Title: Fussy eating in toddlers – thinking beyond the plate

Author:

Carol Williams, MSc, BSc.
Public Health Nutritionist, Senior Lecturer, Centre for Health Research, School of Health Sciences, University of Brighton.

***Correspondence to:** Carol Williams, Centre for Health Research (CHR), Mayfield House, University of Brighton, Falmer, Brighton, BN1 9PH, UK. E-mail: c.williams2@brighton.ac.uk Tel. 01273 644080

Title: Fussy eating in toddlers – thinking beyond the plate

Summary

Existing guidance for parents on how to respond to 'fussy eating' in toddlers offers a range of useful tips and strategies. However these could be applied more effectively with some understanding of the underlying causes of fussy eating. This is a complex subject area, interfacing characteristics of the child, adult, environment and their bi-directional interactions. Contemporary considerations from the emerging literature are discussed, with a call for a step change to focus on offering, modelling and encouraging dietary diversity in toddlers and responding to satiety cues, rather than 'eating it all up'.

Introduction

A child's early years are widely recognised as a key period for supporting optimal growth, development and parenting practice as evidenced by the recent emergence of campaigns focussing on the first 1000 days of life (conception to two years) both in the UK (Davies, 2013, Leadsom, 2013; NCT, 2013;) and internationally (Black, 2008; Black, 2013). In the UK, programmes such as the Healthy Child Programme (DOH, 2009) and Start4Life (DOE and DOH 2014) emphasise the importance of introducing young children to a healthy and varied diet so that they establish healthy eating habits which can help prevent obesity (Schwartz, 2011) and fussy eating, later on (Start4Life). However, for parents it appears that concerns about fussy eating begin in toddlerhood, 12-36 months. The language and content of websites such as Mumsnet and Netmums expressing the frustration of parents preparing food that toddlers sweepingly refuse to eat, suggest fussy eating is experienced as something that goes with toddler tantrums. This is supported by studies which suggest fussy eating is very common, with parental reports of up to 50% in 2 year olds (Carruth et al, 2004.)

So how we can help support parents and children through this transition? Established websites giving information for both parents and health professionals such as NHS Choices, Mumsnet, Infant Toddler Forum have guides and sensible tips for how to respond to fussy eating. However, these tend to offer a menu of strategies to try rather than offering any analytical approach. We know from studies on infant feeding, that

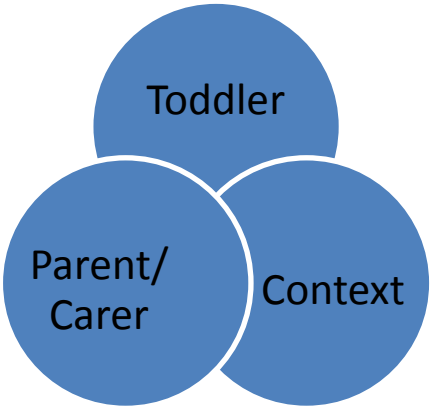
parents want information from health professionals which is tailored to their situation (Horodynski et al, 2007) and is consistent (NCSM, 2011). In this article, drawing from the literature on eating behaviours, a basic framework is proposed to help identify appropriate strategies to address fussy eating.

Definitions of Fussy Eating.

There are no agreed definitions of 'fussy eating' (Boquin et al, 2014, Dovey et al, 2008; Mitchell et al, 2013; Tharner et al, 2014.), and indeed, many studies rely on parents' subjective reporting of their child as a 'fussy' or 'picky eater'. The literature usefully distinguishes clinical feeding disorders which lead to growth faltering, clinical deficiency or developmental delay, from non-clinical feeding problems which do not affect nutritional status (Chatoor and Ganiban, 2003; Mitchell et al, 2013). However, this distinction defines the condition by its outcome; children exhibit on a spectrum of disorder and a prolonged non-clinical feeding problem can become clinical if left unaddressed. This article will focus on non-clinical fussy eating. More often than not, toddlers reported as being fussy eaters are not clinically underweight; rather they tend towards overweight (Leung et al, 2012).

