



Maternal child-feeding style during the weaning period: Association with infant weight and maternal eating style

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ABSTRACT

A controlling maternal child-feeding style has been shown to have negative consequences for child weight and eating style for children over the age of 12 months. Maternal restriction is associated with increased consumption of food if given free access and child overweight. Pressure to eat conversely is associated with picky eating and a lower child weight. Little research however has considered the influence of maternal feeding style under 1 year, during the period when infants are being introduced to complementary foods. In the current study, 642 mothers with a child aged 6–12 months completed a copy of the Child Feeding Questionnaire (Birch, Fisher, Grimm-Thomas, Markey, Sawyer & Johnson 2001), the Dutch Eating Questionnaire (Van Strien, Frijters, Bergers, & Defares 1986) and reported infant and maternal weight. Differences in maternal feeding style were identifiable during this period and related to infant weight and maternal weight and eating style. Infant weight was positively correlated with maternal use of restriction, monitoring and concern for infant weight. Moreover, mothers high in restraint, external and emotional eating reported higher levels of concern for infant weight, restriction and monitoring and perceived their infants to be larger. The findings suggest that the extent to which controlling feeding practices are used is influenced by infant and maternal personal weight concerns even at this early stage. Potentially, these early behaviours could have long term consequences for child weight and eating style.

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1. Introduction

Current Department of Health recommendations in the UK advise the introduction of complementary foods from 6 months of age (DH, 2007) although many mothers introduce complementary foods before this period (Bolling, Grant, Hamlyn, & Thornton 2007). During the weaning stage infants receive their first tastes of solid foods, moving from a milk-based to a varied diet by the time they are around 12 months old. The weaning period is therefore potentially important in the establishment of both maternal child-feeding style and children's eating habits, yet there is a dearth of research examining this period of infant feeding.

Accumulating evidence from both US and UK populations demonstrates that maternal child-feeding style has a direct effect on child eating behaviour and food intake (for a review see Ventura & Birch 2008). A restrictive maternal child-feeding style has been linked with increased levels of eating in the absence of hunger (Birch, Fisher, & Davison 2003) and increased consumption of restricted foods when allowed free access to them (Lee, Mitchell, Smiciklas-Wright, & Birch 2001). The use of restriction is also associated with increased child weight, although the relationship is not always strong (Fisher & Birch

1999; Haycraft & Blissett 2008). Whilst restrictive feeding practices are likely to develop in response to child overweight (Francis, Hofer, & Birch 2001), maternal use of restriction can also increase child weight through over eating when the child is given free access to that food (Anzman & Birch, 2009). Conversely, maternal pressure to eat is associated with increased perceived pickiness or fussiness (Farrow, Galloway, & Fraser 2009) and a decreased intake of nutrient rich foods such as fruit and vegetables (Fisher, Mitchell, Smiciklas-Wright, & Birch 2002). Use of pressure to eat can stem from picky eating behaviours but evidence from experimental settings shows that pressure to eat a food is associated with decreased liking of the food (Galloway, Fiorito, Lee, & Birch 2006) and decreased consumption (Birch, McPhee, Shoba, Steinberg, & Krehbiel, 1987). Some evidence also suggests that maternal pressure to eat is associated with lower child weight (Brann & Skinner 2005). Mothers may react to their child's low weight but increased pressure to eat may discourage the child from consuming the target food (Faith & Kerns 2005).

The majority of the studies regarding maternal child-feeding style have been carried out with preschool aged children (Ventura & Birch 2008). However, as the relationship between maternal child-feeding style and child weight and eating style is bi directional, it is important to explore the role of early life experiences in the formation of maternal child-feeding style. Indeed, Farrow and Blissett (2008) found that pressure to eat measured when the infant was 1 year old was negatively correlated with birth weight, suggesting that even at

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this early stage mothers may react to infant size. Further evidence suggests that high levels of maternal control during this period may have a negative impact upon child weight. [Farrow and Blissett \(2006\)](#) observed mothers feeding their infants at 6 months old. Where maternal control was low, infants who had had slow weight gain during the first 6 months gained significantly more weight during the next 6 months and vice versa, thus balancing their weight gain. Conversely, when mothers showed high levels of controlling feeding practices, infants who had had slow weight gain continued to gain weight at a slower rate, and those with initial heavier weight gain further increased theirs. Thus level of maternal control during the weaning phase is potentially an important influence upon child weight.

