Title

Differences in parental feeding styles and practices and toddler eating behaviour across complementary feeding methods: managing expectations through consideration of effect size.

Authors

Dr Sophia Komninou[1], Prof Jason Halford[2], Dr Jo Harrold[2]

[1]Department of Public Health, Policy and Social Sciences, Swansea University, Wales, UK

[2]Department of Psychological Sciences, University of Liverpool, UK

Abstract

Nutritional experiences during the early periods of infancy and toddlerhood are influential in the development of healthy feeding habits later in life. Interest into solid food introduction practices has experienced resurgence due to the popularisation of the baby-led weaning (BLW) approach as an alternative to more traditional parent-led weaning (PLW) practices. Although the literature shows the beneficial effects of BLW on eating behaviours, the magnitude of those effects is unknown. This study provides an estimation of the size of the difference between the solid feeding practices groups for a variety of practices consistent with the development of healthy food preferences and behaviours.

Five hundred sixty-five participants with infants between 12 and 36 months old completed a survey concerning their preferred parental feeding styles, parental feeding practices, sources of information on feeding and toddler's eating behaviour. Participants were categorised to one of four groups reflecting the level of infant self-feeding level a month after the introduction of solid food (Strict PLW, Predominant PLW, Predominant BLW and Strict BLW).

Estimated effect sizes of the significant differences show that the magnitude of those is modest to minimal. Moderate effect sizes are observed in comparisons regarding breastfeeding duration, maternal feeding practices, sources of information and types of first food given to the infants at the beginning of solid feeding introduction. When it comes to toddlers' eating behaviour and the family food environment, although some differences are statistically significant, the effect sizes are very small. Considering the long-lasting impact of food preferences developed at this stage along with the stress surrounding infant feeding decisions, it is crucial that the complementary feeding advice

parents receive reflects realistic expectations of the outcomes regarding the effects on eating behaviour.

Introduction

The introduction of solid food to an infant's diet is particularly important from both nutritional and behavioural points of view. The complementary feeding period offers the opportunity not only to supplement the infant's milk diet but also provides a unique sensory experience for both taste and texture. The method parents use to introduce solid food to their infant's diet has received a lot of research attention over the past half a decade (Brown & Lee, 2011c; Cameron, Heath, & Taylor, 2012b; Cameron, Taylor, & Heath, 2013; Morison et al., 2016; Rapley, Forste, Cameron, Brown, & Wright, 2015; Rowan & Harris, 2012; Townsend & Pitchford, 2012; Wright, Cameron, Tsiaka, & Parkinson, 2011). Traditionally, the method most commonly utilised was a gradual introduction from simple to more complex textures - first introducing purees, spoon fed by an adult, with more lumpy and solid food being offered a little later. However, an alternative approach is gaining the attention of both parents and researchers. The baby-led weaning (BLW) approach skips puree and spoon feeding and puts the infant in a central role of feeding by letting them self-select and self-feed rather than being the passive receiver of the food (Rapley et al., 2015).

Despite the description above, there is no 'official' definition of BLW. However, in the current literature, it is generally described as spoon feeding less than 10% of the time (Brown & Lee, 2015). This leaves a very broad group of solid food feeding methods to be categorised as parent-led weaning (PLW). Specifically, the methods range from exclusive spoon-feeding to self-feeding and self-selecting food the majority of the time with spoon feeding only occasionally. A combination of spoon feeding by an adult and self-feeding might be used on different occasions and as a result of multiple familial need, for example when caring for multiple children at the same time or eating out, making sure the child gets the appropriate nutrient intake or when a child is having meals in the nursery or with other carers. Currently, despite the plethora of research on the effects of BLW (Brown & Lee, 2015; Cameron et al., 2013; Townsend & Pitchford, 2012), there is very little research looking at the effects of the combination of complementary feeding methods on children's eating behaviour (Fu et al., 2018; Morison et al., 2016).

Mothers following BLW are consistently shown to breastfeed for longer and are more likely to follow the current Department of Health guidelines (NICE, 2015) to delay the introduction of solids to 6 months of age (Brown & Lee, 2011a; Cameron et al., 2012b; Fu et al., 2018; Townsend & Pitchford, 2012) Interestingly, there is not much research on the source of information mothers take advice

from with regard to the timing of solid introduction. Recent evidence from New Zealand indicates that mothers following BLW are more likely to utilise interactive media than health professionals (Fu et al., 2018), however, this finding is isolated and can only reflect the participants in a small geographic region.

Although it is a relatively new area of study, research into BLW is largely identifying the approach as a means of supporting healthy eating behaviours. There is evidence from cross-sectional surveys conducted in the UK and New Zealand that BLW is associated with lower food fussiness and greater satiety responsiveness when compared to traditionally weaned, spoon-fed infants and toddlers (Brown & Lee, 2013; Cameron et al., 2013; Fu et al., 2018). The only randomised control trial that exists, however, does not support this, as differences of energy self-regulation and food responsiveness between the BLW intervention and control groups were not significant and differences of satiety responsiveness favoured the control group (Taylor et al., 2017) indicating that eating behaviour characteristics, like food and satiety responsiveness and self-regulation, might be a result of the parental general traits and feeding style rather than the food texture. Additionally, it has been argued that the reliance on BLW may expose infants to higher levels of fat, sugar and salt and lower levels of vitamins and minerals than those in typically prepared infant foods (Rowan & Harris, 2012, Morison et al. 2016) if the family diet is not well balanced, although the evidence is still mostly conflicting (Daniels et al., 2018).

Perhaps not surprisingly, mothers following BLW are much less controlling in their feeding style (restriction, monitoring and pressure to eat) and to have lower levels of concern for their child's weight (Brown & Lee, 2011c, 2013). They have also been shown to demonstrate significantly general lower anxiety and obsessive-compulsive scores, as well as general higher conscientiousness scores, compared to those following a traditional PLW approach (Brown, 2015). The limited literature focusing on parents selecting to follow PLW practices shows that spoon-feeding is associated with higher parental control over feeding which may result in the insufficient development of children's self-regulation.

Outcomes of such previous studies of BLW focus solely on the significance level and omit the reporting of effect size estimates. However, the importance of the effect size estimates reporting in social science research is multiple. Significance level allows for a binary interpretation of the findings whereas the addition of effect size estimates facilitates a decision on the magnitude of the effects (Bowman, 2017). To put this in context of the present paper, infant feeding decisions can be a stressful experience for many parents, so understanding the magnitude of the reported effects can provide realistic expectations of the outcomes of their decision. From the researchers' point of view,

effect size estimates reporting can benefit future research in the area enabling accurate power (Sullivan & Feinn, 2012) and Bayesian prior calculations.

