Original Article

The role of parents' romantic relationship warmth and hostility in child feeding practices and children's eating behaviours

Emma Haycraft* and Jackie Blissett†

*Loughborough University Centre for Research into Eating Disorders, Loughborough University, Leicestershire, UK, and †School of Psychology, University of Birmingham, Birmingham, UK

Abstract

This research examined the associations between parents' reports of the quality of their romantic relationships with their partner/spouse, their feeding interactions with their children, and their children's eating behaviours. One hundred and fifty-six married/cohabiting mothers of young children completed self-report measures of their romantic relationship quality, child feeding practices and children's eating behaviours. Reports of a less warm, more hostile romantic relationship were associated with children's less adaptive eating behaviours. More hostile relationship quality was also related to greater restriction of their children's food intake. The quality of parents' romantic relationships is associated with parental feeding practices and children's eating behaviours. Further work should examine the emotional tone of mealtimes in order to discover whether this may be the mechanism of the relationship.

Keywords: romantic relationships, child feeding, parents, warmth, hostility, eating.

Correspondence: Dr Emma Haycraft, Loughborough University Centre for Research into Eating Disorders, School of Sport, Exercise and Health Sciences, Loughborough University, Leicestershire LE11 3TU, UK. E-mail: e.haycraft@lboro.ac.uk

Being in a functional relationship with a co-parent has been found to boost self-efficacy with regard to parenting (e.g. Belsky 1984; Cutrona 1984) and provide an important source of support (Belsky 1984). Conversely, research suggests that being in a hostile or less supportive romantic relationship can influence the quality of parenting, such that it becomes less adaptive (e.g. Leinonen *et al.* 2003). The quality of parents' romantic relationships has previously been studied with regard to general parenting practices, with evidence that parents in successful romantic relationships are likely to display warmer, sensitive and more positive parenting behaviours than parents with a lower romantic relationship quality (Cox *et al.* 1989).

Although limited, the literature suggests that parents in a functional, supportive relationship are better able to respond sensitively and appropriately to their child while, conversely, parents in dysfunctional or conflictual relationships may be less responsive or attentive to their child's needs (see Erel & Burman 1995). Reported marital hostility has been reflected in hostile parenting practices, with parents who report a more hostile romantic relationship with their co-parent displaying more punitive parenting interactions with their children (Leinonen *et al.* 2003). Evidence has also linked marital dissatisfaction to problematic childhood outcomes, such as disruptive behaviour in pre-school children (e.g. DeVito & Hopkins 2001). Romantic relationship conflict or

dissatisfaction may affect children's adjustment through factors such as high levels of tension and discord at home and, indeed, mothers who reported higher levels of marital criticism have been found to exhibit more verbally controlling behaviours with their children (Stein *et al.* 2001).

One context in which relationship quality has received little attention is that of eating interactions. General family functioning, of which parents' relationship quality can be considered an important component, has been highlighted as potentially influential in children's psychological adjustment (Drotar 1997) and in childhood obesity (Rhee 2008). An examination of family functioning found that mothers of obese children report higher levels of interpersonal conflict and a greater lack of family cohesion and structure than mothers of non-overweight children (Zeller *et al.* 2007). There is also evidence of parents' dyadic discontent being associated with eating psychopathology in their offspring (Espina *et al.* 2003). Within the child feeding domain, mothers of children with non-organic failure to thrive (now known as 'growth faltering') reported less satisfying romantic relationships than mothers of healthy infants, although the differences were not statistically significant (Skuse *et al.* 1992). Aside from this one study with clinical child sample, there is little work that has examined the role of parents' romantic relationship quality in the child feeding domain; where more negative relationships may be related to less optimal feeding practices and children's less adaptive eating behaviours. Both less optimal feeding practices and less adaptive eating behaviours may have adverse implications for children's health, both in terms of overweight or underweight and later eating disorders (e.g. Edmunds & Hill 1999; Rhee 2008). Indeed, children of divorced parents have been found to have a

higher body mass index (BMI) and to be more likely to eat in the absence of hunger than children whose parents are married (Yannakoulia *et al.* 2008).

