Mothers' experiences of their own parents' food parenting practices and use of coercive food-related practices with their children

Chloe Patel [a,*], Emma Shuttlewood [b], Eleni Karasouli [c], Caroline Meyer [a,b,c]

[a] *Behaviour and Wellbeing Science, WMG, University of Warwick, UK*
[b] *Weight Management Services, Specialist Surgery, University Hospitals Coventry and Warwickshire NHS Trust, Coventry, UK*
[c] *Warwick Clinical Trials Unit, Warwick Medical School, University of Warwick, UK*

A B S T R A C T

The current research examines the relationships between mothers' experiences of the ways in which they were provided food as a child, their current eating behaviours, and their use of coercive food parenting practices with their own child. Mothers (N = 907 (M = 37 years, SD = 7.7)) completed an online/paper survey that included validated measures of food parenting practices and eating behaviours. Regression analyses show that mothers' experiences of being provided food as a child, and their current eating behaviours are significant unique predictors of engagment in coercive food-related parenting practices with their child. Exploratory mediation analyses further show that the relationship between mothers' experiences of being provided food as a child and use of coercive food-related parenting practices with their child is partially mediated by mothers' eating behaviours. The findings indicate concordance between mothers' experiences of being provided food as a child and use of the same coercive food-related parenting practices with their child. Furthermore, maternal experiences of food-related parenting practices as a child are the strongest predictors of use coercive food parenting practices with their own child. There may be value in focussing on the food-related experiences mothers had as a child in addition to their existing eating behaviours prior to food-related parenting practice intervention. Longitudinal research is needed to strengthen the current findings and to further understand the links identified.

1. Introduction

Parents are influential in the intergenerational transmission of obesity and eating disorders (e.g., Lee, Ledoux, Johnston, Ayala, & O'Connor, 2019; Lydecker & Grilo, 2016; Watson, O'Brien, & Sadeh-Sharvit, 2018; Ziauddeen et al., 2020), where child obesity risk increases with parental weight (Health Survey for England, 2019; Whitaker, Jarvis, Beeken, Boniface, & Wardle, 2010). One environmental factor potentially implicated in this transmission is parental use of food parenting practices (FPPs).

FPPs are behaviours used by parents to influence their child's eating behaviours and food intake, and are categorised under three overarching constructs: coercive control, structure, and autonomy support (Vaughn et al., 2016). Examples of coercive control FPPs are food restriction, pressure to eat, food-based threats and bribes, and use of food to control negative emotions. Coercive control FPPs aim to fulfil parent centred goals and desires with regards to their child's food consumption

and eating behaviours. Consequently such FPPs can override a child's internal cues of hunger and satiety (Birch & Fisher, 1998). In contrast, examples of FPPs that implement structure and support child autonomy are healthy food role modelling, healthy home food environment, monitoring, meal and snack routines, limited or guided choices, nutrition education, and child involvement (Vaughn et al., 2016). Therefore coercive control FPPs are of paramount importance to research since they have been found to be positively associated with unhealthy child and adolescent eating behaviours and outcomes such as eating in the absence of hunger and Body Mass Index (BMI) (e.g., Boots, Tiggemann, & Corsini, 2019; Vollmer & Baietto, 2017).

Eating behaviours typically fall into three distinct areas: emotional eating (eating in response to one's emotions), external eating (eating in response to stimuli (sight, taste, smell) in the environment), and restrained eating (eating less to deliberately maintain or lose weight) (van Strien, Frijters, Bergers, & Defares, 1986). Rather than responding to one's internal cues of hunger and satiety, these eating behaviours are

suggested to be in response to emotions and external factors, and contribute to the development of overweight and obesity (van Strien et al., 1986). In addition to FPPs, maternal eating behaviours are a known influence on children's eating behaviours. For instance, it has been found that maternal emotional eating positively predicts daughters' emotional eating; maternal restrained eating positively predicts daughters' restrained eating, and maternal emotional and external eating positively predict sons' emotional and external eating behaviours (Zarychta et al., 2019). Maternal external eating has also been found to be positively associated with children's picky eating and desire to eat (Morrison, Power, Nicklas, & Hughes, 2013).

Research evidence suggests that maternal eating behaviours are implicated in use of coercive FPPs (e.g., Saltzman et al., 2016). For example, high levels of maternal restrained eating positively predict the use of food restriction of daughters' eating (Birch & Fisher, 2000), and high levels of maternal emotional eating are positively associated with use of food to control negative emotions and food-based threats and bribes (Wardle, Sanderson, Guthrie, Rapoport, & Plomin, 2002). More recent research show that parents' diets and eating behaviours are consistent with use of FPPs with adolescents, i.e., parental consumption of junk food positively influences the availability of junk food in the home environment (Fleary & Ettienne, 2019). Furthermore, systematic reviews of maternal eating disorders and child development report that mothers with eating disorders are likely to have difficulties feeding and with eating behaviours such as breast feeding, establishing feeding routines, and engagement in coercive control FPPs (Chapman, Cartwright-Hatton, Thomson, & Lester, 2021; Martini, Barona-Martinez, & Micali, 2020), thus contributing to the transmission of eating behaviours from parent to child.

Experiences of being provided food as a child and parental use of coercive FPPs have been previously explored in order to understand their relationship to adult eating behaviour outcomes. Early qualitative research found that adults with obesity recalled experiencing food rules and having to clear their plate at each mealtime, suggesting that this childhood experience to eat beyond the point of satiety may influence the likelihood of overeating as an adult (Brink, Ferguson, & Sharma, 1999). Later research reported that adults who remember their parents using food-based threats or bribes to control their behaviour, engage in higher levels of binge-eating and dietary restraint (Puhl & Schwartz, 2003). Galloway, Farrow, and Martz (2010) collected data from a student sample on their recollections of being provided food as a child and found that recollections of being restricted were positively associated with student BMI and emotional eating. In another study, reported experience of food restriction and being provided food for emotion regulation as a child was positively associated with later adult emotional eating (Tan, Ruhl, Chow, & Ellis, 2016). Experience of food restriction has also been found to positively predict disordered eating behaviours in adulthood (Lev-Ari & Zohar, 2013). Recollections of being pressured to eat as a child have been found to predict less intuitive eating (responding to cues of hunger and satiety), and high levels of disordered eating behaviours among young adults (Ellis, Galloway, Webb, Martz, & Farrow, 2016; Tan et al., 2016). Overall, there is compelling evidence to suggest a lasting relationship between childhood experiences of being provided food as a child and later eating behaviours. Although adult reports are based on recalled experience, Roberts, Carbonneau, Goodman, and Musher-Eizenman (2020) provide support for the use of retrospective reporting of childhood experiences of being provided food as a child.

In summary, experiences of being provided food as a child appears to influence adult eating behaviours. Additionally, maternal eating behaviours are linked to parents' use of FPPs. To our knowledge there is only one study to date that has examined parents recollections of being provided food as a child, disordered attitudes towards food and eating, and FPPs (Lev-Ari, Zohar, Bachner-Melman, & Totah Hanhart, 2021). The study found that the experiences of being provided food as a child were positively associated with use of the same types of FPPs, and disordered attitudes towards food and eating mediated this relationship

(Lev-Ari et al., 2021). However, the study's sample size is rather small (n = 174). In addition, it appears to examine only three coercive control FPPs (food restriction, pressure, and monitoring) from the Child Feeding Questionnaire (Birch et al., 2001). It is also worth examining other coercive control FPPs such as food-based threats and bribes, use of food to control negative emotions and iterations of food restriction (Vaughn et al., 2016). Research has yet to investigate whether coercive food parenting practices can be explained by parents' experiences of being provided food as a child and current eating behaviours.

Given the evidence to date, it seems plausible that parents' experiences of being provided food as a child and their existing eating behaviours might predict FPP use. Therefore, the aim of the study was to explore whether the way mothers were provided food as a child affects their adult eating behaviours and use of coercive FPPs with their own child. It was predicted that; (1) there would be an association between mothers' experiences of being provided food as a child with their current FPPs; (2) an association between mothers' reports of being provided food as a child and their current eating behaviours; (3) mothers' experiences of being provided food as a child, and their existing eating behaviours would predict their current use FPPs. Exploratory mediation analyses were conducted where appropriate to explore whether maternal eating behaviours potentially mediated relationships between mothers' experiences of being provided food as a child and their current use of FPPs.

2. Method

2.1. Participants and procedure

Mothers of children aged between 2 and 16 years were invited to participate. Mothers are the focus in the current study as it has been previously reported that mothers tend to engage more than fathers with overall house and family issues, including feeding their children (e.g., Davison, Haines, Garcia, Douglas, & McBride, 2020; Pratt, Hoffmann, Taylor, & Musher-Eizenman, 2019). Using convenience sampling, mothers were recruited via social media platforms, a crowdsourcing platform (Prolific Academic), primary/secondary schools and community services (e.g., rhyme time sessions) across the Midlands, UK. Mothers completed a series of demographic questions and self-reported questionnaires online or on paper. The study conformed to the Declaration of Helsinki and was approved by the University of Warwick's Biomedical and Scientific Research Ethics Committee (BSREC 100/18-19).