The present study aimed to identify and highlight the extent of the differences in feeding styles, practices and information sources as well as the toddlers' eating behaviour across the full range of complementary feeding methods. Given the limited scope of previous research, in terms of categorising the range of weaning styles, in this study we employed a more inclusive categorization of complementary feeding practices to allow comparisons of feeding and eating behaviour between those who follow a strict BLW or PLW style and those who choose to follow a combination of both spoon and self-feeding. We included effect size estimates for all comparisons to understand the magnitude of the observed differences. Finally, we examined parental feeding styles beyond monitoring and control to allow for a more comprehensive comparison of the parental feeding styles across the complementary feeding method cohorts.

Methods and materials

Participants and recruitment

Five hundred and sixty-five parents with toddlers between 12-36 months old from the UK, who were born at full term and had no diagnosed developmental conditions, were recruited through relevant social media groups (mainly Facebook and parenthood specific discussion boards) and mailing lists of the local children's centers or through word of mouth advertising to mothers with younger children engaged in ongoing experimental studies on infant feeding and on early language acquisition in the laboratory. The 36 months cut-off point was applied to facilitate recruitment whilst managing potential for inaccurate answers due to fading memories. A web link to the survey was provided in advertisements. Participants were presented with the information sheet of the study and consent was established with a tick box before completing the questionnaire. Participants were not permitted to access the survey without providing their informed consent first. Parents with more than one child within the inclusion criteria were asked to complete the survey on one occasion only for one child. To avoid bias, the study was not advertised in specific BLW groups, and BLW was not included in the advert. The study gained ethical approval from the Ethics Committee of the Department of Psychological Sciences of the University of Liverpool (Ethical approval number IPHS-1314-290). All the aspects of the study were performed per the 1964 Declaration of Helsinki.

The survey

Weaning style categories

To categorise weaning styles, participants were not asked directly whether they followed PLW or BLW practices, removing the potential for differences in interpretation. Instead, using a sliding scale from 0% of the time to 100% of the time, they estimated the portion of time their child fed themselves at one month after the introduction of solid foods. Participants were subsequently grouped into four categories; strict BLW (self-feeding 90% or more of the time (Brown, 2015; Brown & Lee, 2011c, 2011a, 2013, 2015)); predominant BLW (self-feeding between 51% - 90% of the time); predominant PLW (self-feeding between 10% - 50% of the time) and strict PLW (self-feeding less than 10% of the time).

Demographics

Parents were asked demographic questions relating to their ethnicity, household composition, age, height and weight and country of residence. In order to assess social and economic status participants were asked to report maternal and paternal (if the father was living in the same household) occupation status. The simplified National Statistics Socio-economic Classification, which contains three occupation classifications was then applied (ONS, 2010). Limited demographic information (birth weight and order) relating to the child was also obtained.

Milk feeding practices

Questions relating to milk feeding method and, where relevant, breastfeeding duration, were included. Where parents reported that their child still breastfeeds, the age of the child at questionnaire completion was used as the age of the last breastfeeding event.

Family food environment and meal patterns.

Participants responded to three questions previously employed in a survey examining the associations between complementary feeding practices and health-related behaviours in New Zealand (Cameron, Heath, & Taylor, 2012a). Specifically, the questions were: "How often do you eat with your child (either with the same food or a different meal)?" "How often do you eat the same meal as your child, even in modified form or at a different time?" and "How often does your child eat commercially prepared food?"

Parental Feeding Style

Parents were asked to complete the Parental Feeding Styles Questionnaire (PFSQ) (Wardle, Sanderson, Guthrie, Rapoport, & Plomin, 2002). The PFSQ is a 27 item scale assessing four different dimensions (emotional feeding, instrumental feeding, i.e. using food as a reward, prompting/encouragement to eat and control over eating).

Toddlers' eating Behavior

The Child Eating Behaviour Questionnaire(Wardle, Guthrie, Sanderson, & Rapoport, 2001) was used to assess the toddler's eating behaviour. It includes 35 items in eight dimensions (Food responsiveness, Emotional over-eating, Enjoyment of food, Desire to drink, Satiety responsiveness, Slowness in eating, Emotional under-eating and Food fussiness).

Sources of information

Parents were asked their primary source of information about complementary feeding. Options included health professionals, friends, family or the Internet with an "other" option where a free text box was provided to specify this choice. The "other" option was maintained for any other answer that could not be recorded in one of the defined themes.

Introduction to solid food and first food offered

Parents were asked the type of the first food given to their child at the beginning of the complementary feeding. Options initially available were baby rice, fruit and vegetable with an "other" option with a free text box provided to specify this choice. After recording for any emerging themes, three more categories were identified and recoded, meat, bread & starches and mixed meals (where parents reported that their child was offered food from two or more of the above categories simultaneously). The "other" option was maintained for any other answer that could not be recorded in one of the defined themes.

Statistical analysis

The analysis was conducted using IBM SPSS Statistics (version 23, IBM Inc., Somers, NY). Data conformed to the requirements for parametric analysis. Therefore, a multivariate analysis of variance (MANOVA) was initially performed to compare parental characteristics and feeding practices across the four defined weaning styles. Covariates then were added the model to control for relevant characteristics (such as the age of the toddler, breastfeeding duration and age of solid introduction). Maternal occupation was not added as a covariate to this model as it was decided to keep in the model only the covariates that are associated with the outcomes in the literature. However, in the preliminary stages of the maternal analysis occupation was added a covariate in the model and it did not change the results of the analysis. Univariate and pairwise comparisons with Bonferroni corrections for the significance value were applied for post hoc analysis.

For nominal variables, a χ^2 test analysis was performed. Where appropriate a separate test of independence was conducted as an equivalent to post-hoc tests where the standardised residue z-score for each case was calculated and compared with the critical value (±1.96) to assess the difference between the expected and the actual frequency in each case.

The effect size was estimated using eta squared (η^2) for all ANOVA comparisons and Cramer's V for chi-square comparisons using the general rules of thumb given by Miles & Shevlin (2001) (η^2= 0.01 and Cramer's V=0.1 indicate small effect size, η^2= 0.06 and Cramer's V=0.3 indicate medium effect size and η^2= 0.14 and Cramer's V=0.5 indicate large effect size)

Results

Five hundred sixty-five completed the survey and were included in the analysis. 33.3% of these were classified as strict BLW, 17.3% as predominant BLW, 26.2% as predominant PLW and 23.2% as strict PLW.