Extending findings from the previous literature to the context of child feeding, such evidence would suggest that parents in a good relationship may be more sensitive and appropriate in their child feeding behaviours, while parents in less satisfying relationships may be less sensitive and less responsive to their child, resulting in inappropriate or intrusive feeding behaviours, less adaptive child eating behaviours and less enjoyable mealtime interactions. This paper reports on a study that aims to begin filling the gaps in the existing literature by considering the role of parents' romantic relationship quality in their child feeding practices and in children's eating behaviours. It was hypothesized that romantic relationship quality would relate to parental feeding practices and children's eating behaviours. Additionally, this study aims to test the hypothesis that child feeding practices would mediate the associations between parents' romantic relationship quality and their children's eating behaviours.

Method

Participants

One hundred and sixty-eight mothers were recruited via 14 nurseries and pre-schools in the West Midlands and Cambridgeshire, UK. Approximately 1500 questionnaires were initially distributed and 11.2% were returned. Respondents were excluded if they reported marital statuses other than 'married' or 'cohabiting' (e.g. single, widowed or separated; $n = 10$), if they failed to complete all of the questionnaire measures ($n = 2$) or if they did not have a child

Key messages

- Parents' warmer romantic relationships are related to more adaptive eating behaviours in their children and to the implementation of less controlling feeding practices.
- More hostile romantic relationships are related to less adaptive eating behaviours in children and to more restrictive child feeding practices.
- The associations between romantic relationship quality and children's eating behaviours are independent of the feeding practices that mothers use.

aged between 1.5 and 6 years ($n = 0$). This left a total sample of 156 mothers. The mothers had a mean age of 35 years [standard deviation (SD) 4.62, range 23 to 46 years] and had children with a mean age of 42 months (SD 10.86, range 18 to 69 months). Eighty-two per cent of the mothers ($n = 128$) were married and 18% ($n = 28$) were cohabiting. The mothers' mean relationship duration was 10.7 years (SD 4.44, range 2 to 23 years). Ethnicity and socio-economic status data were not collected for this sample of mothers, but the nurseries involved in the study served predominantly white, middle-class neighbourhoods.

Measures and procedure

Following institutional review board ethical clearance and informed consent, the mothers were invited to complete the following self-report questionnaire measures. The questionnaires were distributed via the nurseries/pre-schools, and the responses were returned using postage-paid envelopes that were attached to each questionnaire.

Behavioral Affect Rating Scale (BARS; Conger 1989)

The BARS-22 assesses the respondent's report of another's behaviour towards him/her (e.g. a mother's report of her romantic partner's behaviour towards her). Two of the three BARS subscales were used in this study: warmth and moderate hostility. The extreme hostility subscale was excluded because of insufficient provision for dealing with reports of domestic violence. Responses were made on a seven-point Likert scale ranging from 1 (never) to 7 (always). Each subscale has nine questions, the responses to which were summed, and a mean score for each subscale was calculated. Higher scores on the moderate hostility subscale indicate a more hostile relationship (example statement: 'how often did your partner get angry at you?'), while higher scores on the warmth subscale are indicative of a warmer relationship (example statement: 'how often did your partner let you know she/he really cares about you?'). The BARS has been found to demonstrate concurrent, convergent and predictive validity (e.g. Matthews *et al.* 1996; Melby *et al.* 2003). With the current sample,

the Cronbach's α values were 0.96 for warmth and 0.96 for moderate hostility, indicating acceptable reliability.

The Child Feeding Questionnaire (CFQ; Birch et al. 2001)

The CFQ assesses parents' practices, attitudes and beliefs regarding feeding their child. Three of the CFQ subscales were administered: monitoring (the extent to which parents keep track of the high fat or junk foods that their child consumes), pressure to eat (parents' reports of encouraging their child to eat more of certain foods) and restriction (parents' tendencies to limit consumption of certain foods or to use food as a reward). For each subscale, the question responses were summed and a mean score was calculated by dividing the total number of items per respondent. Higher scores indicate greater reports of each feeding practice. The CFQ is widely used and has been found to display adequate reliability and validity (Birch *et al.* 2001). The reliability of these subscales in the current sample was good: monitoring $\alpha = 0.87$, pressure to eat $\alpha = 0.71$ and restriction $\alpha = 0.76$.