Fussy eating in toddlers has several attributes that distinguish it from fussy eating in older children. Toddlers have less overall autonomy, more limited speech and language to express themselves, less developed skills and proficiency in feeding themselves, and a far higher dependency on adults over what foods are offered and how easy they are to eat. Toddlers have also had much less opportunity to be exposed to different foods so there is a larger element of learning during eating. Toddlers do not set out to be fussy eaters. Although it is usually toddlers' actual eating behaviour which is of concern, it is often things to do with the parent/carers behaviour, the parent/carer-child interaction, or the situation/context of the feeding that are problematic rather than anything intrinsic in the child. Research tying these themes together is limited (Blissett et al, 2013), particularly in toddlers. A simple framework which practitioners have found useful in reflecting on their approaches to working with parents around fussy eating, (Williams, 2013) is used to structure the discussion (Figure 1).

Figure 1: Simple Framework for thinking about fussy eating when supporting parents



Fussy Eating- toddler behaviours.

As human beings, we differ in how we perceive and respond to tastes, and there is a genetic component in this (Blissett and Fogel, 2013; Scaglioni et al, 2011). Children with high levels of sensory sensitivity may react strongly to disliked tastes, while others will stoically carry on eating. (Sensory-sensitive children typically also dislike other sensations, such as the feel of sand on their feet.) These 'intrinsic characteristics' cannot be changed, but can be acknowledged and worked with, accepting that some children will need more encouragement and gradual exposure to eat certain foods than others (Blissett and Fogel, 2013). Over and above these genetic predispositions, Chatoor and Ganiban (2003) provide a typology of three broad categories of 'fussy eating' behaviours, requiring a different response in practice, (Box 1).

Box 1:.Types of fussy eating, how they are characterised and appropriate strategies. (Adapted from Chatoor and Ganiban 2003)

Types of "fussy eating"	**Characteristics**	Possible strategies
Fear-based food refusal - C*onsistently upset by particular food/s* (Also referred to as food aversion, food phobia, post traumatic feeding disorder)	• Consistently reject foods, in response to previous trauma or negative association • Rejects foods based on texture, appearance, location, association • Fear of food overrides hunger	• Recognising the association/ trigger and adapting accordingly. • Ensuring feeding situation is friendly and reassuring. • Gradual desensitisation to the problem food/situation. • Seeking specialist help if persists
Unpredictable food refusal -	• Suddenly does not want to eat all or most of	• Feeding when child is hungry and

Eats a few bites then stops (Attributed to child's temperament)	foods offered • Refusal does not follow a traumatic event and is not due to underlying illness • Child does not communicate hunger • Lacks interest in food but shows interest in surroundings or interacting with caregiver • Meal times often stressful with negative parent -child interactions.	requests foods. • Spacing meals and snacks (eg 4 hours apart) for a while so child experiences hunger. • Let child select food and feed themselves at own pace. • Explore food-parenting dynamic
Selective food refusal - *refuses to eat certain foods* *(*Also referred to as neophobia, picky eaters, taste aversion, sensory aversion)	• Refusal of specific food begins when first introduced to it • May reject based on look of food before tasting • Eats other foods without difficulty. • Can limit dietary diversity and intake of certain nutrients • Is transitory if understood	• Offering new foods alongside highly accepted foods • Persevering with repeatedly offering the refused foods with no insistence that it is eaten up. • Parents model eating the refused foods

Children exhibiting a fear-based food refusal consistently reject certain foods offered in a particular eating situation based on association with a previous trauma (Chatoor and Ganiban, 2003). A child who has previously choked, seriously gagged or vomited with a particular food may reject that food and possibly all foods with a similar appearance or texture. The association may extend to the plate, spoon, feeding chair, or location where the perceived trauma took place. Children who have had naso-gastric tubes or other painful interventions, or repeated gastric reflux may associate some foods or the feeding situation with that pain (Hyman, 1994). Typically fear-based food refusal is distinguished by the child exhibiting intense resistance irrespective of any hunger.