Table one demonstrates the key demographic characteristics of the participants. Significant differences were identified between the feeding groups for maternal occupation (p=0.03), breastfeeding duration (p<0.001) and age of introduction to solid foods (p<0.001). The vast majority (92.9%) of the parents completing the survey came from households comprised of both mother and father living together and on most occasions mothers responded (98.6%).

Table 1: Demographic and descriptive characteristics of the overall sample and complementary feeding categories

Characteristic	Overall (n=565)	Complementary feeding type		
		Strict BLW (n=188)	Predominant BLW (n=98)	Predominant PLW (n=148)
Mother's Age (mean years±SE)	32.37±0.19	32.56±0.31	32.61±0.43	31.49±0.42
Father's Age (mean years±SE)	34.93±0.25	34.84±0.40	35.45±0.65	34.31±0.55
Child's Age (mean months±SE)	22.41±0.30	22.69±0.52	20.96±0.70	22.70±0.60
Parity (N (%*))				
Primiparous	349 (61.8)	103 (18.2)	63 (11.2)	101 (17.9)
Multiparous	216 (38.2)	85 (15.0)	35 (6.2)	47 (8.3)
Mother's BMI (mean kg/m^2 ±SE)	25.50±0.25	25.55±0.45	25.02±0.52	25.22±0.48
Father's BMI (mean kg/m^2 ±SE)	26.21±0.23	26.21±0.23	26.49±0.56	26.55±0.46
Mother’s occupation (N (%*))				
Higher managerial, administrative and professional occupations	313 (55.4)	83 (14.7)	65 (11.5)	91 (16.1)
Intermediate occupations	47 (8.3)	18 (3.2)	4 (0.7)	18 (3.2)
Routine and manual occupations	20 (3.5)	7 (1.2)	4 (0.7)	4 (0.7)
Not on paid occupation	185 (32.7)	80 (14.2)	25 (4.4)	35 (6.2)
Father’s occupation (N (%*))				
Higher managerial, administrative and professional occupations	364 (67.9)	127 (23.7)	55 (10.3)	92 (17.2)
Intermediate occupations	97 (18.1)	30 (5.6)	19 (3.5)	31 (5.8)
Routine and manual occupations	53 (9.9)	15 (2.8)	11 (2.1)	11 (2.1)
Not on paid occupation	22 (4.1)	6 (1.1)	7 (1.3)	6 (1.1)
Household composition (N (%*))				
Mother and father	525 (92.9)	178 (31.5)	88 (15.6)	136 (24.1)
Single mother	26 (4.6)	7 (1.2)	5 (0.9)	9 (1.6)
Single father	1 (0.2)	0 (0.0)	0 (0.0)	1 (0.2)

Other	13 (2.3)	3 (0.5)	4 (0.7)	3(0.5)
Breastfeeding initiation (N (%**))	539 (95.4)	185 (34.3)	95 (17.6)	134 (24.9)
Breastfeeding duration (mean weeks±SE)	66.00±1.68	80.48±2.47	61.04±3.52	56.65±3.52
Age of introduction to solid food (mean weeks±SE)	24.66±0.19	26.01±0.26	24.35±0.34	23.99±0.40

BLW: Baby-led weaning, PLW: Parent-led weaning * Percentages are given in reference to the whole sample ** Percentages are given in refere initiated breastfeeding. ***Group differences ascertained by one Way ANOVA and $\chi 2$ tests

Milk feeding practices

The vast majority of the study population initiated breastfeeding (95.4%) and 89.6% of the study sample was still breastfeeding (either exclusively or as a part of combination feeding) at six weeks of age. The percentage of any breastfeeding remained notably high at six months of age (80.4%) and at one year of age (63%). Babies whose parents followed a strict BLW method were breastfed for longer in comparison to the other three groups with medium effect size ($F(3,560)=13.39$, $p < 0.001$, $\eta^2= 0.067$)

Parental Feeding styles.

A one-way MANOVA revealed a significant difference in parental feeding styles measured with PFSQ between the four groups $F(24, 1665)=6.56$, $p<0.001$. Further univariate analysis showed significant differences between parental feeding styles for all four subscales of the PFSQ [Instrumental Feeding $F(3,560) =7.04$, $p<0.001$, $\eta^2= 0.036$; Control over feeding $F(3.560)= 16.24$, $p<0.001$, $\eta^2= 0.080$; Emotional feeding $F(3,560)=2.64$, $p=0.049$, $\eta^2= 0.014$; Encouragement $F(3,560)=18.26$, $p<0.001$, $\eta^2= 0.089$]. The effect size for all those subscales ranged from small to medium. Adjustment for breastfeeding duration and age of introduction to solids further reduced the effect size.-(Table 2). The addition of toddler's age in the model did not have any effect on any of the associations

Post hoc analysis revealed that parents who were following strict and predominant BLW style were using less instrumental feeding practices than parents in the two PLW groups (Strict BLW vs Predominant PLW $p<0.001$, Strict BLW vs Strict PLW $p=0.003$, Predominant BLW vs Predominant PLW $p=0.036$). Additionally, parents following strict BLW were found to exert significantly less control over their toddler's eating and use significantly less encouragement in order to increase food consumption than the other three groups (Strict BLW vs. Predominant BLW $p<0.001$, Strict BLW vs. Predominant PLW $p<0.001$, Strict BLW vs. Strict PLW $p<0.001$).

Table 2: Unadjusted and adjusted ANOVA comparisons of PFSQ in each complimentary feeding category

PFSQ subscales score (M±S.E.)					Unadjusted model		Adjusted model*	
	Strict PLW	Predominant PLW	Predominant BLW	Strict BLW	p-value	η^2	p-value	η^2
Instrumental Feeding	1.47 +-0.06	1.57+-0.06	1.39+-0.06	1.25+-0.04	**<.001**	.036	**.024**	.017
Control over eating	3.69+-0.06	3.74+-0.05	3.70+-0.07	3.27+-0.06	**<.001**	.080	**<.001**	.043
Emotional Feeding	1.53+-0.05	1.50+-0.05	1.47+-0.05	1.37+-0.04	**0.049**	.014	.191	.008
Encouragement	4.02+-0.05	4.06+-0.05	4.07+-0.05	3.64+-0.05	**<.001**	.089	**<.001**	.060

CEBQ; Child Eating behaviour Questionnaire BLW: Baby Led Weaning PLW: Parent Led Weaning
*Adjusted for breastfeeding duration and age of introduction of solid food.
$\eta^2= 0.01$ indicate small effect size, $\eta^2= 0.06$ indicate medium effect size and $\eta^2= 0.14$ indicate large effect size)

Family food environment and meal patterns

A significant difference was observed between the groups for both shared mealtimes and common meals ($F(3,561) = 9.38$, $p < 0.001$, $\eta^2 = 0.048$ and $F(3,561) = 10.08$, $p < 0.001$ $\eta^2 = 0.051$ respectively). The frequency of commercially prepared food consumption also approached significance ($F(3, 561) = 2.17$, $p = 0.090$, $\eta^2 = 0.011$). The effect size for all those comparisons was small. Adjustment for breastfeeding duration and age of introduction to solids did not change the associations, although, again, further reduced the effect size (Table 3). The addition of toddler's age in the model did not have any effect on any of the associations.