2.2. Measures

2.2.1. Demographic questionnaire

Maternal characteristics collected included gender, age, height, weight, ethnicity, and highest level of education, and age of youngest child.

2.2.2. Retrospective comprehensive feeding practice questionnaire (rCFPQ; (Musher-Eizenman & Holub, 2007))

As per the original CFPQ (Musher-Eizenman & Holub, 2007), the modified, retrospective CFPQ is a 49-item self-report measure of how a parent remembers to have been provided food as a child. The rCFPQ contains the same twelve subscales as the original CFPQ: child control, emotion regulation, encourage balance and variety, environment, food as reward, involvement, modelling, monitoring, pressure, food restriction for health reasons, food restriction for weight control, and teaching about nutrition. The wording of items in this version of the CFPQ is modified to reflect experience. For example, "My parent restricted the food that I ate that might have made me fat"; "Did your parent give you something to eat or drink if you were upset even if s/he thought you were not hungry?". Higher scores in each subscale indicate greater use of the FPP. Cronbach's alphas demonstrated good reliability in the current

sample (α = 0.83 to α = 0.96). Several studies have used this modified approach with community samples and have demonstrated similar levels of reliability (e.g., Ellis et al., 2018; Farrow, 2014; Goldstein, Tan, & Chow, 2017; Małachowska & Jeżewska-Zychowicz, 2021; Roberts et al., 2020). The teaching about nutrition subscale demonstrated weaker reliability (α = 0.57), similar to previous research (Haycraft, Karasouli, & Meyer, 2017; Musher-Eizenman, de Lauzon-Guillain, Holub, Leporc, & Charles, 2009; Tan et al., 2016), and so was excluded from the analyses.

2.2.3. Dutch eating behaviour questionnaire (DEBQ (van Strien et al., 1986))

The DEBQ is a 33-item self-report questionnaire assessing emotional, external, and restrained eating behaviours. For example, "Do you have a desire to eat when you are feeling lonely?", "If food smells and looks good, do you eat more than usual?", "Do you try to eat less at mealtimes that you would like to eat?". Higher scores in each subscale indicate greater frequency of the eating behaviour. Cronbach's alphas demonstrated good reliability in the current sample (α = 0.89 to α = 0.96). This measure has been used extensively with community samples with adequate reliability and validity (e.g., Damiano, Hart, & Paxton, 2016; Zarychta et al., 2019).

2.2.4. Comprehensive feeding practices questionnaire (CFPQ (Musher-Eizenman & Holub, 2007))

The CFPQ is a 49-item self-report measure of a variety of FPPs. Data on five of its subscales that were related to coercive food parenting practices were utilised in the current study (emotion regulation, food as reward, pressure, food restriction for health reasons and food restriction for weight). For example, "I restrict the food my child eats that might make him/her fat?", "Do you give this child something to eat or drink if s/he is bored even if you think s/he is not hungry? A higher total subscale score indicates greater use of the FPP. Mothers were asked to base their responses on their youngest child (aged between 2 and 16) (e.g., Vollmer, Adamsons, Foster, & Mobley, 2015). All included subscales demonstrated good reliability in the current sample (α = 0.75 to α = 0.85). The measure and its subscales have been used extensively with community samples and with parents of younger and older children with adequate reliability and validity (e.g., Haycraft et al., 2017; Holley, Haycraft, & Farrow, 2020; Jansen et al., 2021).

2.3. Power calculation

G*Power analysis software was used to determine the sample size (Faul, Erdfelder, Buchner, & Lang, 2009). To detect a correlation coefficient of $r = 0.3$ with 80% power (α = 0.05), N = 84 participants were required. For multiple regression analyses with N = 15 predictor variables, to detect a $f^2 = 0.15$ with 80% power (α = 0.05), N = 139 participants were required.

2.4. Data analyses

Analyses were conducted using IBM SPSS software (v25) (IBM Corp., 2017). Kolomogorov-Smirnov tests indicated that data were not normally distributed, therefore non-parametric tests were employed where applicable. Missing questionnaire data were not included in the specific analyses when missing but included where data allowed (pairwise deletions). BMI was calculated with the formula: weight (kilograms)/height (meters)^2. Two-tailed Spearman's correlations were conducted to investigate associations between FPPs and maternal demographic variables, mothers' experiences of being provided food as a child (rCFPQ) and their existing eating behaviours (DEBQ). Preliminary two-tailed Spearman's correlations were conducted to assess whether maternal and child age were related to FPP use, since these have been previously identified as covariates of FPP use (Gonçalves, Lima, Machado, & Machado, 2017).

Maternal age was significantly correlated with use of emotion regulation ($r_s = -0.11$, $p < 0.01$), food as reward ($r_s = -0.21$, $p < 0.01$), pressure to eat ($r_s = -0.12$, $p < 0.01$) and food restriction for weight control ($r_s = 0.10$, $p < 0.01$). Child age was significantly correlated with maternal use of emotion regulation ($r_s = -0.16$, $p < 0.01$), food as reward ($r_s = -0.15$, $p < 0.01$), and food restriction for weight control ($r_s = 0.19$, $p < 0.01$). Partial correlations were subsequently conducted between rCFPQ, DEBQ, and CFPQ controlling for maternal and child age due to associations. All study variables were then entered into standard multiple regression to identify a model that could predict maternal use of each coercive food parenting practice and understand the unique contribution that mothers' reports of being provided food as a child, and their existing eating behaviours had in the prediction of coercive FPPs. Multiplicity was controlled for using Benjamini and Hochberg's False Discovery Rate (FDR) methods, assuming an FDR of 5% (Benjamini & Hochberg, 1995). All p-values reported represent adjusted p-values.

Mediation is a statistical method to examine whether a relationship between a predictor variable and outcome variable can be explained by a third variable (the mediator) (Hayes, 2017). Exploratory mediation analysis was conducted only when maternal eating behaviours (mediators; DEBQ (M)) were significantly associated with the antecedent variable (mothers' reports of being provided food as a child; rCFPQ (X)), and the outcome variable (food parenting practice; CFPQ (Y)), controlling for the independent variable. Fig. 1 presents an example conceptual model using the study variables.

Path a refers to the association between the rCFPQ subscale and potential mediator(s) (DEBQ subscale). Path b refers to the association between the potential mediators (DEBQ subscale) and the CFPQ subscale. Path c refers to the total effect of the rCFPQ subscale on the CFPQ subscale. Path c' refers to the direct effect of the rCFPQ subscale on the CFPQ subscale while keeping the mediator(s) constant. The indirect effect (ab) refers the effect of the rCFPQ subscale on the CFPQ subscale through the DEBQ subscale. Full mediation is indicated when X no longer affects Y after M has been controlled for (i.e., the c' path is nonsignificant). Partial mediation is indicated where the strength of the relationship between X and Y is less than that of the c pathway but is still significant in the presence of M (i.e., the c' path is significant).

Maternal age, maternal BMI, and child age were included as covariates. Mediation models (model 4) were tested using the PROCESS macro (Hayes, 2017). Multiple mediators were tested simultaneously if more than one maternal eating behaviour met the criteria for mediation analysis (Preacher & Hayes, 2008). All models ran 10,000 bootstrap samples and 95% bias-corrected confidence interval based on 10,000 bootstrap samples are reported. For indirect effects, 95% bias-corrected confidence intervals were calculated using 10,000 repetitions since this method does not require the assumption of normality, in addition to higher power while controlling for Type one errors (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; MacKinnon, Lockwood, & Williams, 2004). Indirect pathways were determined to be significant by a 95% bias-corrected bootstrapped interval (based on 10,000 bootstrapped samples) that did not contain zero (Preacher & Hayes, 2004; 2008). Where applicable, multiplicity was controlled for using FDR-adjusted confidence intervals (CI) using the Benjamini and Yekutieli (2005) method.

3. Results

3.1. Descriptive statistics

Mothers (N = 907; female, n = 905; not reported, n = 2) were on average 37 years old (range 21–61; $SD = 7.7$), with a mean child age of 5 ½ (range 2–11; $SD = 4.1$). Mothers were predominantly of White ethnicity (91%), educated to degree level (60.7%), and had a mean BMI of 27.6 (range 18.6–64.9; $SD = 6.7$; healthy-weight (BMI 18.6–24.9), 43%; overweight/obese (BMI >25.0), 57%).
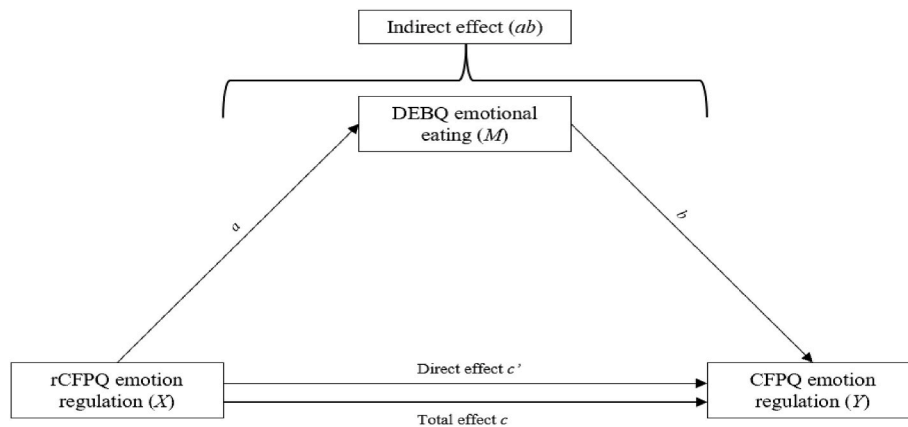
Fig. 1. Example conceptual mediation model using the study variables.