Unpredictable food refusal occurs in children who may have no previous history of feeding resistance, but suddenly refuse to eat all or some of their food, even if they are hungry. Parents reportedly describe these children as will-full, demanding attention, difficult (Chatoor et al, 2000) and note that they are more interested in what is going on around them than in eating (Chatoor and Ganiban, 2003). Meal times are typically stressful and parents respond by trying to coax the child to eat, tempting with different foods, distracting, eg with the television on while they slip food into child's mouth, feeding as the child plays, threatening or force feeding. Research suggests that this type of 'fussy eating' is about the parent/carer-child relationship with conflict becoming a central feature of the feeding interaction, such that meals times are a

negative experience for all involved (Hughes et al, 2013). Resolution here includes removing the conflict from the feeding interaction and exploring food parenting practices (see below).

Selective food refusal is characterised by consistently refusing to eat certain foods whilst eating other familiar foods without a problem. Typically this rejection occurs the first time or times that children are offered the food, but may then extend to all foods which look, taste or smell similar, or foods which have touched or come near to the refused food. Foods may be rejected on sight, without being tasted. Much selective food refusal is a perfectly normal display of neophobia, typically peaking around two years of age, and continuing until around six years (Dovey et al, 2008). From an evolutionary biology perspective, neophobia is thought to be an adaption to the increasing independence of young children, but accordingly their increased risk of eating something poisonous (Blissett 2013). Children are understood to build up a 'schemata' of which foods they can trust based on how they look and smell, and reject foods which do not fall into this (Dovey et al, 2008). The implications for practice of understanding neophobia are considerable. With repeated exposures, encouragement and role modelling, children's neophobia of a particular food can be resolved (Wardle et al, 2003). A parent who misinterprets neophobia as something fixed, may cease to offer that particular food and offer more favourite foods instead (Russell and Worsley, 2013). Studies suggest that children over 12 months require many exposures before they will trust and eat a new food, and more readily accept sweet rather than bitter foods. How many exposures are required depends on the food, the child and other variables. As a general guide, new foods may need to be offered around ten times to be tasted (Mennella and Trabulsi, 2012; Wardle et al, 2003), ideally with the foods being eaten by adults/peers at the same time. For 'fussy eaters', offering ten times with no expectation that the food will be eaten, may be enough to build up trust and familiarity. It may take a further ten or so exposures with encouragement to taste, before it is eaten, and even more exposures before a positive facial expression to emerge (Mennella and Trabulsi, 2012). Infants tend to accept new foods with fewer exposures thus introducing a wide variety of foods during the first 6 months of complementary feeding is thought to increase the range of accepted foods (Schwartz et al, 2011; Cooke et al 2004)

Fussy Eating- parent/carer behaviours.

Who is doing the feeding?

Most of the research in this area talks of parents, but has in fact been conducted with mothers, (an imprecision commented on by Sherriff in this journal). Societal changes mean that many toddlers are now also fed by fathers, grandmothers and licensed child care providers, but the dynamic of these other interactions has barely been explored (Wasser et al, 2013). Peters (2014) found that inconsistent intra-parenting styles, practices and modelling was a source of disputes between mothers and fathers over pre-school feeding, for example, the partner not roll modelling appropriately.

The involvement of multiple caregivers in feeding provides opportunities for children to have a variety of adult-child interactions over food, and perhaps be exposed to a wider dietary variety than exists in the family home. Parents in a qualitative study in Australia believed their children ate healthily in childcare, and ate foods that they would not eat at home (Peters, 2014). However multiple caregivers also means that it can be difficult for individual parents to know what the toddler has/has not eaten at other times of day when being cared for by others. Perhaps this inability to monitor what the toddler has eaten has led parents to misinterpret toddlers disinterest in food as 'fussy eating' when toddlers are simply full. The Canadian Pediatric Society noted that most children 1-5 years of age brought to be seen for refusing to eat, were healthy and had a normal appetite, but parents had unrealistic expectations about how much the child should eat (Leung, 2012).