When examining where the between groups differences lay, parents following a strict BLW style were found to share their mealtimes (Strict BLW vs. Predominant BLW p=0.006, Strict BLW vs. Predominant PLW p=0.001, Strict BLW vs. Strict PLW p<0.001) and eat the same meals with their children significantly more often than all other groups (Strict BLW vs. Predominant BLW p=0.024, Strict BLW vs. Predominant PLW p=0.003, Strict BLW vs. Strict PLW p<0.001). Moreover, parents following a strict PLW style ate the same meal as their child significantly less frequent than the rest of the categories (Strict PLW vs Strict BLW p<0.001, Strict PLW vs Predominant BLW p=0.012, Strict PLW vs Predominant PLW p=0.017).

Table 3: Unadjusted and adjusted ANOVA comparisons of family food environment questions in each complimentary feeding category

PFSQ subscales score (M±S.E.)					Unadjusted model		Adjusted model*	
	Strict PLW	Predominant PLW	Predominant BLW	Strict BLW	p-value	η^2	p-value	η^2
Currently, how often do you eat with your child	4.04+-0.07	4.17+-0.06	4.19+-0.07	4.43+-0.04	**<.001**	.048	**<.001**	.035
Currently, how often your child has the same meal you are eating (even modified or at different time)	3.97+-0.07	4.17+-0.06	4.20+-0.07	4.40+-0.05	**<.001**	.051	**<.001**	.041
How often does your child eats commercial prepared food	2.48+-0.06	2.49+-0.05	2.47+-0.06	2.34+-0.04	.090	.011	.240	.007

CEBQ; Child Eating behaviour Questionnaire BLW: Baby Led Weaning PLW: Parent Led Weaning
*Adjusted for breastfeeding duration and age of introduction of solid food.
$\eta^2 = 0.01$ indicate small effect size, $\eta^2 = 0.06$ indicate medium effect size and $\eta^2 = 0.14$ indicate large effect size)

Sources of information

Within the whole sample, 39.3% of the parents identified the internet as their primary source of information, 22.3% health professional advice, 14.4% books, 12.3% friends and 8% family. Differences between the primary source of information used by each group were identified, although the effect size was small to medium ($\chi^2(15,565) = 197.1$, $p<0.001$, Cramer's $V=0.213$).

To assess the difference between the expected and the actual frequency in each case standardised residue z-score for each case was calculated and compared with the critical value (±1.96). Parents

following strict or predominant PLW styles demonstrated a preference for sourcing advice on complementary feeding from health professionals significantly higher frequency than statistically expected (z=2.2, p=0.03 and z= 2.5, p=0.01 respectively). Parents following a strict BLW style follow health professional's advice significantly lower frequency than statistically expected (z=-3.9 p<0.001). Additionally, family advice was identified as a primary information source significantly more frequently for parents following predominant PLW style (z=3.5, p<0.001). Parents in both the predominant and strict BLW groups demonstrated a preference for independent research, with the internet found to be a significantly more popular source of advice for parents in the predominant BLW group (z=2.0, p=0.05), while parents following strict BLW style demonstrated a preference for the use of literature in books (z=2.1, p=0.04).

Table 4: Count and standardised residual of the main reported source of information on complementary feeding in each complementary feeding category

		Strict PLW	Predominant PLW	Predominant BLW	Strict BLW	Total
Health professional	Count	38	44	19	14	115
	Std residual	**2.2**	**2.5**	-.2	**-3.9**	
Friends	Count	16	23	10	27	76
	Std residual	-.4	.7	-.9	.3	
Family	Count	11	21	1	5	38
	Std residual	0.7	**3.5**	**-2.2**	**-2.1**	
Internet	Count	42	43	53	94	232
	Std residual	-1.6	**-2.3**	**2.0**	1.9	
Books	Count	16	14	10	36	76
	Std residual	-.4	-1.3	-0.9	**2.1**	
Other	Count	8	3	5	12	28
	Std residual	0.6	-1.6	.1	.9	

BLW: Baby led weaning; PLW: Parent-led weaning; Bold characters signify a Z-score higher (or lower) than ±1.96.

Introduction to solid food and the first food offered

There was a statistically significant difference in the age of introduction to solids, albeit with small effect size (F (3,561) =9.26, p<0.001, η^2=0.047). Parents who were following BLW tend to introduce solid food later than the remaining three groups (Strict BLW vs Predominant BLW p=0.002, Strict BLW vs Predominant PLW p<0.001, Strict BLW vs Strict PLW p<0.001). However, parents in the strict and predominant PLW groups introduced finger foods later than parents who were following strict or predominant BLW (Strict PLW vs. Predominant BLW p<0.001, Strict PLW vs. Predominant PLW p<0.001, Strict PLW vs. Strict BLW p<0.001, Predominant PLW vs. Predominant BLW p=0.015, Predominant PLW vs. Strict BLW p=0.045).

Within the whole sample, there were also differences between the groups regarding the nature of the first foods offered (χ^2 (18,565) = 106.99, p<.001 Cramer's V= 0.251). Parents in the strict and predominant PLW groups offered baby cereals as an introductory food significantly higher frequency than statistically expected (z=4.3, p<0.001 and z=3.0, p=0.001 respectively). Parents in the strict PLW

category were also significantly less likely to offer vegetables or a mixed meal (z=-2.0, p= 0.023 and z=-2.0, p=0.023 respectively). By contrast, parents followed strict BLW were significantly less likely to offer baby cereals (z=-5.6, p<0.001) and more likely to offer vegetables (z=2.3, p=0.011) or a mixed meal (z=3.9, p<0.001) as a first food than the parents in the rest of the feeding groups.