3.2. Mothers' perceptions of being provided food as a child and mothers' eating behaviours

Several FPPs experienced as a child were associated with mothers' existing eating behaviours (Table 1). First, mothers' experiences of rCFPQ control and rCFPQ food restriction for health reasons as a child were significantly (positively) associated with DEBQ emotional and external eating. Second, mothers' experiences of rCFPQ emotion regulation, rCFPQ food as reward, rCFPQ pressure to eat and rCFPQ food restriction for weight control as a child were significantly (positively) associated with DEBQ restrained, emotional, and external eating behaviours. Third, mothers' experiences of rCFPQ environment, and rCFPQ food as reward as a child were significantly (negatively) associated with DEBQ restrained, emotional, and external eating. Forth, mothers' experience of rCFPQ involvement as a child was significantly (negatively) associated with DEBQ emotional and external eating. Fifth, mothers' experience of rCFPQ modelling as a child was significantly associated (negatively) with DEBQ emotional eating. Finally, mothers' experience of rCFPQ encouragement of balance and variety as a child was significantly associated (negatively) with DEBQ restrained and emotional eating.

3.3. Mothers' perceptions of being provided food as a child and use of coercive food parenting practices

Mothers' use of CFPQ emotion regulation was significantly associated (positively) with rCFPQ child control, rCFPQ emotion regulation, rCFPQ food as reward, and rCFPQ food restriction for weight control, and significantly associated (negatively) with rCFPQ encourage balance and variety and rCFPQ environment (Table 2). Mothers' use of CFPQ food as reward was significantly associated (positively) with rCFPQ emotion regulation, rCFPQ food as a reward, and rCFPQ pressure to eat, and significantly associated (negatively) with rCFPQ environment. Mothers' use of CFPQ pressure to eat was significantly associated (positively) with rCFPQ food as a reward and rCFPQ pressure to eat. Mothers' use of CFPQ food restriction for health reasons was significantly associated (positively) with maternal BMI, rCFPQ food as a reward, rCFPQ monitoring, rCFPQ pressure to eat, rCFPQ food restriction for health and rCFPQ food restriction for weight and significantly associated (negatively) with rCFPQ involvement. Mothers' use of CFPQ food restriction for weight was significantly associated (positively) with maternal BMI, rCFPQ child control, rCFPQ emotion regulation, rCFPQ food as a reward, rCFPQ food restriction for weight and significantly associated (negatively) with rCFPQ encourage balance and variety and rCFPQ environment.

3.4. Investigating relationships between mothers' eating behaviours and use of coercive food parenting practices

Apart from use of pressure to eat, mothers' eating behaviours were significantly associated with mothers' use of coercive control FPPs (Table 2). Mothers' use of CFPQ emotion regulation, CFPQ food as a reward, CFPQ food restriction for health reasons, and CFPQ food restriction for weight control with their child were significantly (positively) associated with mothers' restrained, emotional, and external eating (DEBQ) behaviours.

3.5. Predicting mothers' use of coercive food parenting practices

3.5.1. Emotion regulation

The regression model significantly predicted CFPQ emotion regulation score and was a good fit for the data ($F(17, 792) = 10.875$, $p < .001$), accounting for 17.2% of the variance in CFPQ emotion regulation. This was driven by experiencing more rCFPQ emotion regulation ($\beta = 0.266$, $p < .001$) and rCFPQ modelling ($\beta = 0.145$, $p = .034$) as a child, less rCFPQ encouragement of balance and variety as a child ($\beta = -0.139$, $p = .034$), increased DEBQ external eating ($\beta = 0.141$, $p < .001$), and lower child age ($\beta = -0.123$, $p = .034$). Lower child age was significantly associated with higher maternal use CFPQ emotion regulation (Table 3).

Table 1
Associations (two-tailed) between mothers' recollections of being provided food as a child (rCFPQ), and mothers' eating behaviours (DEBQ).

Variables	DEBQ					
	Restrained eating		Emotional eating		External eating	
	Rho	p	rho	p	rho	p
rCFPQ						
Child control	−.01	.792	.08	**.030**	.11	**.002**
Emotion regulation	.14	**<.001**	.35	**<.001**	.25	**<.001**
Encourage balance & variety	−.09	**.012**	−.10	**.004**	−.07	.058
Environment	−.08	**.024**	−.16	**<.001**	−.14	**<.001**
Food as reward	.12	**.001**	.27	**<.001**	.24	**<.001**
Involvement	−.06	.069	−.12	**<.001**	−.11	**.003**
Modelling	−.07	**.047**	−.07	**.045**	−.04	.286
Monitoring	.02	.673	−.03	.330	−.03	.387
Pressure to eat	.09	**.014**	.10	**.005**	.12	**<.001**
Restriction for health reasons	.03	.413	.17	**<.001**	.11	**.002**
Restriction for weight control	.17	**<.001**	.18	**<.001**	.10	**.002**

Cases excluded pairwise; N ranges from 811 to 885 due to missing data; Bold indicates significance after applying Benjamini-Hochberg FDR procedures.

Table 2

Associations (two-tailed) between mothers' food parenting practices, mothers' recollections of being provided food as a child (rCFPQ), and mothers' eating behaviours (DEBQ).

Variables	Emotion regulation[a]		Food as reward[a]		Pressure to eat[b]		Restriction for health reasons		Restriction for weight control[a]	
	Rho	p	rho	p	rho	p	rho	p	rho	p
Maternal BMI	.00	.919	.03	.378	−.06	.071	.07	**.031**	.09	**.008**
rCFPQ										
Child control	.14	**<.001**	.06	.100	.06	.108	−.04	.228	.15	**<.001**
Emotion regulation	.33	**<.001**	.15	**<.001**	.07	.056	.04	.251	.17	**<.001**
Encourage balance and variety	−.08	**.017**	−.07	.053	.02	.661	−.04	.217	−.08	**.018**
Environment	−.09	**.009**	−.11	**.002**	−.06	.095	−.06	.069	−.13	**<.001**
Food as reward	.17	**.001**	.30	**.001**	.15	**<.001**	.10	**.003**	.14	**<.001**
Involvement	−.02	.517	−.03	.452	.04	.272	−.10	**.004**	−.02	.677
Modelling	.00	.964	−.03	.377	.02	.517	−.04	.275	−.05	.128
Monitoring	−.01	.690	−.01	.742	.03	.437	.08	**.025**	−.04	.228
Pressure to eat	.04	.213	.13	**<.001**	.17	**<.001**	.09	**.014**	.03	.394
Restriction for health reasons	.04	.248	.02	.570	.03	.419	.15	**<.001**	.06	.093
Restriction for weight control	.09	**.016**	.01	.828	−.08	.020	.08	**.027**	.20	**<.001**
DEBQ										
Restraint	.14	**<.001**	.13	**<.001**	.05	.144	.18	**<.001**	.24	**<.001**
Emotional	.27	**<.001**	.12	**<.001**	.03	.363	.13	**<.001**	.12	**<.001**
External	.26	**<.001**	.16	**<.001**	.07	.052	.18	**<.001**	.10	**.002**

Cases excluded pairwise; N ranges from 810 to 907 due to missing data; [a]Partial correlation controlling for maternal and child age; [b]Partial correlation controlling for maternal age. Bold indicates significance after applying Benjamini-Hochberg FDR procedures.

Table 3

Regression models reporting unstandardized coefficients (B), standard errors (SE), and standardised coefficients (β) for CFPQ emotion regulation, CFPQ food as reward, and CFPQ pressure to eat.

Variables	CFPQ emotion regulation			CFPQ food as reward			CFPQ pressure to eat		
	B	SE	β	B	SE	β	B	SE	β
Adjusted R^2			**.172**			**.141**			**.072**
rCFPQ									
Child control	.007	.020	.014	.012	.034	.015	.083	.043	.089
Emotion regulation	.191	.031	**.266**	.005	.054	.004	−.045	.067	−.031
Encourage balance and variety	−.060	.023	**−.139**	−.053	.040	−.072	.014	.050	.016
Environment	.018	.026	.038	.021	.045	.025	−.082	.055	−.082
Food as reward	.013	.023	.022	.264	.040	**.273**	.112	.049	.098
Involvement	−.005	.021	−.009	.022	.037	.023	.062	.045	.056
Modelling	.055	.021	**.145**	.050	.036	.078	.040	.045	.052
Monitoring	.006	.017	.015	.002	.030	.003	.043	.037	.052
Pressure to eat	−.004	.018	−.009	.034	.031	.042	.158	.038	**.164**
Restriction for health	.002	.018	.004	−.016	.032	−.024	.041	.039	.050
Restriction for weight	.007	.010	.030	−.017	.017	−.039	−.068	.021	**−.135**
DEBQ									
Restraint	.009	.008	.039	.030	.014	.076	.022	.017	.048
Emotional	.015	.007	.095	−.006	.012	−.023	−.004	.014	−.012
External	.042	.012	**.141**	.050	.021	.098	.025	.025	.042
Demographic									
Maternal age	.015	.012	.057	−.046	.021	−.099	−.040	.026	−.073
Child age	−.062	.023	**−.123**	−.105	.039	−.122	−.036	.048	−.035
Maternal BMI	−.023	.011	−.073	.002	.018	.004	−.040	.023	−.064

Bold indicates significance after applying Benjamini-Hochberg FDR procedures.

