To test the hypothesis that more controlling feeding practices would be related to greater eating disorder symptoms, two multiple regressions (enter method) were run. BMIz was entered into Step 1 and the four CFQ-A subscales were entered into Step 2 as potential correlates (statistical predictors) of EDI total.

## Results

### *Descriptive statistics*

Descriptive statistics for this sample can be seen in Table 1, along with the results of the Mann Whitney U tests conducted to identify gender differences.

---TABLE 1 ABOUT HERE---

Girls' scores on the EDI total and pressure to eat subscale were significantly higher than boys' scores. Boys' restriction scores were significantly higher than girls' scores. There were no other significant differences.

Multiple regressions were run separately for boys and girls to test the hypothesis that more controlling feeding practices would be related to greater eating psychopathology (see Table 2).

---TABLE 2 ABOUT HERE---

For girls, the overall model was significant ( $F = 9.067, p < .001$ ) and accounted for 16% of the variance. BMIz and perceived pressure to eat were both positively associated with EDI total and perceived feeding responsibility was negatively associated with EDI total. Monitoring and restriction were not significantly associated with EDI total. For boys, the overall model was significant ( $F = 12.820, p < .001$ ) and accounted for 23% of the variance. BMIz and perceived restriction were both positively associated



with EDI total and perceived feeding responsibility was negatively associated with EDI total. Monitoring and pressure to eat were not significantly related to EDI total.

## Discussion

This study aimed to examine the relationships between adolescents' eating-related attitudes and their reports of their parents' practices around food and mealtimes. The study's hypothesis was supported. Specifically, adolescent boys who reported feeling greater parental restriction of food and adolescent girls who reported greater perceived parental pressure to eat also reported higher levels of eating psychopathology. In addition, male and female adolescents' perceptions of greater levels of food responsibility from parents were associated with lower eating psychopathology scores.

Adolescence is a time of developing autonomy. While these data suggest that adolescents' perceptions of their parents' monitoring of their food intake is not related to their eating disorder symptoms, perceiving their parents as being less responsible for their food or more controlling were significantly related to disordered eating. The cross-sectional nature of these data prevents us from determining cause and effect, so it is not known whether these feeding practices may be being used by parents as a result of their adolescent engaging in less healthy eating behaviours, or whether disordered eating has resulted from these practices. These findings support and extend previous research (7) by highlighting adolescents' perceptions of parental control as correlates of their unhealthy eating attitudes. Interestingly, the current study found different feeding practices to be significantly related to eating psychopathology for girls and boys. For girls, it was perceived pressure to eat more food which was related to higher levels of eating psychopathology, while for boys, greater restriction of food was linked to eating psychopathology. Pressure to eat is often used with children who are underweight (26,27) and it is possible that parents might be using this practice to encourage adolescent girls who may be restricting their intake to eat more. Interestingly, boys' perception of parental food restriction was related to greater levels of eating psychopathology. Parental use of restrictive feeding

practices has been found to relate to children's restrained eating (7) and so these findings support previous work by identifying an association between perceived restriction and eating pathology in boys. Restriction is often associated with parental concern about overweight, both in themselves (28) and their children (2,4,5), and so it may be that parents with such concerns are likely to restrict their son's food intake but do not feel comfortable restricting girls' intake, believing that this would be dangerous for girls, given the well-publicised incidence of restrictive eating problems among females.

Adolescents' perceptions of their parents being more responsible for their food was related to lower levels of eating psychopathology in both girls and boys. These findings suggest that parental involvement in meals is related to healthier eating-related attitudes in this sample, which concurs with evidence highlighting the protective effect of family meals for the development of eating disorders in adolescence (14). While previous studies have demonstrated the adverse impact that controlling feeding practices can have on children's eating behaviours (1-4), the current study's finding highlights that moderate amounts of parental involvement in their child's eating, such as being responsible for providing food and meals, may be beneficial for children's on-going relationships with food and eating.