Table 5: Count and standardized residual of the reported type of first food given in each complementary feeding category

		Strict PLW	Predominant PLW	Predominant BLW	Strict BLW	Total
Baby rice/Baby porridge	Count	47	45	15	3	110
	Std residual	**4.3**	3	-0.9	**-5.6**	
Vegetable	Count	42	52	50	103	247
	Std residual	**-2.0**	-1.6	1.1	**2.3**	
Fruit	Count	35	47	28	55	165
	Std residual	-.5	0.6	-.1	.0	
Bread& Starches	Count	2	2	2	6	12
	Std residual	-0.5	-.6	-.1	1.0	
Meat	Count	3	2	1	6	12
	Std residual	.1	-.6	-.7	1.0	
Mixed Meal	Count	0	0	2	15	17
	Std residual	**-2.0**	**-2.1**	-.6	**3.9**	
Other	Count	2	0	0	0	2
	Std residual	**2.3**	-.7	-.6	-.8	

BLW: Baby-led weaning, PLW: Parent-led weaning
Bold characters signify a Z-score higher (or lower) than ±1.96.

Toddlers' Eating behaviour characteristics

A one-way MANOVA revealed a significant difference between the toddlers eating behaviour between the four groups F(24, 1665)=2.04, p=0.002. Further univariate tests revealed significant differences between the four defined complementary feeding method groups and food fussiness F(3,560)=3.99, p=0.008, η^2= 0.021) and food responsiveness F(3,551)=4.82, p=0.003 η^2= 0.025 from the CEBQ. When the model was corrected for confounding variables (duration of breastfeeding and age of solid introduction), however, the food responsiveness subscale was no longer significant. Adjustment for covariates strengthens the significant level for food fussiness F(3,560)=5.30, p<0.001, η^2= 0.028; and, interestingly, revealed a significant difference for the mean score on the enjoyment of food subscale between the categories F(3,560)=3.30, p=0.020, η^2= 0.017. It is noteworthy that for all those comparisons the effect size was minimal.

Post hoc analysis of the significant subscales of the CEBQ revealed significantly lower level of food fussiness and higher food enjoyment for the toddlers who were allowed to self-feed most of the

time in comparison to mainly spoon fed toddlers [Fussiness: (strict PLW vs. strict BLW p=.030); Enjoyment: (strict PLW vs. strict BLW p=.004), (Predominant PLW vs. strict BLW p=.029)].

Table 6: Unadjusted and adjusted comparisons of CEBQ in each complimentary feeding category

CEBC subscales score (M±S.E.)					Unadjusted model		Adjusted model*	
	Strict PLW	Predominant PLW	Predominant BLW	Strict BLW	p-value	η^2	p-value	η^2
Food Fussiness	14.31±0.39	13.13±0.36	13.21±0.45	12.57±0.32	**.008**	.021	**.001**	.028
Food Responsiveness	11.44±0.32	11.79±0.30	11.84±0.37	10.49±0.26	**.003**	.025	.115	.011
Emotional Overeating	6.39±0.19	6.45±0.17	6.06±0.21	5.90±0.16	.073	.012	.225	.008
Enjoyment of food	15.84±0.19	16.18±0.18	16.33±0.22	16.39±0.16	.163	.009	**.020**	.017
Satiety Responsiveness	15.20±0.19	14.76±0.23	14.52±0.29	15.16±0.21	.171	.009	.326	.006
Emotional Undereating	12.31±0.33	12.49±0.31	12.04±0.38	11.48±0.27	.073	.012	.222	.008

CEBQ; Child Eating behaviour Questionnaire BLW: Baby Led Weaning PLW: Parent Led Weaning
*Adjusted for breastfeeding duration and age of introduction of solid food.
η^2= 0.01 indicate small effect size, η^2= 0.06 indicate medium effect size and η^2= 0.14 indicate large effect size)

Discussion

This study allows the meaningful interpretation of previous research on the effects of BLW by incorporating the estimation of effect size to estimate the magnitude of the effects observed. Additionally, the study looked across the whole spectrum of complementary feeding methods, from strict BLW to strict PLW, to allow a more inclusive categorisation than previous studies that focused largely on strict BLW (Brown & Lee, 2015; Cameron et al., 2013; Townsend & Pitchford, 2012). The results of this study are consistent previous literature (Brown, 2015; Brown & Lee, 2011c, 2015; Cameron et al., 2013; Fu et al., 2018; Rowan & Harris, 2012; Townsend & Pitchford, 2012). More specifically, it shows that parents following a strict BLW style are less controlling over feeding issues and less likely to use encouragement as a technique to increase their child's food consumption. They are more likely to offer vegetables and finger foods from the beginning of complementary feeding and rely more on independent research for information relating to the introduction of solid foods. Finally, they shared mealtimes with their child and offered the same food as they eat more frequently than the other defined categories. By contrast, PLW is associated with a reliance on health professionals for advice on solid introduction. Consistent with this, finger foods are introduced later, and initial weaning foods are more often in the form of bland baby cereal, with vegetable flavours offered less frequently.

Interestingly, and in conflict with the official guidelines for delayed introduction to solids at six months of age, strict PLW is also associated with an earlier introduction to solids. Regarding the effects of solid feeding method on the toddler's eating behaviour, after adjustment for breastfeeding duration and age of introduction to solid food, toddlers who were weaned following a strict BLW style, with very little or no use of spoon feeding at all, were less food fussy and enjoyed food more.

Looking at the estimated effect sizes of the significant differences~~;~~ however, we can observe the magnitude of the differences found in the present are modest to minimal. The largest effects sizes (even though still moderate) are observed in comparisons regarding breastfeeding duration, maternal feeding practices, sources of information and types of first food given to the infants at the beginning of solid feeding introduction. When it comes to the consequences in toddlers' eating behaviour and family food environment, although some of the differences are statistically significant, the effect sizes are very small.

Studies looking at maternal characteristics associated with solid introduction methods to date focused on the controlling aspects of eating and feeding behaviour (Brown, 2015; Brown & Lee, 2011b, 2011c) such as pressure to eat, restriction and monitoring. By contrast, this study examined

maternal feeding behaviour using the PSFQ, with moderate effect sizes identified for most behaviours. Using the PFSQ, we extended the range of parental feeding behaviours examined, and we revealed that mothers who are following a BLW approach are not only less controlling around feeding, but also used significantly less instrumental and emotional feeding. These behaviours are in line with a more responsive pattern of feeding that promotes reliance on internal cues (e.g. hunger) than external cues (e.g. eating as a response to an emotion or a reward) for appetite control. Previous studies have demonstrated that adopting some of the characteristics of parents following a, typically less responsive, PLW approach, such as feeding children in the absence of hunger, in response to specific emotions and encouraging them to consume larger amounts of food than desired, can jeopardize appetite regulation by teaching the child to ignore internal signs of satiety in the presence of food or in response to specific emotions (Birch & Doub, 2014; Birch, McPhee, Shoba, Pirok, & Steinberg, 1987; Campbell, Crawford, & Ball, 2006; Johnson & Birch, 1994).

