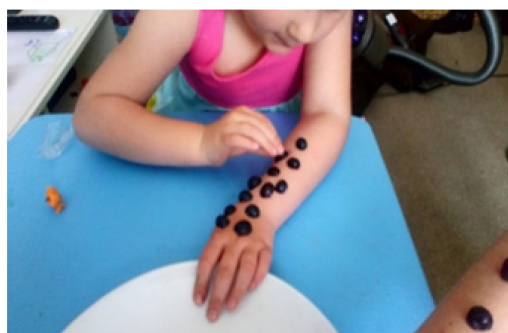


Institution: De Montfort University		
Unit of Assessment: 4		
Title of case study: The Sensory Play Toolkit for Parents and Professionals: A Game-Based Intervention to Increase Food Acceptance in Picky Eaters		
Period when the underpinning research was undertaken: 2009–2018		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Helen Coulthard	Reader	2007–present
Vicki Aldridge	VC2020 Senior Lecturer	2017–present
Iain Williamson	Associate Professor	2005–present
Zoe Palfreyman	Senior Lecturer	2011–present
Period when the claimed impact occurred: 2017–2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact <p>The Sensory Play Toolkit is a free, caregiver-led, evidence-based intervention for children with picky eating. To date, it has provided practical, interactive strategies and support for parents, professionals, and organisations from 38 countries (n = 2,500 individuals), for whom there is currently a dearth of resources. The impact generated includes:</p> <ol style="list-style-type: none"> 1. reduced parental anxiety and improved parental management of eating problems after using the toolkit. 2. use of the Toolkit by the charity ARFID Awareness as a support resource for parents on their website. 3. Professionals including dietitians, occupational therapists and psychologists, changing their practice to include the toolkit at treatment outset, to reduce anxiety and provide information. 		
2. Underpinning research <p>Picky eating describes the rejection of a wide range of familiar and novel foods. Picky eating is common in childhood (up to 40% of 2–7-year-olds) and can have a profound impact on child diet and family mealtime functioning. Since 2015, cases of extreme avoidance of a wide range of foods and poor health / psychosocial functioning can be given the new diagnosis of ARFID (Avoidant/Restrictive Food Intake Disorder), a lifespan clinical disorder. Picky eating and ARFID can negatively impact a person's physical health and psychological well-being; children may not get essential nutrients needed for health, development, or ability to function due to the narrow range of foods consumed. Treatments for picky eating and ARFID are still in their infancy and proof of effectiveness is yet to be demonstrated. At present, no standardised materials are available to families or health/childcare professionals to support parents and children with these eating patterns. There is, therefore, a real need for help and support for children who are picky, avoidant, or fussy eaters, and those with the new diagnosis of ARFID, for whom no clear assessment or treatment pathway currently exists. In such children, an increase in tasting of even one food can lead to psychosocial benefits, such as the ability to eat at a family mealtime, party, picnic, café or restaurant.</p> <p>The underpinning research conducted at DMU focused on helping children develop positive relationships with foods and widen dietary intake. The Health Psychology Research Cluster in the Institute of Psychological Science (led by Dr Helen Coulthard) have published novel research into the relationship between sensory play and food acceptance. Research was first published from our group showing an association between food rejection and tactile sensitivity in preschool children in both questionnaire (n = 70; R1) and behavioural (n = 63; R2) studies. The results showed that children who liked the sensation of sticky messy substances on their hands rejected fewer novel foods. Our team have also identified associations between food rejection</p>		

and sensory engagement with foods in clinical samples of children with ARFID (n = 39; R3). We have further provided evidence for a variety of sensory activities and games to increase food acceptability for children with and without picky eating. These include making pictures out of real fruits and vegetables based on the picture book *The Hungry Caterpillar* (n = 62; R4), playing bingo with real fruits and vegetables (n = 102; R5), and a five-week non-taste sensory play intervention encompassing ten games, including making raspberries into finger puppets and rescuing toy animals from goo (n = 100; R6, supported by external funding from the Feeding for Life Foundation, GBP49,000). All outputs found increases in tasting relative to control conditions.

These findings support the theory that familiarisation with the sensory characteristics of foods without pressure to try, may have made children more comfortable with the foods, and consequently, more likely to taste them. Based on our underpinning research, in 2017 we carried out sensory play impact workshops with 200 Leicester-based schoolchildren, and from these, 15 child-tested sensory games and activities were compiled into a toolkit. The toolkit emphasises creativity and fun to maximise the message of food play and pleasure-based eating.

The aim of the toolkit was threefold; to profile the child's eating and sensory behaviour, to desensitise children to multiple sensory stimuli through play, and to help them develop more positive (and less fearful) relationships with food. The design of the toolkit also ensured that it could be used by an adult who knew the child, such as a parent, making it a low cost and sustainable form of intervention.