The Child Eating Behaviour Questionnaire (CEBQ; Wardle et al. 2001)

The CEBQ is a valid and reliable measure of parents' reports of their children's eating behaviours (Wardle *et al.* 2001). The seven eating subscales were used in this study: food responsiveness, enjoyment of food, satiety responsiveness, food fussiness, slowness in eating, emotional overeating and emotional undereating. The desire to drink subscale was excluded. The parents answered on a five-point scale (never to always), and the mean scores were calculated for each subscale with higher scores indicating greater incidence of the eating behaviours in the children. In the current sample, the Cronbach's α coefficients for each of the subscales were as follows: food responsiveness 0.68, enjoyment of food 0.92, satiety responsiveness 0.71, food fussiness 0.91, slowness in eating 0.82, emotional overeating 0.48 and emotional undereating 0.81. These scores indicate acceptable reliability, with the exception of the emotional overeating subscale. Any significant findings involving

the emotional overeating subscale were interpreted cautiously with this in mind.

Data analysis

Pearson's two-tailed correlations were run to test for associations between maternal reports of their relationship quality and their reports of their child-feeding practices and children's eating behaviours. Mediation models were subsequently constructed to test whether the mothers' child feeding practices mediated the association between romantic relationship quality and children's eating behaviours. Mediation analyses were conducted using a series of linear regression analyses. For mediation to occur: (1) the independent variable (in this case, relationship quality; either moderate hostility or warmth) must significantly predict the dependent variable (children's eating behaviours); (2) the independent variable must also predict the mediator (maternal child feeding practices); and (3) the mediator must predict the dependent variable while controlling for the predictor (Holmbeck 2002). If all three of these conditions are met, then the fourth step is to examine whether the effect of the independent variable on the dependent variable is less after controlling for the mediator. Once all of these are established, mediation is said to have occurred (Baron & Kenny 1986; Holmbeck 1997, 2002).

Results

Table 1 presents descriptive statistics for this sample's scores on the subscales of the BARS, CFQ and CEBQ. This sample's scores are broadly comparable with previous uses of these measures (e.g. Wardle *et al.* 2001; Leinonen *et al.* 2003; Blissett & Haycraft 2008).

Table 2 presents correlations between mothers' reported relationship warmth and moderate hostility with mothers' reports of their children's eating behaviours and their child feeding practices. The mothers who reported greater warmth in their romantic relationships reported having children who were more responsive to food, who enjoyed food more, who were less responsive to satiety, less slow at eating and less likely to emotionally undereat. The mothers who

Table 1. Descriptive statistics for mothers' self-reported scores on the subscales of the Behavioral Affect Rating Scale (BARS), Child Feeding Questionnaire (CFQ) and Child Eating Behaviour Questionnaire (CEBQ) ($n = 156$)

	Mean (SD)	Actual range of mean scores	Possible range of mean scores
BARS			
Warmth	5.34 (1.18)	1.00–7.00	1.00–7.00
Moderate hostility	2.41 (0.93)	1.11–5.89	1.00–7.00
CFQ			
Monitoring	4.51 (0.68)	2.00–5.00	1.00–5.00
Pressure to eat	2.95 (1.03)	1.00–5.00	1.00–5.00
Restriction	3.27 (0.85)	1.00–5.00	1.00–5.00
CEBQ			
Food responsiveness	2.16 (0.57)	1.00–4.20	1.00–5.00
Enjoyment of food	3.68 (0.75)	1.00–5.00	1.00–5.00
Satiety responsiveness	3.11 (0.60)	1.80–4.60	1.00–5.00
Food fussiness	2.90 (0.87)	1.00–5.00	1.00–5.00
Slowness in eating	3.05 (0.81)	1.25–5.00	1.00–5.00
Emotional overeating	1.70 (0.55)	1.00–5.00	1.00–5.00
Emotional undereating	3.30 (0.91)	1.00–5.00	1.00–5.00

SD, standard deviation.