3.5.2. Food as reward

The regression model significantly predicted CFPQ food as reward score and was a good fit for the data ($F(17, 792) = 8.811$, $p < .001$), accounting for 14.1% of the variance in CFPQ food as reward. This was driven by experiencing more rCFPQ food as a reward a child (β = 0.273, $p < .001$) (Table 3).

3.5.3. Pressure to eat

The regression model significantly predicted CFPQ pressure to eat score and was a good fit for the data ($F(17, 792) = 4.706$, $p < .001$), accounting for 7.2% of the variance in CFPQ pressure to eat. This was driven by more experience of more rCFPQ pressure to eat as a child (β = 0.164, $p < .001$), and less rCFPQ food restriction for weight control as a child (β = −0.135, $p = .008$) (Table 3).

3.5.4. Food restriction for health reasons

The regression model significantly predicted CFPQ food restriction for health reasons score and was a good fit for the data ($F(17, 792) = 3.866$, $p < .001$), accounting for 5.7% of the variance in CFPQ food restriction for health reasons. This was driven by more experience of rCFPQ food restriction for health reasons as a child (β = 0.159, $p = .008$), and increased DEBQ restrained (β = 0.135, $p < .001$) and external eating behaviours (β = 0.118, $p = .034$) (Table 4).

3.5.5. Food restriction for weight control

The regression model significantly predicted CFPQ food restriction for weight control score and was a good fit for the data ($F(17, 792) = 8.011$, $p < .001$), accounting for 12.8% of the variance of CFPQ food restriction for weight control. This was driven by mothers' experiences of more rCFPQ child control (β = 0.119, $p = .030$) and rCFPQ food restriction for weight control as a child (β = 0.190, $p < .001$), increased

Table 4
Regression models reporting unstandardized coefficients (B), standard errors (SE), and standardised coefficients (β) for CFPQ restriction for health reasons and CFPQ restriction for weight control.

Variables	CFPQ restriction for health reasons			CFPQ restriction for weight control		
	B	SE	β	B	SE	β
Adjusted R^2			**.057**			**.128**
rCFPQ						
Child control	.018	.047	.018	.169	.063	**.119**
Emotion regulation	−.043	.074	−.026	.043	.098	.019
Encourage balance and variety	−.048	.056	−.049	−.055	.074	−.041
Environment	−.079	.061	−.072	−.103	.081	−.068
Food as reward	−.003	.055	−.002	.061	.073	.035
Involvement	−.062	.051	−.051	.026	.067	.016
Modelling	.006	.050	.008	.033	.066	.029
Monitoring	.073	.041	.080	−.037	.055	−.030
Pressure to eat	.033	.042	.031	.026	.056	.018
Restriction for health	.143	.044	**.159**	.009	.058	.007
Restriction for weight	−.040	.024	−.071	.146	.031	**.190**
DEBQ						
Restraint	.070	.019	**.135**	.135	.025	**.189**
Emotional	−.008	.016	−.023	−.008	.021	−.017
External	.079	.028	**.118**	.021	.037	.023
Demographic						
Maternal age	−.007	.029	−.012	−.006	.038	−.008
Child age	−.006	.054	−.005	.288	.071	**.186**
Maternal BMI	.008	.025	.011	−.009	.033	−.009

Bold indicates significance after applying Benjamini-Hochberg FDR procedures.

DEBQ restrained eating behaviours (β = 0.189, p < .001) and child age (β = 0.186, p < .001). Higher child age was significantly associated with higher maternal use of CFPQ food restriction for weight control (Table 4).

3.6. The potential mediating role of maternal eating behaviours in the relationship between rCFPQ score and CFPQ score

3.6.1. Emotion regulation

Results from the simple mediation analysis show a significant positive association between mothers' experience of rCFPQ emotion regulation as a child and DEBQ external eating behaviours (a = 0.56, p < 0.001), and a significant positive association between mothers' DEBQ external eating behaviours and use of CFPQ emotion regulation with their child (b = 0.07, p < 0.001). There was a significant direct relationship between mothers' experience of emotion regulation as a child (rCFPQ emotion regulation), and use of emotion regulation with their child (CFPQ emotion regulation) when no mediators were included in

the model (total effects, c = 0.25, p < 0.001). This remained the same case when DEBQ external eating was included in the model (direct effects, c' = 0.21, p < 0.001), indicating partial mediation. A significant indirect effect through mothers' external eating (b = 0.036, 95% BCa CI$_{FDR}$ [0.025, 0.047]). (Fig. 2).

Second, there was no significant association between mothers' experience of rCFPQ encouragement of balance and variety as a child and DEBQ external eating behaviours (a = −0.08, p = 0.099), however there was a significant positive association between mothers' DEBQ external eating behaviours and use of CFPQ emotion regulation with their child (b = 0.09, p < 0.001). There was no significant direct relationship between experience of encouragement of balance and variety as a child (rCFPQ encourage balance and variety), and use of emotion regulation with their child (CFPQ emotion regulation) when no mediators were included in the model (total effects, c = −0.04, p = 0.063). When mediators were included in the model, this relationship was significant (direct effect, c' = −0.03, p = 0.025), indicating partial mediation and a significant indirect effect ran through mothers' external eating (b = −0.007, 95% BCa CI$_{FDR}$ [−0.014, −0.001]). (Fig. 3).

Third, there was no significant association between mothers' experience of rCFPQ modelling as a child and DEBQ external eating behaviours (a = −0.03, p = 0.534), however there was a significant positive association between mothers' DEBQ external eating behaviours and use of CFPQ emotion regulation with their child (b = 0.09, p < 0.001). There was no significant direct relationship between mothers' experience of modelling as a child (rCFPQ modelling), and use of emotion regulation with their child (CFPQ emotion regulation) when no mediators were included in the model (total effects, c = 0.002, p = 0.878). This remained the same case when DEBQ external eating was included in the model (direct effects, c' = 0.004, p = 0.735), and no significant indirect effect through mothers' external eating (b = −0.002, 95% BCa CI [−0.010, 0.005] (Fig. 4).

3.6.2. Food restriction for health reasons

Parallel mediation analysis showed that there was no significant association between mothers' experience of rCFPQ food restriction for health as a child and DEBQ restrained eating behaviours (a$_1$ = 0.07, p = 0.243). There was a significant positive association between mothers' experience of rCFPQ food restriction for health as a child and DEBQ external eating behaviours (a$_2$ = 0.10, p = 0.036). There were significant positive associations between mothers' DEBQ restrained and external eating behaviours and use of CFPQ food restriction for health with their child (b$_1$ = 0.06, p < 0.001; b$_2$ = 0.08, p < 0.001). There was a significant direct relationship between mothers' experience of being restricted food as a child for health (rCFPQ food restriction for health reasons), and use of food restriction for health with their child (CFPQ food restriction
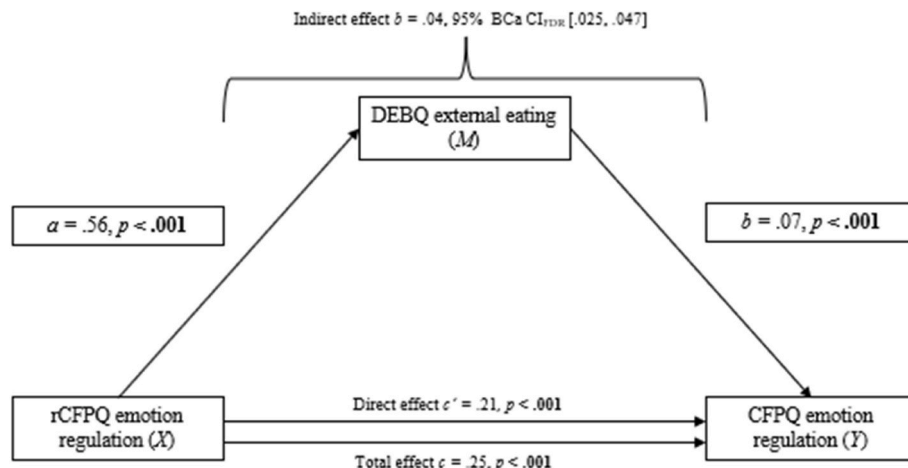

Indirect effect *b* = .04, 95% BCa CI$_{FDR}$ [.025, .047]

a = .56, *p* < .001   *b* = .07, *p* < .001

DEBQ external eating (*M*)

rCFPQ emotion regulation (*X*)   CFPQ emotion regulation (*Y*)

Direct effect *c'* = .21, *p* < .001
Total effect *c* = .25, *p* < .001

Fig. 2. Direct and indirect pathways from mothers' experience of emotion regulation as a child to use of CFPQ emotion regulation with their own child.