3. References to the research

- [R1] Coulthard, H. and Thakker, D. (2015) 'Enjoyment of tactile sensory play is associated with food neophobia in preschool children', *Journal of the Academy of Nutrition and Dietetics*, 115(7): 1134–1140; <https://doi.org/10.1016/j.jand.2015.02.020>
- [R2] Coulthard, H. and Sealey, A.-M. (2017) 'Play with your food! Sensory play is associated with tasting of fruits and vegetables in preschool children', *Appetite*, 113: 84–90; <https://doi.org/10.1016/j.appet.2017.02.003>
- [R3] Aldridge, V.A., Dovey, T.M., El Hawi, N., Martiniuc, A., Martin, C.I. and Meyer, C. (2018) 'Observation and comparison of mealtime behaviours in a sample of children with avoidant/restrictive food intake disorder and a control sample of children with typical development', *Infant Mental Health Journal*, 39(4): 410–422; <https://doi.org/10.1002/imhj.21722>
- [R4] Coulthard, H. and Sahota, S. (2015) 'Food neophobia and enjoyment of tactile play: associations between preschool children and their parents', *Appetite*, 97: 155–159; <https://doi.org/10.1016/j.appet.2015.11.028>
- [R5] Coulthard, H. and Ahmed, S. (2017) 'Non taste exposure techniques to increase fruit and vegetable acceptance in children: effects of task and stimulus type', *Food Quality & Preference*, 61: 50–54; <https://doi.org/10.1016/j.foodqual.2017.04.012>
- [R6] Coulthard, H., Williamson, I., Palfreyman, Z. and Lyttle, S. (2018) 'Evaluation of a pilot sensory play intervention to increase fruit acceptance in preschool children', *Appetite*, 120: 609–615; <https://doi.org/10.1016/j.appet.2017.10.011>

4. Details of the impact



(1) DISTRIBUTION AND REACH

The findings of our research have had press coverage nationally and internationally through, for instance, *VICE*, the *Daily Mail*, and multiple parenting websites [C1]. Aldridge appeared on *Women's Hour* on Radio 4 (an average of 3,700,000 listeners), where she discussed the importance of sensory exposure in clinical groups of children with feeding problems [C2].

The toolkit is a 28-page paper workbook that parents and children can fill in together. Since the Covid-19 pandemic, the toolkit has been disseminated in a printable online format through charities (ARFID Awareness UK), support groups on Facebook (e.g. Parents of picky eaters and problem feeders) and professional networks (Education Standards Board, Australia; Eating and Feeding in Childhood Network, UK). To achieve this, a website was created with a portal to download the toolkit [C3]. To date, the toolkit has been downloaded approximately 2,500 times since June 2020 but is also being distributed by health professionals to their clients (1,500 professionals with an average of 32.3 clients = 52,339 users [C3, C4]). The toolkit has been downloaded and used by health professionals from 38 countries. Though the majority have been from Australia and the UK, health professionals in countries as diverse as Iceland, Mexico, Zimbabwe, Qatar and Singapore have also used the toolkit (see C3 for distribution statistics).

(2) PROFESSIONAL IMPACT

Professionals from multiple disciplines have downloaded the toolkit (n = 1,500), or have received paper copies (n = 300), including occupational therapists (n = 445), educators / child support workers (n = 277), dietitians (n = 270), clinical psychologists (n = 103), speech and language therapists (n = 146), and doctors/nurses (n = 61) [C3, C4]. A professional evaluation (n = 75) found that the majority of professionals stated that it was a useful information/support resource for clients who demonstrate sensory processing issues and food refusal (98%), and that it was helping them in their practice (98%). Furthermore, of the professionals surveyed, most reported that they had subsequently changed their practice to include the toolkit (84%) as a resource to distribute to their clients for initial reassurance and information [C4].

Their feedback about the toolkit was overwhelmingly positive, for example some professionals stated that it:

- 1 supported and changed their practice:
 - 'It's a very helpful guide to practical things to do at home which is hard to explain in a consultation, and a support to do these things at home' (dietitian, NHS, UK)
 - 'It helped me develop my practice' (child psychologist, Bulgaria)
- 2 helped their clients while they were undergoing treatment:
 - 'I think it helps parents be more realistic about their expectations. It helps the parent understand the child. It moves at a pace for the child.' (dietitian, NHS, UK)
 - 'Giving parents an activity to do with children where eating the food is not the focus. Takes pressure off parents. Gives practical support.' (dietitian, NHS, UK)
- 3 helped during the Covid pandemic when many groups had been closed:

'It was useful during covid-19 when we are unable to run our "fun with food" groups' (occupational therapist, NHS, UK).

'Due to the current coronavirus I was looking for a tool for parents to use to reduce sensory aversion' (speech and language therapist, NHS, UK).