The aim of the current study was therefore to examine differences in maternal control during the weaning period and explore differences in relation to infant and maternal characteristics.

2. Materials and methods

2.1. Participants

All participants gave informed consent prior to inclusion in the study. All aspects of this study have been performed in accordance with the ethical standards set out in the 1964 Declaration of Helsinki. Approval for this study was granted by the Department of Psychology Research Ethics Committee at Swansea University. Six hundred and forty-two mothers with a singleton child aged between 6 months and 12 months of age (mean age 8.35 months) whose child had started consuming complementary foods completed the questionnaire. Mothers were recruited to the study through posters placed in nurseries and community centres hosting mother and baby groups. In addition advertisements for the study were posted on internet parenting sites.¹

Mothers provided information regarding birth weight and gestation. All infants included in the study had a birth weight ≥ 2500 g and were born at ≥ 37 weeks gestation. 68.7% of mothers were primiparous. The mean age of the respondents was 28.93 years and the mean number of years in education 14.23. Further demographic information is provided in [Table 1](#).

2.2. Measures

Data was collected using an online questionnaire designed and hosted using SurveyMonkey.com (Portland, Oregon, USA). The posters advertising the study provided a web link to the online questionnaire or contact details to request a paper copy of the questionnaire. For the online questionnaire, consent was collected using a series of checkboxes which had to be completed. The questionnaire examined maternal child-feeding style, infant and maternal weight and maternal eating style.

2.2.1. Maternal feeding style

Participants completed a copy of the Child Feeding Questionnaire (CFQ) designed and validated by [Birch, Fisher, GrimmThomas, Markey, Sawyer and Johnson \(2001\)](#). The CFQ examines parental attitudes and behaviours towards children's diet and was designed to be used with parents whose children are consuming solid foods. This self report questionnaire aims to assess the level of primary career involvement and control over diet and key behaviours including perceived responsibility, concerns about child weight, restriction, pressure to eat and monitoring feeds alongside perceptions of both parental and child weight. Although the CFQ was designed with a suggested age

Table 1
Sample distribution by demographic factors.

Indicator	Group	N	%
Age	≤ 19	22	3.3
	20–24	90	13.6
	25–29	278	42.1
	30–34	194	29.4
	$35 \geq$	76	11.5
Education	No formal	25	3.8
	School	88	13.3
	College	174	26.4
	Higher	373	56.5
Marital status	Married	457	69.2
	Cohabiting	170	25.8
	Single	26	4.0
Home	Owned	425	64.5
	Rented	183	28.3
	Council	33	4.5
	Other	14	2.7
Maternal occupation	Professional and managerial	267	40.5
	Skilled	116	17.6
	Unskilled	185	28.0
	Other	48	7.3
	Paternal occupation	Professional and managerial	213
	Skilled	218	33.0
	Unskilled	169	25.6
	Other	37	5.6

range of approximately 2 to 11 years, the majority of questions were applicable for those introducing complementary foods.

2.2.2. Maternal eating style

Participants completed a full copy of the three scales of the Dutch Eating Behaviour Questionnaire which measures external, emotional and restrained eating behaviours ([Van Strien, Frijters, Bergers & Defares 1986](#)).

2.2.3. Infant and maternal weight

Participants provided current weight and height from which Body Mass Index was computed. Respondents also gave details of infant birth weight and estimated current infant weight. If they were unsure participants were instructed to leave these sections blank. Six hundred and twenty-eight respondents (97.8%) provided an estimated current infant weight.

2.3. Data analysis

Data analyses were carried out using SPSS v13, SPSS UK Ltd. The CFQ was scored as per instructions to give the factors perceived responsibility, perceived parent weight, perceived child weight and concerns about child weight, restriction, pressure to eat and monitoring ([Birch et al., 2001](#)). The DEBQ was also scored following author instructions to give the scales restraint, external eating and emotional eating ([Van Strien et al., 1986](#)). Pearson's correlations were used to examine the association between weaning behaviours, maternal control as measured by the CFQ, maternal and infant weight and maternal eating style as measured by the DEBQ. Median splits were performed for the three scales of the DEBQ to compare differences in maternal beliefs and behaviours by maternal eating style using multivariate ANCOVA. Maternal age and education were controlled for throughout.

3. Results

Maternal feeding style during the weaning period was associated with both infant weight and maternal weight and eating style.

¹ www.bounty.com; www.mumsnet.com; www.iwantmymum.com and www.babyletweaning.com.

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