Table 2. Two-tailed Pearson's correlations between the mothers' reported romantic relationship quality and reports of maternal child feeding practices and children's eating behaviours ($n = 156$)

	Warmth	Moderate hostility
Child Feeding Questionnaire		
Monitoring	−0.001	−0.153
Pressure to eat	−0.090	0.115
Restriction	−0.095	0.169*
Children's Eating Behaviour Questionnaire		
Food responsiveness	0.192*	−0.061
Enjoyment of food	0.239**	−0.157*
Satiety responsiveness	−0.288***	0.236**
Food fussiness	−0.121	0.152
Slowness in eating	−0.238**	0.283***
Emotional overeating	0.071	−0.037
Emotional undereating	−0.207**	0.222**

* $P \leq 0.05$; ** $P \leq 0.01$; *** $P \leq 0.001$.

reported more moderately hostile romantic relationships reported having children who enjoyed food less, were more responsive to satiety, were slow at eating and more likely to emotionally undereat. More hostile

Table 3. Results of the regressions, testing Steps 1 and 2 of the mediational model: (1) predictor to outcome – relationship quality (warmth, moderate hostility) to children's eating behaviours (CEBQ); and (2) predictor to mediator – relationship quality (warmth, moderate hostility) to child feeding practices (CFQ)

	Warmth				Moderate Hostility			
	R ²	Beta	B	SE of B	R ²	Beta	B	SE of B
(1) Predictor to outcome								
Food responsiveness	0.037	0.192	0.093*	0.038	0.004	−0.061	−0.037	0.049
Enjoyment of food	0.057	0.239	0.153**	0.050	0.025	−0.157	−0.127*	0.064
Satiety responsiveness	0.083	−0.288	−0.146***	0.039	0.056	0.236	0.152**	0.050
Food fussiness	0.015	−0.121	−0.089	0.059	0.023	0.152	0.142	0.075
Slowness in eating	0.057	−0.238	−0.164**	0.054	0.080	0.283	0.246***	0.067
Emotional overeating	0.005	0.071	0.033	0.037	0.001	−0.037	−0.022	0.048
Emotional undereating	0.043	−0.207	−0.161**	0.061	0.049	0.222	0.218**	0.077
(2) Predictor to mediator								
Monitoring	0.000	−0.001	0.001	0.046	0.023	−0.153	−0.111	0.058
Pressure to eat	0.008	−0.090	−0.078	0.070	0.013	0.115	0.127	0.088
Restriction	0.009	−0.095	−0.068	0.058	0.029	0.169	0.155*	0.073

* $P \leq 0.05$, ** $P \leq 0.01$, *** $P \leq 0.001$.

SE, standard error.

Table 4. Results of the regressions, testing Step 3 of the mediational model: (3) mediator to outcome (controlling for predictor; moderate hostility) – restriction (CFQ) to children's eating behaviours (CEBQ)

	Restriction			
	R ²	Beta	B	SE of B
Food responsiveness	0.110	0.331	0.223***	0.052
Enjoyment of food	0.031	0.080	0.070	0.071
Satiety responsiveness	0.063	0.088	0.062	0.056
Food fussiness	0.030	−0.086	−0.088	0.038
Slowness in eating	0.081	−0.036	−0.034	0.075
Emotional overeating	0.060	0.247	0.158**	0.051
Emotional undereating	0.049	0.005	0.006	0.086

** $P \leq 0.01$, *** $P \leq 0.001$.

SE, standard error.

relationship quality was also related to greater restriction of foods. There was also a trend ($P = 0.058$) for more hostile relationship quality to be related to less maternal monitoring of their children's food intake.