Indirect effect $b = -.01$, 95% BCa CI$_{FDR}$ [-.014, -.001]
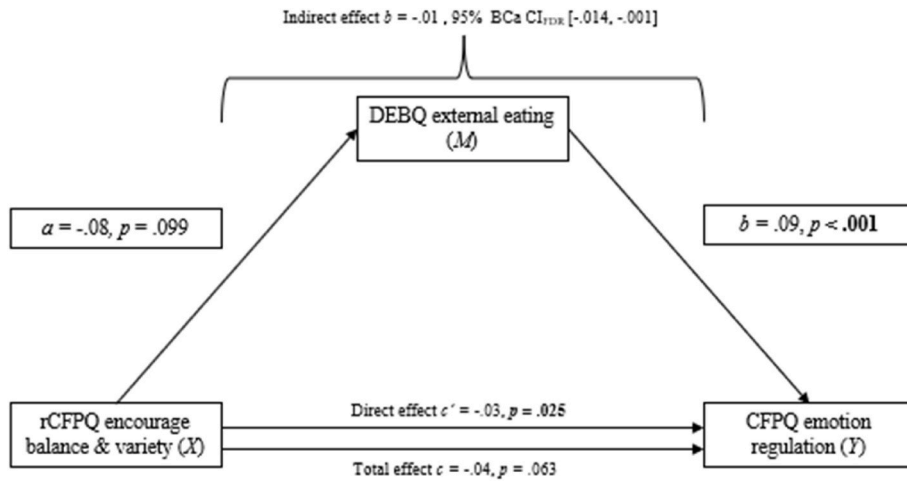

Fig. 3. Direct and indirect pathways from mothers' experience of encouragement of balance and variety as a child and use of CFPQ emotion regulation with their own child.
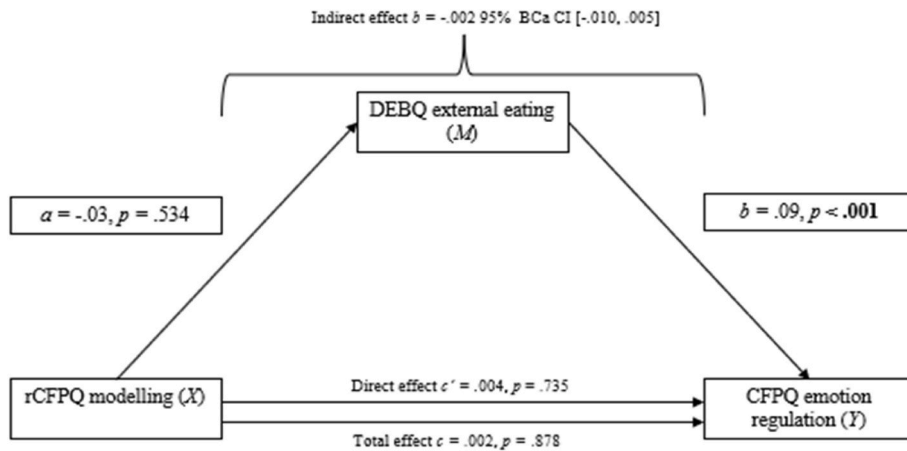
Indirect effect $b = -.002$ 95% BCa CI [-.010, .005]

Fig. 4. Direct and indirect pathways from mothers' experience of modelling as a child and use of CFPQ emotion regulation with their own child.

for health) when no mediators were included in the model (total effects, $c = 0.13$, $p < 0.001$). This remained the same case when mediators were included (direct effects, $c' = 0.12$, $p < 0.001$), indicating partial mediation. A significant indirect effect ran through mothers' external eating ($b = 0.012$, 95% BCa CI$_{FDR}$ [0.005, 0.020]), but not mothers' restrained

eating ($b = 0.005$, 95% BCa CI [−0.004, 0.015]). (Fig. 5).

3.6.3. Food restriction for weight control

Results from a simple mediation analysis showed that there was no significant association between mothers' experience of rCFPQ child
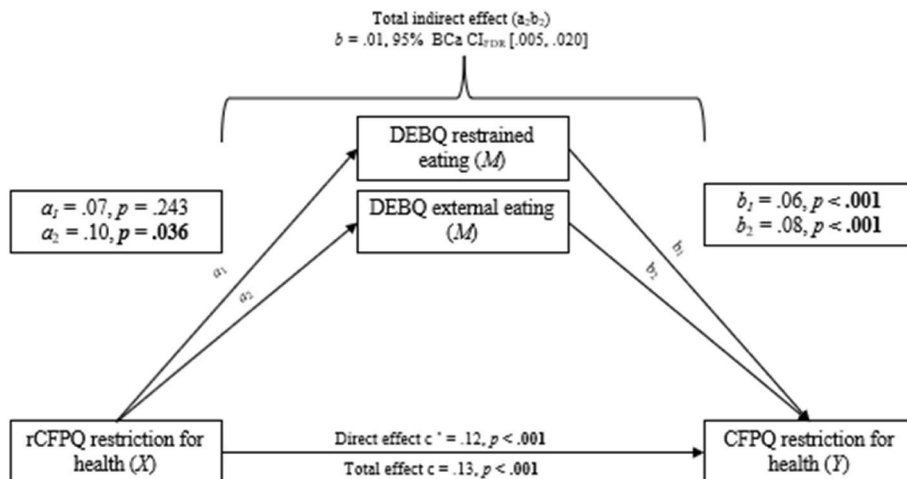
Total indirect effect (a₂b₂)
$b = .01$, 95% BCa CI$_{FDR}$ [.005, .020]

Fig. 5. Direct and indirect pathways from mothers' experience of food restriction for health as a child and use of CFPQ restriction for health with their own child.

control and DEBQ restrained eating behaviours ($a = 0.04$, $p = 0.593$), however there was a significant positive association between mothers' DEBQ restrained eating behaviours and use of CFPQ food restriction for weight control with their child ($b = 0.18$, $p < 0.001$). A significant direct relationship between mothers' experience of control as a child (rCFPQ child control), and use of food restriction for weight control with their child (CFPQ food restriction for weight control) when no mediators were included in the model (total effects, $c = 0.20$, $p < 0.001$). This remained the same case when DEBQ external eating was included in the model (direct effects, $c' = 0.20$, $p < 0.001$), indicating partial mediation however the indirect effect running through mothers' restrained eating was not significant ($b = 0.007$, 95% BCa CI [−0.019, 0.034]). (Fig. 6).

Second, there was a significant positive association between mothers' experience of rCFPQ food restriction for weight control as a child and DEBQ restrained eating behaviours ($a = 0.17$, $p < 0.001$), and there was a significant positive association between mothers' DEBQ restrained eating behaviours and use of CFPQ food restriction for weight control with their own child ($b = 0.16$, $p < 0.001$). There was a significant direct relationship between mothers' experience of food restriction for weight control as a child (rCFPQ food restriction for weight control), and use of food restriction for weight control with their child (CFPQ food restriction for weight control) when no mediators were included in the model (total effects, $c = 0.15$, $p < 0.001$). This remained the same case when DEBQ restrained eating was included in the model (direct effects, $c' = 0.12$, $p < 0.001$), indicating partial mediation and a significant indirect effect through mothers' restrained eating ($b = 0.027$, 95% BCa CI_{FDR} [0.017, 0.037]) (Fig. 7).

4. Discussion

The aim of the study was to understand whether the way mothers were provided food as a child affected their adult eating behaviours and use of coercive FPPs with their own child. It also sought to understand whether indirect effects ran through maternal eating behaviours between how mothers were provided food as a child and use of coercive FPPs with their own child. The results indicate that mothers' experiences as a child were positively associated with their current eating behaviours, and that mothers' experiences as a child and their existing eating behaviours predicted use of coercive food parenting practices with their own child.

Specifically, maternal use of food to control their child's emotions was predicted by mothers' experiences of higher levels of emotion regulation and modelling as a child alongside higher levels of external eating behaviours. Other research using the DEBQ similarly report that higher levels of maternal external eating are positively associated with

use of emotion regulation FPPs (Wardle et al., 2002). The current finding is of particular importance to target in clinical interventions as emotional eating is likely a learned behaviour (with only a small percentage accounted for through genetic transmission) (Herle, Fildes, & Llewellyn, 2018; Steinsbekk, Barker, Llewellyn, Fildes, & Wichstrom, 2018) and therefore potentially modifiable via FPP intervention.

Maternal use of CFPQ food as reward was predicted by mothers' experiences of being provided food as a reward as a child. This result suggests that mothers have learnt this FPP from the ways in which they were rewarded as child. Further research is needed to understand this finding as the current interpretation is speculative. However the long-term impact of such a finding is concerning as adults report increased engagement in binge-eating and dietary restraint with experience of their parents use of food as a reward as a child (Puhl & Schwartz, 2003).