Feeding styles and strategies

For the past decade, guidance on complementary feeding of children 6-24 months has advocated responsive feeding, (WHO, 2003) whereby children's hunger and satiety cues are observed and responded to. This emphasis stemmed from concerns that much feeding was a 'laissez faire' style, whereby children were rarely encouraged to eat nor their consumption monitored. These days 'indulgent food parenting' seems to be a more predominant problem, where parents/carers fail to set limits on what or how much is consumed or have little confidence in their ability to influence food preferences (Peters et al, 2014; Russell and Worsley, 2013).

Research into effective parent feeding strategies is still emerging, but some general indications suggest as follows. Pressurising children to eat more than they need over-rides their satiety cues and can limit their ability to self regulate their intake when older (Thompson et al, 2009). Rewarding or incentivising eating with a desired food, eg giving a sweet desert provided the 'problem foods' are eaten first, can increase desirability of the reward food when restrictions are removed so that is eaten to excess (Ventura and Birch, 2009). However this is a complex area with conflicting research (Cooke et al, 2011) and much depends on the context; incentivising a neophobic child to taste a new food is very different from incentivising a child to 'eat up" a quantity of food to merit a pudding. Practice advice is to offer non-food rewards such as stickers or stories, "treats not sweets" (Changet4Life, 2014) and this is supported by research (Anez et al, 2012). Some evidence suggests that restricting access to a desired food that children know is available (overt restriction), increases the desirability of that food (Birch and Ventura, 2009) whereas covert restriction, where a strongly desired food is simply not available, does not (Mitchell et al, 2013).

Fussy Eating- feeding context.

Where do fussy toddlers eat and who with? Whilst studies demonstrate a clear association between having meals as a family and eating healthily in childhood (Hammons and Fiese, 2011) this appears to be much less researched in toddlers. From infancy onwards children's' awareness and interest in their surrounding environment increases, and as discussed, a supportive feeding environment is one where there is an opportunity for role modelling and social interaction to take place (Birch and Fisher, 1998). This is limited if toddlers are eating in front of televisions and advertisements for food (Russell and Worsley, 2013), or being fed separately from adults, or given different foods from the rest of the family. Identifying and limiting distractions and framing meal times as a time for meaningful educational and social inter-action, rather than the delivery of food as a fuel, can be helpful.

The context also affects parent's perceptions of the child and likely ways to respond. Nutritional supplement drinks labelled, advertised and marketed as providing a nutritional safety net while children go through the *"fussy eating phase*", adds to the mistaken framing of fussy eating as a nutritional problem (Paediasure Shake, 2013).

During the toddler years, most 'fussy eating' is about behavioural responses to learning to eat a variety of foods.

Conclusion

12-36 months is a key period of transition in feeding; at the end of infancy, toddlers are expected to be eating three meals a day, yet most will they take another 12 months before they can put together short strings of words to express how they feel. Thus understanding some of the complex interactions that are taking place at feeding times can help parents/ carers and health professionals to identify appropriate strategies to prevent and respond to fussy eating. Tips and advice need to match the particular child's situation, and thinking about the parent, child and the environment may help. Supporting parents to achieve healthful eating behaviours during toddlerhood when the foods the child has access to are mostly under adult control (Peters et al, 2014), provides an opportunity to create norms and eating patterns that can persist in later childhood. Importantly, given our obesiogenic environment, this requires a culture shift towards prioritisation of offering, modelling and encouraging variety, rather than 'eating it all up' (Birch and Ventura, 2009, Mennella and Trabulsi, 2012).

Word count - 2776

References

Añez, E., Remington, A., Wardle, J. & Cooke, L. 2013. The impact of instrumental feeding on children's responses to taste exposure. *J Hum Nutr Diet,* 26 (5), 415-20.

Birch, L. L. & Fisher, J. O. 1998. Development of eating behaviors among children and adolescents. *Pediatrics,* 101 (3 Pt 2), 539-49.

Birch, L. L. & Ventura, A. K. 2009. Preventing childhood obesity: what works? *Int J Obes (Lond),* 33 Suppl 1**,** S74-81.

Black, R. E., Allen, L. H., Bhutta, Z. A., Caulfield, L. E., de Onis, M., Ezzati, M., Mathers, C., Rivera, J. & Group, M. a. C. U. S. 2008. Maternal and child undernutrition: global and regional exposures and health consequences. *Lancet,* 371**,** 243-60.