Following the correlations, a series of regression analyses were conducted to see whether child feeding practices mediated the association between the mothers' romantic relationship quality and the children's eating behaviours (see Tables 3,4). Initially, the independent variable (relationship quality) was

tested as a predictor of each of the seven child eating behaviours. Warmth significantly predicted food responsiveness, enjoyment of food, satiety responsiveness, slowness in eating and emotional undereating. Where relationship warmth was higher, food responsiveness and enjoyment of food were also higher, but satiety responsiveness, slowness in eating and emotional undereating were lower. Warmth did not predict food fussiness or emotional overeating. Moderate hostility significantly predicted enjoyment of food, satiety responsiveness, slowness in eating and emotional undereating. Where moderate hostility was higher, enjoyment of food was lower but satiety responsiveness, slowness in eating and emotional undereating were higher. Moderate hostility did not predict food responsiveness, food fussiness or emotional overeating.

Next, the independent variable was tested as a predictor of the three child feeding practices (monitoring, pressure to eat, restriction). Relationship warmth did not significantly predict any child feeding practices (Table 3) and so no further mediational models were tested using this independent variable. Higher levels of moderate hostility significantly predicted greater use of the child feeding practice of restriction but did not predict monitoring or pressure to eat.

As restriction was the only feeding practice to be significantly predicted by moderate hostility, restriction was then tested as a potential predictor of children's eating behaviours (controlling for the effect of the predictor; moderate hostility). Food responsiveness and emotional overeating were the only children's eating behaviours to be significantly predicted by restriction, with higher levels of restrictive feeding practices predicting greater food responsiveness and greater emotional overeating (see Table 4).

Taken together, these results demonstrate that no functional mediational pathway could be tested because not all of the conditions were met for any combination of independent variable/mediator/dependent variable. The lack of potential mediational pathways can be primarily attributed to the failure of Step 2 (predictor to mediator). Only one significant relationship was found (between moderate hostility and restriction), severely limiting the potential pathways that could be formed. Given that food responsiveness and emotional overeating were the only two eating behaviours predicted by restriction, and that these two eating behaviours were not predicted by moderate hostility, there were no potential mediational pathways. Thus, maternal child feeding practices do not appear to mediate the associations between maternal relationship quality and children's eating behaviours.

Discussion

The current study aimed to test for associations between reported romantic relationship quality and reports of child feeding practices and children's eating behaviours in a sample of mothers. Where mothers reported more hostile, less warm romantic relationships, they also reported more restriction of their children's food intake and less adaptive eating behaviours in their children, indicating support for the study's hypothesis. In addition, the potential mediational role of maternal child feeding practices in the associations between romantic relationship quality and children's eating behaviours was tested. Contrary to predictions, no mediational models were established, suggesting that maternal feeding practices are not the mechanism by which poorer roman-

tic relationship quality is related to children's less adaptive eating behaviours. This lack of support for the mediational models also implies that the relationships between poorer relationship quality and feeding practices, and between poorer relationship quality and eating behaviours, are relatively independent.

Mothers reporting higher levels of romantic relationship hostility reported greater restriction of their children's food intake. There was also a trend for more hostile relationship quality to be related to lower levels of monitoring. Restriction has been related to less favourable factors, such as children's inability to regulate their internal hunger and satiety cues (Birch & Fisher 1998) and more permissive parenting (Blissett & Haycraft 2008). Moderate monitoring can be considered to be an adaptive child-feeding behaviour and, indeed, it has been linked to a lower likelihood of childhood obesity (Faith *et al.* 2004). While the current data are cross-sectional, and thus do not permit attributions of causality, the association between greater restriction with maternal reports of a more hostile relationship with her partner are consistent with the literature regarding the negative impacts of a hostile relationship on parenting behaviours in general (e.g. Leinonen *et al.* 2003). Given that greater relationship hostility is associated with higher levels of punitive parenting (Leinonen *et al.* 2003), these data may also inform the literature that suggests that more authoritarian parenting is associated with higher levels of restriction (Hubbs-Tait *et al.* 2008).

Greater reports of moderate hostility in the mothers' romantic relationships were also linked with children's decreased enjoyment of food, and with children's increased responsiveness to satiety, slowness in eating and emotional undereating. Such associations may indicate that the mealtime environment plays an important role in children's eating behaviours. These eating behaviours suggest that children are less likely to enjoy eating or mealtimes, and it is possible that a mother's hostile relationship could be impinging negatively on children's mealtimes, with the child not being motivated to remain at the table and consume more food in a negative atmosphere. Alternatively, it is possible that the children's difficult eating behaviours may be a contributory factor in the mothers'

reports of a more hostile, less warm relationship quality. However, these are only inferences and further observational work would help to clarify and further examine the role of the mealtime environment in child feeding.