Maternal use of pressure to eat was predicted by mothers' experiences of higher levels of pressure to eat, and less food restriction for weight control as a child. No maternal eating behaviours were associated with CFPQ pressure to eat. This finding is in contrast to previous research reporting that maternal external and restrained eating are both positively associated with CFPQ pressure to eat (Haycraft, 2020). However, although Tylka, Eneli, Kroon Van Diest, and Lumeng (2013) administered the Intuitive Eating Scale to mothers in their study, they also report that no maternal behaviours were related to pressuring their child to eat, supporting the findings identified.

Maternal use of food restriction for health reasons was predicted by mothers' experiences of food restriction for health reasons as a child, and their current restrained, and external eating behaviours. Finally, maternal use of CFPQ food restriction for weight control, was predicted by mothers' experiences of having more control and increased food restriction for weight control as a child, higher levels of restrained eating behaviours and older child age. These findings support previous research reporting that food restriction for weight is positively associated with parental restrained eating (de Lauzon-Guillain, Musher-Eizenman, Leporc, Holub, & Charles, 2009; Haycraft, 2020), and other previous research reporting that mothers who engage in higher levels of restrained eating are likely to restrict their preschool daughters' food intake (Birch & Fisher, 2000). More recent research further reports that external and emotional eating behaviours are also positively associated with use of CFPQ food restriction for health reasons and food restriction for weight control (Haycraft, 2020). In addition to supporting the findings of previous research, the current results also identify restrained eating behaviours as a significant predictor of increased use of food restriction for health reasons and weight control.

Exploratory mediation analyses revealed that relationships between mothers' childhood experiences of FPPs and use of coercive FPPs were
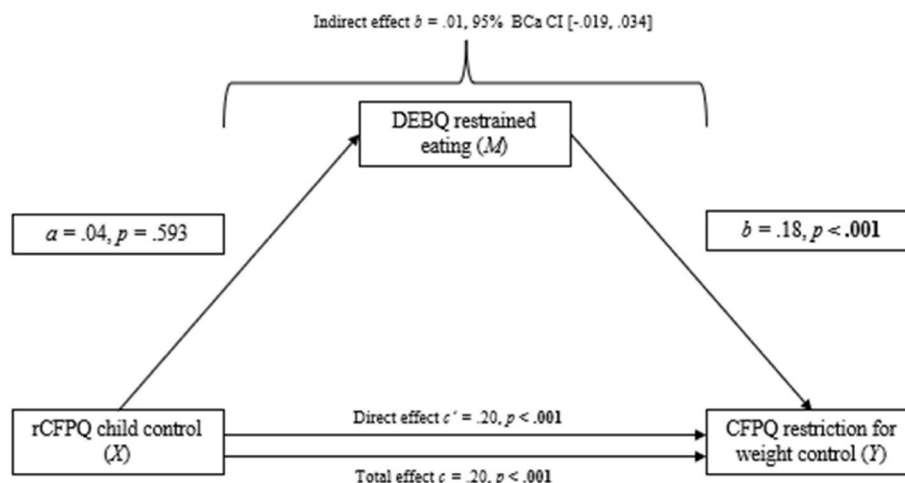

Fig. 6. Direct and indirect pathways from mothers' experience of control as a child and use of CFPQ food restriction for weight control with their own child.
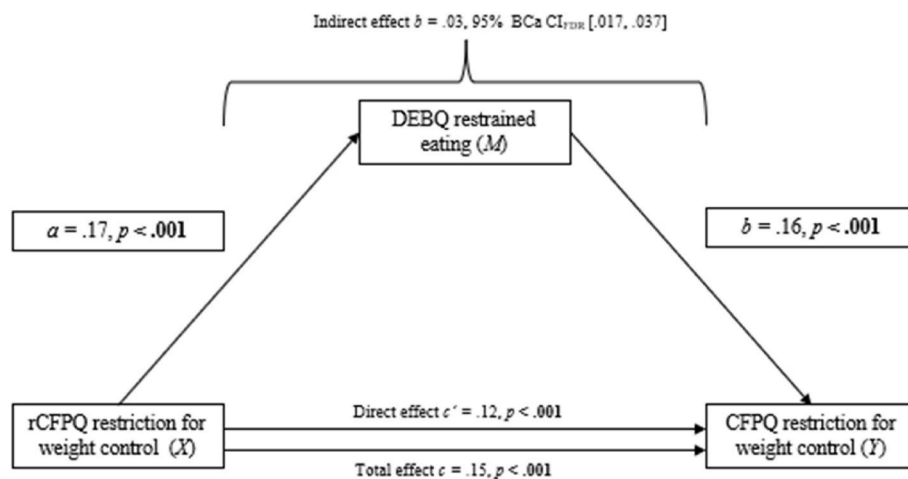
Indirect effect $b = .03$, 95% BCa CI$_{FDR}$ [.017, .037]

DEBQ restrained eating (M)

$a = .17, p < .001$

$b = .16, p < .001$

rCFPQ restriction for weight control (X)

Direct effect $c' = .12, p < .001$

CFPQ restriction for weight control (Y)

Total effect $c = .15, p < .001$

Fig. 7. Direct and indirect pathways from mothers' experience of food restriction for weight control as a child and use of CFPQ food restriction for weight control with their own child.

partially mediated by mothers' eating behaviours with significant indirect effects found for mothers' external eating and restrained eating behaviours. The results indicate that mothers' who experienced more emotion regulation and food restriction for health reasons as a child were more likely to eat in response to stimuli in the environment (external eating: e.g., sight, taste, and smell). In turn, mothers engaged in use of CFPQ emotion regulation and CFPQ food restriction for health reasons with their child. Additionally, mothers who experienced more food restriction for weight control as a child were more likely to eat less to deliberately maintain or lose weight (restrained eating). In turn, mothers engaged in use of CFPQ food restriction for weight control with their child. Overall, the results of the mediation analyses show that maternal external and restrained eating behaviours partially account for the relationship between mothers' childhood experiences of FPPs and use of coercive FPPs.

Although the overall variance accounted for was small, the strongest unique predictors of coercive FPPs were the same FPPs mothers report to have experienced as a child (e.g., experiencing pressure to eat as a child predicted pressuring their child to eat). This supports previous research also showing that parents (predominantly mothers in the sample) engage in the same FPPs with their own child that they recall having experienced as a child such as pressure to eat (Lev-Ari et al., 2021). There is also evidence from the findings that the presence of certain eating behaviours that are known contributors to the development of overweight and obesity (van Strien et al., 1986), predict use of coercive FPPs. The current results indicate that maternal external eating significantly predicted use of CFPQ emotion regulation; maternal restrained and external eating behaviours significantly predicted CFPQ food restriction for health reasons; and maternal restrained eating predicted CFPQ food restriction for weight. Recent findings reported by Haycraft (2020) agree with the present findings on maternal eating behaviours and use of coercive FPPs. Haycraft (2020) reports positive associations between DEBQ external eating and CFPQ emotion regulation, DEBQ restrained and external eating and CFPQ food restriction for health, and DEBQ restrained eating and CFPQ food restriction for weight. Further, although not directly comparable, restrained eating has been reported to be positively associated with use of food restriction for health (de Lauzon-Guillain et al., 2009). The present findings may suggest that when mothers are concerned about their own eating, they are likely to have more involvement and control when providing food to their child. Taken together the results of the present study highlight that mothers' experiences of being provided food as a child, predict maternal use of coercive FPPs with maternal eating behaviours partially accounting for some of these relationships (i.e., emotion regulation, food restriction for health reasons, and food restriction for weight reasons).

The current study forms an important step towards understanding the potential long-term relationship between experiences of being provided food as a child and use of food parenting practices. However, there are a few study limitations to consider. Owing to the cross-sectional nature of the study, the study findings are limited. It is also not possible to rule out that mothers' current eating behaviours or current use of FPPs may affect their memories of being fed as a child (i.e., certain memories/experiences may become more or less salient based on current circumstances). It is also evident that other factors contribute to the use of coercive FPPs such as concern about child weight, child eating behaviours and child BMI (Jansen et al., 2014; Shloim, Edelson, Martin, & Hetherington, 2015) that were not explored. The sample were mostly white and educated to university/college degree level, and therefore the results may not apply to mothers from other cultural backgrounds and of less education level. Previous research generated from a large cohort indicates that there is higher engagement in coercive FPPs among parents from ethnic minority groups compared to white ethnicity groups, and those with less than high school education compared to those with a degree (Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2013).