he age around which the introduction to solid food typically occurs appears to be an opportunity to establish healthy eating habits that are likely to track later in life. Research has shown that although preference for sweet and salty is higher than sour and bitter during the first year of life (Schwartz et al., 2009), between 5-7 months of age infants equally accept sweet, salty, umami, sour and bitter tastes when added to water (Schwartz, Chabanet, Lange, Issanchou, & Nicklaus, 2011) suggesting a critical window of flavour acceptance in the early months of solid introduction. As such, the introduction of sour and bitter tasting food (such as green vegetables and citrus fruit for example) during this specific weaning period could be beneficial. Indeed, fruit and vegetable introduction in general, during the early weaning period has been found to result in higher consumption of fruit and vegetables later during childhood (Coulthard, Harris, & Emmett, 2010; Möller, de Hoog, van Eijsden, Gemke, & Vrijkotte, 2013). Parents who follow PLW, largely introduce solid food in the form of bland-tasting baby cereal with vegetables and mixed meals introduced later. This can lead to possibly missing the critical flavour-learning window if the bland tasting diet is continued for long. However, the exact timing of the introduction to vegetable tastes, after the introduction to cereal by parents who follow PLW has not been examined. It could also be the case however that, with parents following PLW introducing solids earlier, the actual age of vegetable introduction is similar with babies following BLW.

In addition to flavour learning, evidence also supports the existence of a specific post-natal learning window related to food texture. Introduction of complex texture at the right time (around 10 months of age) is reported to increase acceptance of foods with complex textures whilst also decreasing food fussiness and other feeding-related problems during toddlerhood and childhood (Coulthard, Harris, & Emmett, 2009; Northstone, Emmett, Nethersole, & ALSPAC Study Team. Avon Longitudinal Study of Pregnancy and Childhood, 2001). The introduction of more textured food also

aids with the development of oral motor skills that are important in food consumption and have also been linked with speech development (Reilly, Skuse, Mathisen, & Wolke, 1995). The categorization that has been used to identify parents who are using BLW, both in this study and the rest of the literature is based around the texture of the food offered, spoon-fed purees or finger food (Fu et al., 2018; Morison et al., 2016; Rapley et al., 2015; Townsend & Pitchford, 2012). Although each texture is associated with a specific way of delivery, it is possible that categorising using this factor will miss the bigger picture of what BLW is claiming to be, a more responsive way of introducing solid foods. A better quantitative categorisation could be achieved by a set of questions that provide a score to assess responsive feeding, rather than solely focusing on whether the infant was spoon fed by an adult or self-fed themselves.

Moderate effect size differences were also found for a shared meal and mealtimes in favour of BLW. Frequent family mealtimes are consistently associated with better overall health outcomes (Verhage, Gillebaart, van der Veek, & Vereijken, 2018), better weight outcomes, lower prevalence of obesity (Anderson & Whitaker, 2010; Gable, Chang, & Krull, 2007) and increased diet quality and fruit, vegetable and milk consumption (FitzPatrick, Edmunds, & Dennison, 2007; Hammons & Fiese, 2011). Additionally, eating similar meals as parents have been shown to be a strong predictor for both higher vegetable consumption and liking in pre-schoolers aged 2-5 years old (Sweetman, McGowan, Croker, & Cooke, 2011).

Baby led weaning is a solid food introduction practice that is mostly followed by a very distinct category of parents; highly educated, older and those who breastfeed for longer(Brown, 2015; Brown & Lee, 2011c, 2011a; Cameron et al., 2013). They are also found to be less monitoring in their feeding behaviour in previous studies (Arden & Abbott, 2015; Brown & Lee, 2011c; Brown, Raynor, & Lee, 2011), and, as the present study shows, are less likely to use food as a reward or encouragement. Those findings, in the present study, become less important as breastfeeding duration and age of solid food introduction are added to the statistical model. From all this, it is clear that the degree of intercorrelations between the factors explains the majority of the findings. It is possible that a combination of the characteristics of the BLW philosophy in general, as well as the individual characteristics of the parents who choose to follow it, can both contribute towards the eating behaviour outcomes observed. In practice, and in contrast to the discussion of flavour learning above, that means that advice around solid introduction should be centred around the responsive feeding and eating autonomy principles rather than focus on specific textures or types of food offered.

Consistent with a recent study (Fu et al., 2018), a great proportion of mothers following a strict BLW approach were not in paid occupation. Considering that mothers following BLW are typical of a higher socioeconomic status, it is likely that this reflects more of a lifestyle choice, where they do not need to immediately return to work, and they can afford to spend more time on maternity leave. This lifestyle choice allows for a potentially more laid-back approach to parenting in general, that extends to the feeding approach.

When looking on the association of solid food introduction methods to future eating behaviours, the results of this study are partly consistent with one published study examining weaning style and eating behaviours in toddlerhood (Brown & Lee, 2015). Inconsistencies with other studies may reflect an overstating of their outcomes. After estimating the effect size of the differences in the current samples, the magnitude~~s~~ of any differences in the toddler's eating behaviour associated with BLW is very small.

Although there has been some previous research on the sources of information parents use when it comes to infant feeding (Pridham, 1990; Carruth & Skinner, 2000), these studies quickly become outdated as new and more accessible ways of obtaining information, e.g. the internet and social media becoming available. There is only one very recent study examining the information sources utilised by parents following BLW in parents in New Zealand (Fu et al., 2018). The findings of that study are consistant with our findings; parents following BLW are utilising social media more than parents following PLW, who are sourcing info from health professionals. As parents following BLW approaches are largely reliant on alternative information sources potentially lacking in accuracy and without a sound underlying evidence base. Given the potential for a profound impact of feeding practices and flavour, preferences developed early in life on future health it is imperative that parents are supported and educated across a range of complementary feeding approaches

The limitations of this study are consistent with those attributed to the use of online survey methodologies, such as self-selective sample which provided with self-reported data. In addition, reported breastfeeding rates were much higher than average according to the latest infant feeding survey in the UK (McAndrew et al., 2012), suggesting a potential bias towards responses from more educated and health-conscious individuals. This kind of behavioural feedback in cross-sectional studies has recently been formally reported (Oster, 2019) and can only be moderated by randomised control trials, such as BLISS . Indeed, in BLISS the effects of the BLW intervention to eating behaviour outcomes, such as food fussiness, satiety and food responsiveness and calorie self-regulation were moderatetly to non-significant, consistent~~ly~~ to what the present study suggests. However, a balanced distribution across the four defined complementary feeding styles was achieved. Although

we tried to eliminate any mention of BLW as a practice during advertising and we refrain from advertising in specific BLW groups, it is possible that parents who decide to take part in the study were more health conscious which valued the importance of research in everyday evidence-based practice. The retrospective nature of data collection introduces recalling errors, especially estimating the percentage of time infants self-fed at the beginning of solid feeding. The age of the toddler, when their caregiver took the study was used as a confounding variable were relevant to address this concern, and the addition of the variable did not alter the results. Further, a similar method was used in another study recently published (Fu et al., 2018) which, again shows that regardless of the recalling time, the results are consistent.