Blissett, J. & Fogel, A. 2013. Intrinsic and extrinsic influences on children's acceptance of new foods. *Physiol Behav,* 121**,** 89-95.

Boquin M M, Moskowitz H.R., Donovan S. M & Lee S. (2014) Defining perceptions of picky eating obtained through focus groups and conjoint analysis Journal of Sensory Studies 29; 126–138

Cooke, L. J., Wardle, J., Gibson, E. L., Sapochnik, M., Sheiham, A. & Lawson, M. 2004. The

effect of reward on food acceptance. A narrative review. *Appetite,* 57**,** 493-7.

Carruth, B. R., Ziegler, P. J., Gordon, A. & Barr, S. I. 2004. Prevalence of picky eaters among infants and toddlers and their caregivers' decisions about offering a new food. *J Am Diet Assoc,* 104**,** s57-64.

Change for Life (2014) http://www.nhs.uk/change4life/pages/sugar-swap-ideas.aspx

Chator I, Ganiban J. Cognitive & Behavioural Practice 2003

Davies S C., 2013. *Chief Medical Officer's annual report 2012: Our Children Deserve Better: Prevention Pays*. Department of Health. https://www.gov.uk/government/publications/chief-medical-officers-annual-report-2012-our-children-deserve-better-prevention-pays [accessed 10 April 2014]

Department of Health. (2009), Healthy Child Programme. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/167998/Health_Child_Programme.pdf [accessed 23/05/2014]

DoE and DoH. Department of Education and Department of Health, (2014) Policy: Giving all children a healthy start in life. Update 24 February 2014. https://www.gov.uk/government/policies/giving-all-children-a-healthy-start-in-life[accessed 23/05/2014]

Dovey, T. M., Staples, P. A., Gibson, E. L. & Halford, J. C. 2008b. Food neophobia and 'picky/fussy' eating in children: a review. *Appetite,* 50**,** 181-93.

Frankel, L. A., O'Connor, T. M., Chen, T. A., Nicklas, T., Power, T. G. & Hughes, S. O. 2014. Parents' perceptions of preschool children's ability to regulate eating. Feeding style differences. *Appetite,* 76**,** 166-74.

Hammons, A. J. & Fiese, B. H. 2011. Is frequency of shared family meals related to the nutritional health of children and adolescents? *Pediatrics,* 127**,** e1565-74.

Hughes, S. O., Frankel, L. A., Beltran, A., Hodges, E., Hoerr, S., Lumeng, J., Tovar, A. & Kremers, S. 2013. Food parenting measurement issues: working group consensus report. *Child Obes,* 9 Suppl**,** S95-102.

Hyman, P. E. 1994a. Gastroesophageal reflux: one reason why baby won't eat. *J Pediatr,* 125**,** S103-9.

Infant Toddler Forum. (2014) Fussy and faddy eating in toddlers. https://www.infantandtoddlerforum.org/feeding-toddlers-topics [accessed 28/05/2014]

Kreipe, R. E. & Palomaki, A. 2012. Beyond picky eating: avoidant/restrictive food intake disorder. *Curr Psychiatry Rep,* 14**,** 421-31.

Lancet Maternal and Child Nutrition Study Group (2013) Maternal and Child Nutrition. Executive summary. . Lancet.Available from: http://www.thelancet.com/series/maternal-and-child-nutrition [accessed 28/05/2014]

Leadsom, A et al. (2013). *The 1001 Critical Days*. *The Importance of the Conception to Age Two Perio.* A cross party manifesto. London, UK House of Lords. Available from http://www.andrealeadsom.com/downloads/1001cdmanifesto.pdf [accessed 14 May 2014]

Leung, A. K., Marchand, V., Sauve, R. S. & Canadian Paediatric Society, N. t. a. G. C. 2012. The 'picky eater': The toddler or preschooler who does not eat. *Paediatr Child Health,* 17**,** 455-60.