Conversely, mothers reporting a warmer relationship had children who were more responsive to food, enjoyed food and did not eat slowly, were less responsive to being full and were less likely to emotionally undereat; relationships that also tie in with the mealtime environment. It may be that mothers who report a warmer romantic relationship can create a more positive mealtime climate with their children and make mealtimes and eating more pleasurable. As such, they have children who they perceive enjoy food and mealtimes more. A positive environment is likely to encourage adaptive feeding or eating behaviours in the child, and the absence of any problematic eating behaviour may be reflected in the shorter mealtime duration.

Some of these associations have demonstrated preliminary evidence to suggest that the emotional tone of the interaction between family members at mealtimes may warrant further attention. As the findings suggest that relationship quality may be related to children's eating behaviours independently of the feeding practices that the mother uses, it is possible that the emotional tone of family mealtimes may be the mechanism by which the romantic relationship quality and children's eating behaviours are linked. Observational studies, which could examine warmth and hostility and other emotional mealtime factors, would expand on the current findings.

Although no mediational pathways were established, the finding that maternal restriction was positively related to children's food responsiveness and emotional overeating is worthy of comment. These eating behaviours are both indicative of parents perceiving their children as likely to overeat. As causality cannot be inferred, we cannot ascertain whether parental restriction is leading to their children being more responsive to food or more likely to emotionally overeat, or whether it is the children's eating behaviours that are promoting maternal use of restriction as an attempt to control their child's weight, although an interactive cycle is likely (Blissett & Farrow 2007).

These data may therefore be consistent with previous work which has suggested that restrictive feeding practices do not facilitate children's reliance on internal self-regulatory processes and may indeed exacerbate tendencies towards external or emotional eating behaviour, ultimately leading to greater weight gain and higher weight status (see Clark *et al.* 2007).

While significant associations were found between parents' romantic relationship warmth and hostility and their child feeding practices and children's eating behaviours, it is noteworthy that the correlation coefficients were often fairly low. Similarly, the amount of variance explained by the regressions used to test for mediation was also generally low. Therefore, while the findings are statistically significant, there are likely to be many other important contributors to the explanation of variance in children's eating behaviour and parents' feeding practices. There are other limitations of the present study that should be acknowledged. The data were obtained by self-report. However, previous studies have found mothers' reports of child feeding to be reliable (Whelan & Cooper 2000) and the CEBQ has been found to correlate well with behavioural measures of children's eating (Carnell & Wardle 2007). Although this study used pre-established, previously validated measures, no test-retest reliability was obtained on these measures using the current sample, and so an incomplete picture of the measures' reliabilities was provided. High Cronbach's α values, while affirming the internal consistency of the measures, may indicate redundancy of questions within these subscales.

Furthermore, the findings from this study are based on responses from a moderately sized, self-selected sample of married/cohabiting mothers of children under 6 years old, which limits their generalizability. Future work should examine the role of relationship quality in fathers and mothers of older children. The study had a low response rate and the recruitment strategy means that the data are clustered. Given that responses to the questionnaire were anonymous, it was impossible to test whether any potential effects of the data being clustered by nursery were observable. However, we acknowledge that these data may not be wholly representative and that the research design prevented parental responses from being

nested within a nursery, meaning that any potential clustering by nursery could not be directly accounted for in the analyses. Future work could explore this area further using qualitative methods, by interviewing parents about the quality of their romantic relationship and their children's eating behaviours, in order to gain further insights.

In conclusion, this study has highlighted a notable role for parents' romantic relationship quality in children's mealtimes and mothers' feeding practices. The pattern of associations suggests that the benefits of being in a functional relationship may be related to children's adaptive eating behaviours, while a poorer quality romantic relationship is related to maladaptive parenting behaviours within the context of child feeding.

Source of funding

None.

Conflicts of interest

No conflicts of interest have been declared.

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