The present methodology does not allow the drawing of any conclusions about the direction of the outcomes, especially when the confounding factors are not clearly understood. The retrospective nature of the research also renders it impossible to determine whether the identified parental feeding styles and practices provided the motivation to follow a specific complementary feeding style or developed because the approach was chosen. A mixed methods longitudinal study, incorporating measures before and after the weaning period may provide information on the motives for choosing to follow a particular weaning style. The unique combination of infant eating behaviour characteristics and parental characteristics can influence the complementary feeding style each family chooses to follow. Additionally, those characteristics are possible to dynamically change and adapt to different situations, and it is equally important to take into account the parent-infant and parent-child interactions in each case.

Future study on BLW as a complementary feeding practice would benefit from mixed methods longitudinal studies that can reveal more about the direction of the associations currently found in cross-sectional studies as well as addressing any remaining doubts about the validity of the recalled information. Literature published since the present study was designed recognises that BLW is not only defined by the texture of the food being fed to the infant, but also the principles of responsive feeding. It is equally important that this more inclusive categorisation of BLWis applied moving forward.

Considering the evidence so far, the guidance given to health professionals as well as the advice given to parents should take into account the limitations of cross-sectional studies, the modest effect sizes of any difference in toddlers' eating behaviour the present study reports, as well as the consistent findings from the BLISS randomised control trial discussed above. Guidance should direct parents to introduce solids in the way that is more appropriate for the individual needs of the family, and consider the time and the cost associated with the BLW in relation to the limited future eating

behaviour outcomes. Instead, a more responsive feeding approach, regardless of the texture of the food offered, should be encouraged, with emphasis on the child's autonomy over food consumption.

References

Arden, M. A., & Abbott, R. L. (2015). Experiences of baby-led weaning: Trust, control and renegotiation. *Maternal and Child Nutrition*, *11*(4), 829–844. https://doi.org/10.1111/mcn.12106

Bartok, C. J., & Ventura, A. K. (2009). Mechanisms underlying the association between breastfeeding and obesity. *International Journal of Pediatric Obesity*, *4*(4), 196–204. https://doi.org/10.3109/17477160902763309

Birch, L. L., & Doub, A. E. (2014). Learning to eat: Birth to age 2 y. *American Journal of Clinical Nutrition*, *99*(3), 723S–8S. https://doi.org/10.3945/ajcn.113.069047

Birch, L. L., McPhee, L., Shoba, B. C., Pirok, E., & Steinberg, L. (1987). What kind of exposure reduces children's food neophobia?. Looking vs. tasting. *Appetite*, *9*(3), 171–178. https://doi.org/10.1016/S0195-6663(87)80011-9

Bowman, N. D. (2017). The Importance of Effect Size Reporting in *Communication Research Reports*. *Communication Research Reports*, *34*(3), 187–190. https://doi.org/10.1080/08824096.2017.1353338

Brown, A. (2015). Differences in eating behaviour, well-being and personality between mothers following baby-led vs. traditional weaning styles. *Maternal and Child Nutrition*. https://doi.org/10.1111/mcn.12172

Brown, A., & Lee, M. (2011a). A descriptive study investigating the use and nature of baby-led weaning in a UK sample of mothers. *Maternal and Child Nutrition*, *7*(1), 34–47. https://doi.org/10.1111/j.1740-8709.2010.00243.x

Brown, A., & Lee, M. (2011b). An exploration of the attitudes and experiences of mothers in the United Kingdom who chose to breastfeed exclusively for 6 months postpartum. *Breastfeeding Medicine*, *6*(4), 197–204. https://doi.org/10.1089/bfm.2010.0097

Brown, A., & Lee, M. (2011c). Maternal control of child feeding during the weaning period: Differences between mothers following a baby-led or standard weaning approach. *Maternal and Child Health Journal*, *15*(8), 1265–1271. https://doi.org/10.1007/s10995-010-0678-4

Brown, A., & Lee, M. (2012). Breastfeeding during the first year promotes satiety responsiveness in children aged 18-24 months. *Pediatric Obesity*, *7*(5), 382–390. https://doi.org/10.1111/j.2047-6310.2012.00071.x

Brown, A., & Lee, M. (2013). An exploration of experiences of mothers following a baby-led weaning style: Developmental readiness for complementary foods. *Maternal and Child Nutrition*, *9*(2), 233–243. https://doi.org/10.1111/j.1740-8709.2011.00360.x

Brown, A., & Lee, M. (2015). Early influences on child satiety-responsiveness: The role of weaning style. *Pediatric Obesity*, *10*(1), 57–66. https://doi.org/10.1111/j.2047-6310.2013.00207.x

Brown, A., Raynor, P., & Lee, M. (2011). Healthcare professionals' and mothers' perceptions of factors that influence decisions to breastfeed or formula feed infants: A comparative study. *Journal of Advanced Nursing*, *67*(9), 1993–2003. https://doi.org/10.1111/j.1365-2648.2011.05647.x

Cameron, S., Heath, A.-L. M., & Taylor, R. W. (2012a). Healthcare professionals' and mothers' knowledge of, attitudes to and experiences with, Baby-Led Weaning: a content analysis study. *BMJ Open*, *2*(6), 1–10. https://doi.org/10.1136/bmjopen-2012-001542

Cameron, S., Heath, A. L. M., & Taylor, R. W. (2012b). How feasible is Baby-Led Weaning as an approach to infant feeding? A review of the evidence. *Nutrients*, *4*(11), 1575–1609. https://doi.org/10.3390/nu4111575

Cameron, S., Taylor, R. W., & Heath, A.-L. M. L. (2013). Parent-led or baby-led? Associations between complementary feeding practices and health-related behaviours in a survey of New Zealand families. *BMJ Open*, *3*(12), e003946. https://doi.org/10.1136/bmjopen-2013-003946

Campbell, K. J., Crawford, D. A., & Ball, K. (2006). Family food environment and dietary behaviors likely to promote fatness in 5-6 year-old children. *International Journal of Obesity*, *30*(8), 1272–80. https://doi.org/10.1038/sj.ijo.0803266