While much research has focussed on parents' reports of their feeding practices, a strength of this study is the consideration of adolescents' perceptions of their parents' feeding and food-related practices, which has enabled consideration of the relationship between these perceptions about parents' attitudes towards food/mealtimes and adolescents' own eating behaviours. This preliminary study also benefitted from having a good sample size, was sufficiently powered to detect significant results, and considered both girls and boys. Despite these strengths, the study had some limitations. Adolescents self-reported their height and weight data, resulting in a significant amount of missing data which therefore reduced the sample size. Research has shown self-reported height and weight to be relatively accurately reported in adults (28) but future research would benefit from including an objective assessment of adolescents' height and weight data as the accuracy of these adolescents' reports

cannot be determined. Furthermore, many participants did not know their height and/or weight, which resulted in them being removed from the sample. Analyses suggested that these individuals had higher EDI total scores than those who provided BMI data, which indicates that our sample may not have included those with more extreme eating disordered attitudes and behaviours. Although demonstrating adequate reliability in this sample, the CFQ-A was adapted for this study and requires further validation and testing. Future research, building on this study, should consider adolescents' views of their mothers' and fathers' feeding interactions separately, in view of evidence demonstrating that mothers and fathers can exhibit different influences on their children's eating (29). Future research would also benefit from obtaining reports from adolescents and their parents, in order to identify correspondence between parent-child reports and to explore differences or similarities in the relationships seen depending on the respondent. Moreover, adolescents with greater levels of disordered eating might be more sensitive to food-related behaviours exhibited by their parents, which might have impacted on their responses in this study, and so obtaining perceptions of feeding practices from both adolescents and their parents is therefore encouraged in future studies which aim to build on our initial findings.

Clinicians, health professionals, and others (e.g., teachers) working with adolescents and their families would benefit from a greater awareness of the potential link between parents' feeding practices and adolescents' attitudes towards food and eating. While engaging in and enjoying family mealtimes is recommended during adolescence (13,14,30), advising parents and caregivers to avoid the use of overly controlling feeding practices with their teens is likely to be an effective and easy-to-implement way to contribute to more positive eating behaviours and is in line with efforts to bring about sustained behaviour changes within adolescents and their families (30).

Parents have been found to be more likely to use controlling feeding practices when they have their own eating or weight concerns (31), symptoms of psychopathology (32), or are overweight themselves

(28). Thus, in families of adolescents where health professionals identify a risk of parental use of controlling feeding (e.g., in obese parents or those with eating disorders), it may be beneficial to recommend the avoidance of controlling practices and to encourage parents take some degree of responsibility for their adolescent's meals / food provision. Furthermore, assessing parental eating psychopathology is also recommended for future studies in view of the intergenerational transmission of eating psychopathology (33) and the established links between parental eating disorder symptoms and the use of controlling feeding practices (29,32,34).

In conclusion, this study has provided preliminary evidence for the links between adolescents' perceptions of their parents' food- and mealtime-related practices and their levels of unhealthy eating-related attitudes. Girls' perceptions of parental pressure to eat and boys' perceptions of restriction of food were associated with higher levels of eating disorder symptoms. Further work is required to test these relationships longitudinally, in order to identify the temporal precedence.

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*Table 1: Descriptive statistics for the EDI total and CFQ subscales and tests of difference between girls' and boys' scores*

	Girls		Boys		Mann Whitney U
	Mean (SD)	Min - Max	Mean (SD)	Min - Max	
EDI total	18.30 (14.35)	0 - 61	8.51 (10.31)	0 - 60	10.84***
CFQ perceived responsibility	3.64 (0.82)	1 - 5	3.57 (0.89)	1 - 5	0.74
CFQ monitoring	2.63 (1.10)	1 - 5	2.61 (1.08)	1 - 5	0.02
CFQ pressure to eat	3.16 (0.94)	1 - 5	2.94 (0.83)	1 - 5	2.97**
CFQ restriction	2.18 (0.87)	1 - 5	2.37 (0.90)	1 - 5	3.07**

\*\* p<.01; \*\*\* p<.001

*Table 2: Results of the multiple regressions, for girls and for boys, examining BMI Z scores and CFQ scores as potential correlates (statistical predictors) of EDI scores.*

	EDI scores			
	Girls		Boys	
	Beta	t	Beta	t
BMI Z score	0.32	5.27***	0.289	4.52***
CFQ perceived responsibility	-0.12	1.93*	-0.23	3.66***
CFQ monitoring	0.05	0.76	0.10	1.43
CFQ pressure to eat	0.17	2.76**	-0.04	0.61
CFQ restriction	0.09	1.29	0.29	4.21***

\* p<.05; \*\* p<.01; \*\*\* p<.001