Mennella, J. A. & Trabulsi, J. C. 2012. Complementary foods and flavor experiences: setting the foundation. *Ann Nutr Metab,* 60 Suppl 2, 40-50.

Mitchell, G. L., Farrow, C., Haycraft, E. & Meyer, C. 2013. Parental influences on children's eating behaviour and characteristics of successful parent-focussed interventions.

Appetite, 60**,** 85-94.

NCSM National Centre for social marketing. (2011) Breastfeeding learning demonstration site. The show case. Available from http://www.thensmc.com/sites/default/files/Brighton%20and%20Hove%20demosite%20FULL%20case%20study%20%28print%20version%29.pdf [accessed 23/05/2014]

Mums net (2014) Fussy eaters. http://www.mumsnet.com/toddlers/fussy-eaters [accessed 28/05/2014]

National Childbirth Trust. (2013) *First 1000 days*. http://www.first1000days.org.uk/ [accessed 14 May 2014]

NHS choices (2014) Fussy Eaters. http://www.nhs.uk/Conditions/pregnancy-and-baby/pages/fussy-eaters.aspx#close [accessed 28/05/2014]

Paedisure Shake. http://www.fussyeaters.co.uk/paediasure-shake/what-is-paediasure-shake.aspx#1180 [Accessed 28/05/2014]

Peters, J., Parletta, N., Lynch, J. & Campbell, K. 2014. A comparison of parental views of their pre-school children's 'healthy' versus 'unhealthy' diets. A qualitative study. *Appetite,* 76**,** 129-36.

Russell, C. G. & Worsley, A. 2013. Why don't they like that? And can I do anything about it? The nature and correlates of parents' attributions and self-efficacy beliefs about preschool children's food preferences. *Appetite,* 66**,** 34-43.

Scaglioni, S., Arrizza, C., Vecchi, F. & Tedeschi, S. 2011. Determinants of children's eating behavior. *Am J Clin Nutr,* 94**,** 2006S-2011S.

Schwartz, C., Scholtens, P. A., Lalanne, A., Weenen, H. & Nicklaus, S. 2011. Development of healthy eating habits early in life. Review of recent evidence and selected guidelines. *Appetite,* 57**,** 796-807.

Sherriff N and V Hall. (2014) Rhetoric or reality? Father support in promoting breastfeeding In this journal.

Start4Life. (2014) Taste for life - giving your baby a variety of food now may prevent fussy eating later

http://www.nhs.uk/start4life/Pages/babies-food-variety.aspx [accessed 23/05/2014]

Tharner, A., Jansen, P. W., Kiefte-de Jong, J. C., Moll, H. A., van der Ende, J., Jaddoe, V. W., Hofman, A., Tiemeier, H. & Franco, O. H. 2014. Toward an operative diagnosis of fussy/picky eating: a latent profile approach in a population-based cohort. *Int J Behav Nutr Phys Act,* 11**,** 14.

Thompson, A. L., Mendez, M. A., Borja, J. B., Adair, L. S., Zimmer, C. R. & Bentley, M. E. 2009. Development and validation of the Infant Feeding Style Questionnaire. *Appetite,* 53**,** 210-21.

Wardle, J., Cooke, L. J., Gibson, E. L., Sapochnik, M., Sheiham, A. & Lawson, M. 2003. Increasing children's acceptance of vegetables; a randomized trial of parent-led exposure. *Appetite,* 40**,** 155-62.

Wasser, H. M., Thompson, A. L., Siega-Riz, A. M., Adair, L. S., Hodges, E. A. & Bentley, M. E. 2013. Who's feeding baby? Non-maternal involvement in feeding and its association with dietary intakes among infants and toddlers. *Appetite,* 71**,** 7-15.

Williams C. (2013) Advance Training on Infant and Young Child Feeding, Save the Children and Alive & Thrive. Hanoi, Da Nang and Ho Chi Min City, Vietnam. 25 November – 3 December 2013.

Acknowledgments

With thanks to Save the Children and Alive & Thrive in Vietnam, who commissioned a bespoke training, on ‘fussy eating’ in December 2013 funded by the Bill & Melinda Gates foundation, and prompted development of the framework presented here