Carruth, B. R., & Skinner, J. (2000). Revisiting the Picky Eater Phenomenon: Neophobic Behaviors of Young Children. *Journal of the American College of Nutrition*, *19*(6), 771–780. https://doi.org/10.1080/07315724.2000.10718077

Coulthard, H., Harris, G., & Emmett, P. (2009). Delayed introduction of lumpy foods to children during the complementary feeding period affects child's food acceptance and feeding at 7 years of age. *Maternal & Child Nutrition*, *5*(1), 75–85. https://doi.org/10.1111/j.1740-8709.2008.00153.x

Coulthard, H., Harris, G., & Emmett, P. (2010). Long-term consequences of early fruit and vegetable feeding practices in the United Kingdom. *Public Health Nutrition*, *13*(12), 2044–51.

https://doi.org/10.1017/S1368980010000790

Daniels, L., Taylor, R. W., Williams, S. M., Gibson, R. S., Samman, S., Wheeler, B. J., … Heath, A.-L. M. (2018). Modified Version of Baby-Led Weaning Does Not Result in Lower Zinc Intake or Status in Infants: A Randomized Controlled Trial. *Journal of the Academy of Nutrition and Dietetics*, *118*(6), 1006–1016.e1. https://doi.org/10.1016/J.JAND.2018.02.005

Fu, X., Conlon, C. A., Haszard, J. J., Beck, K. L., von Hurst, P. R., Taylor, R. W., & Heath, A.-L. M. (2018). Food fussiness and early feeding characteristics of infants following Baby-Led Weaning and traditional spoon-feeding in New Zealand: An internet survey. *Appetite*, *130*, 110–116. https://doi.org/10.1016/J.APPET.2018.07.033

Johnson, S. L., & Birch, L. L. (1994). Parents' and children's adiposity and eating style. *Pediatrics*, *94*(5), 653–661. Retrieved from http://pediatrics.aappublications.org/content/94/5/653.abstract

McAndrew, F., Thompson, J., Fellows, L., Large, A., Speed, M., Renfrew, M. J., … Renfrew, M. J. (2012). Infant Feeding Survey 2010. *The Health and Social Care Information Centre*, 1–331.

Miles, J., & Shevlin, M. (2001). *Applying regression & correlation : a guide for students and researchers*. Sage Publications. Retrieved from https://books.google.co.uk/books/about/Applying_Regression_and_Correlation.html?id=pU6hPqjvu6kC&redir_esc=y

Möller, L. M., de Hoog, M. L. A., van Eijsden, M., Gemke, R. J. B. J., & Vrijkotte, T. G. M. (2013). Infant nutrition in relation to eating behaviour and fruit and vegetable intake at age 5 years. *The British Journal of Nutrition*, *109*(3), 564–71. https://doi.org/10.1017/S0007114512001237

Morison, B. J., Taylor, R. W., Haszard, J. J., Schramm, C. J., Williams Erickson, L., Fangupo, L. J., … Heath, A.-L. M. (2016). How different are baby-led weaning and conventional complementary feeding? A cross-sectional study of infants aged 6-8 months. *BMJ Open*, *6*(5), e010665. https://doi.org/10.1136/bmjopen-2015-010665

NICE. (2015). *Maternal and child nutrition | Guidance and guidelines | NICE*. NICE. Retrieved from https://www.nice.org.uk/guidance/qs98/chapter/Quality-statement-5-Advice-on-introducing-solid-food

Northstone, K., Emmett, P., Nethersole, F., & ALSPAC Study Team. Avon Longitudinal Study of Pregnancy and Childhood. (2001). The effect of age of introduction to lumpy solids on foods

eaten and reported feeding difficulties at 6 and 15 months. *Journal of Human Nutrition and Dietetics*, *14*(1), 43–54. https://doi.org/10.1046/j.1365-277X.2001.00264.x

ONS. (2010). SOC2010 volume 3: the National Statistics Socio-economic classification (NS-SEC rebased on SOC2010). Retrieved from http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/soc2010/soc2010-volume-3-ns-sec--rebased-on-soc2010--user-manual/index.html

Oster, E. (2019). *Behavioral Feedback: Do Individual Choices Influence Scientific Results? **. Retrieved from https://www.brown.edu/research/projects/oster/sites/brown.edu.research.projects.oster/files/uploads/OsterSelectionFeb2018.pdf

Rapley, G., Forste, R., Cameron, S., Brown, A., & Wright, C. M. (2015). Baby-Led Weaning: A New Frontier? *ICAN: Infant, Child, & Adolescent Nutrition*, *7*(2), 77–85. https://doi.org/10.1177/1941406415575931

Rowan, H., & Harris, C. (2012). Baby-led weaning and the family diet. A pilot study. *Appetite*, *58*(3), 1046–1049. https://doi.org/10.1016/j.appet.2012.01.033

Schwartz, C., Chabanet, C., Lange, C., Issanchou, S., & Nicklaus, S. (2011). The role of taste in food acceptance at the beginning of complementary feeding. *Physiology and Behavior*, *104*(4), 646–652. https://doi.org/10.1016/j.physbeh.2011.04.061

Sullivan, G. M., & Feinn, R. (2012). Using Effect Size-or Why the P Value Is Not Enough. *Journal of Graduate Medical Education*, *4*(3), 279–82. https://doi.org/10.4300/JGME-D-12-00156.1

Taylor, R. W., Williams, S. M., Fangupo, L. J., Wheeler, B. J., Taylor, B. J., Daniels, L., … Heath, A.-L. M. (2017). Effect of a Baby-Led Approach to Complementary Feeding on Infant Growth and Overweight: A Randomized Clinical Trial. *JAMA Pediatrics*, *171*(9), 838–846. https://doi.org/10.1001/jamapediatrics.2017.1284

Townsend, E., & Pitchford, N. J. (2012). Baby knows best? The impact of weaning style on food preferences and body mass index in early childhood in a case-controlled sample. *BMJ Open*, *2*(1), e000298. https://doi.org/10.1136/bmjopen-2011-000298

Wardle, J., Guthrie, C. A., Sanderson, S., & Rapoport, L. (2001). Development of the Children's Eating Behaviour Questionnaire. *J. Child Psychol. Psychiat. Association for Child Psychology and Psychiatry*, *42*(7), 963–970. https://doi.org/10.1111/1469-7610.00792

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

Wright, C. M., Cameron, K., Tsiaka, M., & Parkinson, K. N. (2011). Is baby-led weaning feasible? When do babies first reach out for and eat finger foods? *Maternal and Child Nutrition*, *7*(1), 27–33. https://doi.org/10.1111/j.1740-8709.2010.00274.x