This evidence of change from the professional evaluation is also evident in two testimonials taken from health professionals who work with ARFID. A child psychologist from the Birmingham Food Refusal Service stated, 'Parents have reported back to me that they have found the interactive games very useful, giving them new ideas for approaching the difficult task of sensory desensitisation' [C5]. An NHS dietitian stated, 'There is good information for parents and [it] validates what they are experiencing' [C6]. Both emphasised that there was a lack of resources to support their practice, and they had changed their practice to include the Sensory Play Toolkit.

(3) PARENTAL IMPACT

To date, approximately 1,000 parents have independently downloaded the toolkit for use with their children. Over 50% of the children were reported as having comorbid diagnoses, including autism (n = 116), sensory processing disorder (n = 404), and ARFID (n = 99 diagnosed, n = 50 suspected).

In a subsample of caregivers, use of the toolkit for a period of 4–6 weeks led to decreases in parental anxiety, parental problems managing their child's eating behaviour, and problematic eating behaviour in children, relative to the baseline (n = 29; C7). Qualitative data from parents showed increases in sensory play ('I've learnt to relax around messy play', Parent 5, UK; 'The games were fun and engaging', Parent 24, UK) and in tasting ('We've had some success with moving away from white bread and she has now tried 50/50 bread which is a big step', Parent 4, UK), as well as increased knowledge about the strategies used ('The sensory chaining really clicked with me and made it easier to understand how to get my child to try new things' Parent 7, UK).

Organisations have added the toolkit to their websites as a resource tool, such as the charity ARFID Awareness UK, who state:

Resources are very important to our charity, as we support parents, carers and individuals who aren't getting the support they need from the NHS – either practically, or emotionally. Having something like the toolkit enables us to empower the people we support with something practical that they can do to tackle ARFID ... the toolkit gives parents hope and allows them to feel like they can 'do something'. [C8, Co-founder of ARFID Awareness]

Coulthard has also been a consultant on *Easy Ways to Live Well*, with Hugh Fearnley-Whittingstall [C9], which aired on 5th February 2020. A family of three children (3, 7 and 10 years) who showed extreme picky eating at the beginning of the programme adopted the sensory games over an 8-week period. All children showed increased dietary variety, introducing 9–16 healthy new foods into their diet including, rice, pears, green beans and spinach. In the programme, the mother stated, 'This was my dream ... mealtimes are no longer a battle ... the pressure has been taken off' (C9, lines 1055-1064); and the children said 'Mummy's not forced me to eat anything...it's been really good' (C9, lines 1044-1046). Hugh Fearnley-Whittingstall concluded, 'That is a family enjoying their food in ways that a few months ago was impossible ... all the tension has gone out of the situation...the kids are willing to try new stuff' (C9, lines 1076-1081). Sensory play was also featured on the BBC website, as one of 'Eight simple things you can do to live better': Banish fussy eating by ... letting kids play with their food [C10].

5. Sources to corroborate the impact

[C1] UK media and international media coverage:

UK media coverage

<https://www.dailymail.co.uk/health/article-4236582/Why-let-children-play-food.html>

Australian media coverage

<https://www.playwithfood.com.au/embrace-mess>

American media coverage

<https://www.wgbh.org/news/2017/03/12/save-hide-and-seek-playground-why-kids-should-see-their-veggies>

<https://www.reuters.com/article/us-food-fears-children/playing-with-food-may-help-preschoolers-become-less-picky-eaters-idINKBN0O41MD20150519?edition-redirect=in>

- [C2] Vicki Aldridge invited contributor on Women's hour, Radio 4 on ARFID;
<https://www.bbc.co.uk/sounds/play/m00081sk> [segment starts 00:25:15]
- [C3] Website: The Sensory Play Toolkit; <https://sensoryplaytoolkit.weebly.com/> (PDF of paper copy and download statistics from the website).
- [C4] Evaluation report for the Sensory Play Toolkit: professional subsample.
- [C5] Testimonial 1. Clinical Psychologist for Birmingham Food Refusal Service.
- [C6] Testimonial 2. Paediatric Dietitian from an NHS professional.
- [C7] Brief empirical evaluation report for parent study.
- [C8] Testimonial 3. Co-Founder of ARFID Awareness UK charity;
<https://www.arfidawarenessuk.org/post/new-free-sensory-play-toolkit-for-parents-from-leading-arfid-researchers>
- [C9] *Easy Ways to Live Well*, programme transcript (no longer on iPlayer) Easy Ways to Live Well, 00:10 05/02/2020, BBC1 London, 60 mins.
<https://learningonscreen.ac.uk/ondemand/index.php/prog/15509D7E?bcast=131284811>
(Accessed 08 Mar 2021) [evidence taken from page 19 of transcript]
- [C10] *Easy Ways to Live Well*, website link:
<https://www.bbc.co.uk/programmes/articles/5kq6JpLyGD38BMGYGKVMxQn/eight-simple-things-you-can-do-to-live-better>