The study is strengthened by the inclusion of subscales that capture broader coercive FPPs from the CFPQ that include use of food to control negative emotions, use of food as a reward and different types of food restriction. Previous research has used subscales from the Child Feeding Questionnaire that are limited to the assessment of use of food restriction, pressure to eat, and monitoring (e.g., Haycraft & Blissett, 2012; Hazzard et al., 2020; Lev-Ari et al., 2021). The current study results indicate there is a pattern of experience of FPPs in childhood on eating behaviours and subsequent use of FPPs. This is important as results from interventions demonstrate that FPPs are modifiable influences. For instance, the Child Feeding Guide delivers a digitally based health intervention comprising evidence-based support to aid parents' FPP use (Haycraft, Witcomb, & Farrow, 2020). Evaluation of the intervention shows a significant decrease in mothers' use of CFPQ pressure to eat and CFPQ food restriction for weight control (Haycraft et al., 2020). Follow-up from another parent-based intervention targeting parental eating, family eating patterns, and healthy eating show a significant reduction in parental engagement in emotional eating behaviours, and significant improvements in structured mealtimes, the home food environment, and healthier food consumption (parents and children) (Willis et al., 2014). Finally in an intervention that focussed on appetite regulation among children, when compared to the control group, mothers in the intervention group rated their child to emotionally overeat significantly less (Ruggiero, Hohman, Birch, Paul, & Savage, 2021). Mothers also reported to provide significantly more consistent meal routines, and significantly less pressure to eat, emotion regulation,

and use of food as a reward when compared to the control group (Ruggiero et al., 2021). The best, although complex, way to approach the current study again would be via longitudinal replication of this study that follows children into parenthood to untangle the reported findings further.

5. Conclusion

To the authors' knowledge, this study presents the first known investigation into the relationship between mothers' experiences of being provided food as a child, mothers' current eating behaviours and their use of coercive food parenting practices. Exploratory mediation analyses suggest that maternal eating behaviours are a potential mechanism linking mothers' experiences of being provided food as a child and use their use of coercive food parenting practices. Mothers (and caregivers more generally) have a pivotal role in influencing their child's intake and relationship with food. Understanding the influences that promote certain coercive food parenting practices are useful in clinical and community practice when working with parents and families and in the development of FPP-targeted interventions.

Availability of data

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Funding

Ethical statement

The study conformed to the Declaration of Helsinki and was approved by the University of Warwick's Biomedical and Scientific Research Ethics Committee (BSREC 100/18-19).

Declaration of competing interest

The authors declare no potential conflict of interest.

Acknowledgements

References

Benjamini, Y., & Hochberg, Y. (1995). Controlling the False discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society: Series B, 57*(1), 289–300. Retrieved from http://www.jstor.org/stable/2346101.

Benjamini, Y., & Yekutieli, D. (2005). False discovery rate–adjusted multiple confidence intervals for selected parameters. *Journal of the American Statistical Association, 100* (469), 71–81.

Birch, L. L., & Fisher, J. O. (1998). Development of eating behaviors among children and adolescents. *Pediatrics, 101*(3 II SUPPL), 539–549. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-0031885291&partnerID=40&md5=1674ac15cceb46fe2b02bafa1a3d22a8.

Birch, L. L., & Fisher, J. O. (2000). Mothers' child-feeding practices influence daughters' eating and weight. *The American Journal of Clinical Nutrition, 71*(5), 1054–1061. https://doi.org/10.1093/ajcn/71.5.1054. %J The American Journal of Clinical Nutrition.

Birch, L. L., Fisher, J. O., Grimm-Thomas, K., Markey, C. N., Sawyer, R., & Johnson, S. L. (2001). Confirmatory factor analysis of the child feeding questionnaire: A measure of parental attitudes, beliefs and practices about child feeding and obesity proneness. *Appetite, 36*(3), 201–210. https://doi.org/10.1006/appe.2001.0398

Boots, S. B., Tiggemann, M., & Corsini, N. (2019). Pumpkin is "yucky"!: A prospective study of overt and covert restriction in the development of young children's food preferences. *Appetite, 135*, 54–60. https://doi.org/10.1016/j.appet.2018.12.035

Brink, P. J., Ferguson, K., & Sharma, A. (1999). Childhood memories about food: The successful dieters project. *Journal of Child and Adolescent Psychiatric Nursing, 12*(1), 17–25. https://doi.org/10.1111/j.1744-6171.1999.tb00037.x

Chapman, L., Cartwright-Hatton, S., Thomson, A., & Lester, K. (2021). Parental eating disorders: A systematic review of parenting attitudes, behaviours, and parent-child interactions. *Clinical Psychology Review.* , Article 102031. https://doi.org/10.1016/j.cpr.2021.102031

Damiano, S. R., Hart, L. M., & Paxton, S. J. (2016). Correlates of parental feeding practices with pre-schoolers: Parental body image and eating knowledge, attitudes, and behaviours. *Appetite, 101*, 192–198. https://doi.org/10.1016/j.appet.2016.03.008

Davison, K. K., Haines, J., Garcia, E. A., Douglas, S., & McBride, B. (2020). Fathers' food parenting: A scoping review of the literature from 1990 to 2019. *Pediatric Obesity, 15* (10), Article e12654. https://doi.org/10.1111/ijpo.12654

Ellis, J. M., Galloway, A. T., Webb, R. M., Martz, D. M., & Farrow, C. V. (2016). Recollections of pressure to eat during childhood, but not picky eating, predict young adult eating behavior. *Appetite, 97*, 58–63. https://doi.org/10.1016/j.appet.2015.11.020

Ellis, J. M., Schenk, R. R., Galloway, A. T., Zickgraf, H. F., Webb, R. M., & Martz, D. M. (2018). A multidimensional approach to understanding the potential risk factors and covariates of adult picky eating. *Appetite, 125*, 1–9. https://doi.org/10.1016/j.appet.2018.01.016

Farrow, C. (2014). A comparison between the feeding practices of parents and grandparents. *Eating Behaviors, 15*(3), 339–342. https://doi.org/10.1016/j.eatbeh.2014.04.006

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*(4), 1149–1160.

Fleary, S. A., & Ettienne, R. (2019). The relationship between food parenting practices, parental diet and their adolescents' diet. *Appetite, 135*, 79–85. https://doi.org/10.1016/j.appet.2019.01.008

Galloway, A. T., Farrow, C. V., & Martz, D. M. (2010). Retrospective reports of child feeding practices, current eating behaviors, and BMI in college students. *Obesity, 18* (7), 1330–1335. https://doi.org/10.1038/oby.2009.393

Goldstein, M., Tan, C. C., & Chow, C. M. (2017). Maternal emotional feeding practices and adolescent daughters' emotional eating: Mediating roles of avoidant and preoccupied coping. *Appetite, 116*, 339–344. https://doi.org/10.1016/j.appet.2017.05.021

Gonçalves, S., Lima, V., Machado, B. C., & Machado, P. (2017). Maternal–child feeding practices and associations with maternal and child characteristics. *Nutrition Today, 52*(5), 232–239. https://doi.org/10.1097/nt.0000000000000233

Haycraft, E. (2020). Mental health symptoms are related to mothers' use of controlling and responsive child feeding practices: A replication and extension study. *Appetite, 147*, Article 104523. https://doi.org/10.1016/j.appet.2019.104523

Haycraft, E., & Blissett, J. (2012). Predictors of paternal and maternal controlling feeding practices with 2-to 5-year-old children. *Journal of Nutrition Education and Behavior, 44*(5), 390–397.

Haycraft, E., Karasouli, E., & Meyer, C. (2017). Maternal feeding practices and children's eating behaviours: A comparison of mothers with healthy weight versus overweight/obesity. *Appetite, 116*, 395–400. https://doi.org/10.1016/j.appet.2017.05.033

Haycraft, E., Witcomb, G. L., & Farrow, C. (2020). The child feeding guide: A digital health intervention for reducing controlling child feeding practices and maternal anxiety over time. *Nutrition Bulletin, 45*(4), 474–482. https://doi.org/10.1111/nbu.12445

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* Guilford publications.

Hazzard, V. M., Loth, K. A., Berge, J. M., Larson, N. I., Fulkerson, J. A., & Neumark-Sztainer, D. (2020). Does exposure to controlling parental feeding practices during adolescence predict disordered eating behaviors 8 years later in emerging adulthood? *Pediatric Obesity, 15*(10), Article e12709. https://doi.org/10.1111/ijpo.12709

Health Survey for England. (2019). Health survey for England 2018. Retrieved from https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2018/summary.

Herle, M., Fildes, A., & Llewellyn, C. H. (2018). Emotional eating is learned not inherited in children, regardless of obesity risk. *Pediatric Obesity, 13*(10), 628–631. https://doi.org/10.1111/ijpo.12428

Holley, C. E., Haycraft, E., & Farrow, C. (2020). Unpacking the relationships between positive feeding practices and children's eating behaviours: The moderating role of child temperament. *Appetite, 147*, Article 104548. https://doi.org/10.1016/j.appet.2019.104548

IBM Corp. (2017). *IBM SPSS statistics for windows.* Version 25.0. Armonk, NY: IBM Corp.

Jansen, E., Thapaliya, G., Aghababian, A., Sadler, J., Smith, K., & Carnell, S. (2021). Parental stress, food parenting practices and child snack intake during the COVID-19 pandemic. *Appetite, 161*, Article 105119. https://doi.org/10.1016/j.appet.2021.105119

Jansen, P. W., Tharner, A., van der Ende, J., Wake, M., Raat, H., Hofman, A., … Tiemeier, H. (2014). Feeding practices and child weight: Is the association bidirectional in preschool children? *American Journal of Clinical Nutrition, 100*(5), 1329–1336. https://doi.org/10.3945/ajcn.114.088922

de Lauzon-Guillain, B., Musher-Eizenman, D., Leporc, E., Holub, S., & Charles, M. A. (2009). Parental feeding practices in the United States and in France: Relationships with child's characteristics and parent's eating behavior. *Journal of the American Dietetic Association, 109*(6), 1064–1069. https://doi.org/10.1016/j.jada.2009.03.008

Lee, C. Y., Ledoux, T. A., Johnston, C. A., Ayala, G. X., & O'Connor, D. P. (2019). Association of parental body mass index (BMI) with child's health behaviors and child's BMI depend on child's age. *BMC Obesity, 6*(1), 11. https://doi.org/10.1186/s40608-019-0232-x

Lev-Ari, L., & Zohar, A. H. (2013). Nothing gained: An explorative study of the long-term effects of perceived maternal feeding practices on women's and men's adult BMI, body image dissatisfaction, and disordered eating. *International Journal of Psychology, 48*(6), 1201–1211. https://doi.org/10.1080/00207594.2013.779378

Lev-Ari, L., Zohar, A. H., Bachner-Melman, R., & Totah Hanhart, A. (2021). Intergenerational transmission of child feeding practices. *International Journal of Environmental Research and Public Health, 18*(15), 8183. Retrieved from https://www.mdpi.com/1660-4601/18/15/8183.

Loth, K. A., MacLehose, R. F., Fulkerson, J. A., Crow, S., & Neumark-Sztainer, D. (2013). Eat this, not that! Parental demographic correlates of food-related parenting practices. *Appetite, 60*, 140–147. https://doi.org/10.1016/j.appet.2012.09.019

Lydecker, J. A., & Grilo, C. M. (2016). Fathers and mothers with eating-disorder psychopathology: Associations with child eating-disorder behaviors. *Journal of Psychosomatic Research, 86*, 63–69. https://doi.org/10.1016/j.jpsychores.2016.05.006

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*(1), 83.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39*(1), 99–128.

Małachowska, A., & Jeżewska-Zychowicz, M. (2021). Does examining the childhood food experiences help to better understand food choices in adulthood? *Nutrients, 13*(3), 983. Retrieved from https://www.mdpi.com/2072-6643/13/3/983.

Martini, M. G., Barona-Martinez, M., & Micali, N. (2020). Eating disorders mothers and their children: A systematic review of the literature. *Archives of Women's Mental Health, 23*(4), 449–467. https://doi.org/10.1007/s00737-020-01019-x

Morrison, H., Power, T. G., Nicklas, T., & Hughes, S. O. (2013). Exploring the effects of maternal eating patterns on maternal feeding and child eating. *Appetite, 63*, 77–83. https://doi.org/10.1016/j.appet.2012.12.017

Musher-Eizenman, de Lauzon-Guillain, B., Holub, S. C., Leporc, E., & Charles, M. A. (2009). Child and parent characteristics related to parental feeding practices. A cross-cultural examination in the US and France. *Appetite, 52*(1), 89–95. https://doi.org/10.1016/j.appet.2008.08.007

Musher-Eizenman, & Holub, S. (2007). Comprehensive feeding practices questionnaire: Validation of a new measure of parental feeding practices. *Journal of Pediatric Psychology, 32*(8), 960–972. https://doi.org/10.1093/jpepsy/jsm037

Pratt, M., Hoffmann, D., Taylor, M., & Musher-Eizenman, D. (2019). Structure, coercive control, and autonomy promotion: A comparison of fathers' and mothers' food parenting strategies. *Journal of Health Psychology, 24*(13), 1863–1877. https://doi.org/10.1177/1359105317707257

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*(4), 717–731.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879–891.

Puhl, R. M., & Schwartz, M. B. (2003). If you are good you can have a cookie: How memories of childhood food rules link to adult eating behaviors. *Eating Behaviors, 4*(3), 283–293. https://doi.org/10.1016/s1471-0153(03)00024-2

Roberts, L. T., Carbonneau, N., Goodman, L. C., & Musher-Eizenman, D. R. (2020). Retrospective reports of childhood feeding in mother-daughter dyads. *Appetite, 149*, Article 104613. https://doi.org/10.1016/j.appet.2020.104613

Ruggiero, C. F., Hohman, E. E., Birch, L. L., Paul, I. M., & Savage, J. S. (2021). INSIGHT responsive parenting intervention effects on child appetite and maternal feeding

practices through age 3 years. *Appetite, 159*, Article 105060. https://doi.org/10.1016/j.appet.2020.105060

Saltzman, J. A., Pineros-Leano, M., Liechty, J. M., Bost, K. K., Fiese, B. H., & Team, S. K. (2016). Eating, feeding, and feeling: Emotional responsiveness mediates longitudinal associations between maternal binge eating, feeding practices, and child weight. *International Journal of Behavioral Nutrition and Physical Activity, 13*. https://doi.org/10.1186/s12966-016-0415-5, 89-89.

Shloim, N., Edelson, L. R., Martin, N., & Hetherington, M. M. (2015). Parenting styles, feeding styles, feeding practices, and weight status in 4–12 year-old children: A systematic review of the literature. *Frontiers in Psychology, 6*, 1849.

Steinsbekk, S., Barker, E. D., Llewellyn, C., Fildes, A., & Wichstrom, L. (2018). Emotional feeding and emotional eating: Reciprocal processes and the influence of negative affectivity. *Child Development, 89*(4), 1234–1246. https://doi.org/10.1111/cdev.12756

van Strien, T., Frijters, J. E. R., Bergers, G. P. A., & Defares, P. B. (1986). The Dutch Eating Behavior Questionnaire (DEBQ) for assessment of restrained, emotional, and external eating behavior. *5*(2), 295–315. https://doi.org/10.1002/1098-108x(198602)5, 2<295::Aid-eat2260050209>3.0.Co;2-t.

Tan, C. C., Ruhl, H., Chow, C. M., & Ellis, L. (2016). Retrospective reports of parental feeding practices and emotional eating in adulthood: The role of food preoccupation. *Appetite, 105*, 410–415. https://doi.org/10.1016/j.appet.2016.06.009

Tylka, T. L., Eneli, I. U., Kroon Van Diest, A. M., & Lumeng, J. C. (2013). Which adaptive maternal eating behaviors predict child feeding practices? An examination with mothers of 2- to 5-year-old children. *Eating Behaviors, 14*(1), 57–63. https://doi.org/10.1016/j.eatbeh.2012.10.014

Vaughn, A. E., Ward, D. S., Fisher, J. O., Faith, M. S., Hughes, S. O., Kremers, S. P. J., … Power, T. G. (2016). Fundamental constructs in food parenting practices: A content map to guide future research. *Nutrition Reviews, 74*(2), 98–117. https://doi.org/10.1093/nutrit/nuv061. %JNutrition Reviews.

Vollmer, R. L., Adamsons, K., Foster, J. S., & Mobley, A. R. (2015). Association of fathers' feeding practices and feeding style on preschool age children's diet quality, eating behavior and body mass index. *Appetite, 89*, 274–281. https://doi.org/10.1016/j.appet.2015.02.021

Vollmer, R. L., & Baietto, J. (2017). Practices and preferences: Exploring the relationships between food-related parenting practices and child food preferences for high fat and/or sugar foods, fruits, and vegetables. *Appetite, 113*, 134–140. https://doi.org/10.1016/j.appet.2017.02.019

Wardle, J., Sanderson, S., Guthrie, C. A., Rapoport, L., & Plomin, R. (2002). Parental feeding style and the inter-generational transmission of obesity risk. *Obesity Research, 10*(6), 453–462. https://doi.org/10.1038/oby.2002.63

Watson, H. J., O'Brien, A., & Sadeh-Sharvit, S. (2018). Children of parents with eating disorders. *Current Psychiatry Reports, 20*(11), 101. https://doi.org/10.1007/s11920-018-0970-3

Whitaker, K. L., Jarvis, M. J., Beeken, R. J., Boniface, D., & Wardle, J. (2010). Comparing maternal and paternal intergenerational transmission of obesity risk in a large population-based sample. *The American Journal of Clinical Nutrition, 91*(6), 1560–1567. https://doi.org/10.3945/ajcn.2009.28838. %J The American Journal of Clinical Nutrition.

Willis, T. A., George, J., Hunt, C., Roberts, K. P. J., Evans, C. E. L., Brown, R. E., et al. (2014). Combating child obesity: Impact of HENRY on parenting and family lifestyle. *Pediatric Obesity, 9*(5), 339–350. https://doi.org/10.1111/j.2047-6310.2013.00183.x

Zarychta, K., Kulis, E., Gan, Y., Chan, C. K. Y., Horodyska, K., & Luszczynska, A. (2019). Why are you eating, mom? Maternal emotional, restrained, and external eating explaining children's eating styles. *Appetite, 141*, Article 104335. https://doi.org/10.1016/j.appet.2019.104335

Ziauddeen, N., Wilding, S., Roderick, P. J., Macklon, N. S., Smith, D., Chase, D., et al. (2020). Predicting the risk of childhood overweight and obesity at 4–5 years using population-level pregnancy and early-life healthcare data. *BMC Medicine, 18*(1), 105. https://doi.org/10.1186/s12916-020-01568-z