

Impact case study (REF3)

Institution: Loughborough University		
Unit of Assessment: A2 Public Health, Health Services and Primary Care		
Title of case study: The new UK Child Feeding Guide digital guidance: Improving how parents, caregivers and professionals feed children		
Period when the underpinning research was undertaken: 2001 - 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:
1. Dr Emma Haycraft 2. Dr Gemma Witcomb (previously Mitchell)	1. Reader in Psychology 2. Senior Lecturer in Psychology	1. 01.07.2007 - present 2. 01.10.2001 – present
Period when the claimed impact occurred: 2014 - 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Over half of the UK's pre-schoolers are 'fussy eaters' and less than 20% eat the recommended amount of fruit and vegetables. We know that limited diets have significant adverse health consequences including obesity, type 2 diabetes, and some cancers. Research at Loughborough University has identified strategies to improve children's eating, which underpin the UK's first evidence-based digital child feeding guidance (the 'Child Feeding Guide') for parents/caregivers and professionals and curriculum content for healthcare/childcare training. The guide has 1) been adopted by NHS as the main advice for parents/caregivers across the UK; 2) improved the ability and practice of >100,000 parents/caregivers and healthcare/childcare professionals to support children's healthy eating, and 3) improved the eating behaviours of children in the UK.</p>		
2. Underpinning research		
<p>Unhealthy or restricted diets during childhood contribute to numerous preventable health conditions for children and the adults they become. Fussy or restrictive eating (e.g., just eating beige foods) and not eating enough fruit/vegetables affect over 50% of children, yet many families and caregivers (including healthcare and childcare professionals) do not know how to manage this, often implementing behaviours which our research has shown can unintentionally worsen the situation. Fussy eating behaviours in children can also cause anxiety and stress in caregivers, which further perpetuates the problem.</p> <p>Parents/caregivers report needing evidence-based guidance about which health-promoting feeding behaviours to use with their children. Haycraft and Witcomb's research has furthered knowledge and understanding of the role that parents/caregivers play in feeding their children. The research underpinning the impact was conducted at Loughborough University between 2001–2018. All of this research has informed the development of the Loughborough University Child Feeding Guide digital guidance. Six illustrative research examples are highlighted here.</p> <p>Our research initially identified factors that impact food preferences and intake in adults and how these are influenced by the way in which they were fed as children by their parents/caregivers [R1]. Further work revealed the impact of parental feeding behaviours on children's food preferences and intake, highlighting the formative role that parents/caregivers have in shaping children's eating habits from birth [R2-R6]. Notably, this research exposed a disparity between the information available to those feeding children (e.g., parents, caregivers, childcare professionals, healthcare professionals) and what was known by academics/researchers about how best to facilitate the development of children's healthy eating habits [R3]. It is well established that poor</p>		

dietary preferences in childhood are associated with adiposity and a range of adverse health outcomes in adulthood, meaning that **early intervention is vital**. Our research highlighted an essential need to improve the way that information is communicated to parents, other caregivers, and professionals to improve child health [R3].

This underpinning Loughborough University research investigated how children's eating habits are impacted by parent/caregiver use of adaptive (healthy, responsive) and maladaptive (overly controlling, neglectful or indulgent) feeding behaviours. This research has made novel, impactful discoveries including identifying, for the first time, a link between controlling feeding and young children's emotional eating [R4] and the importance of parental role modelling for promoting children's healthy food intake [R5]. Importantly, both studies highlight how parent/caregiver behaviours can be easily modified to promote healthier eating habits in children.

Haycraft and Witcomb have also extensively explored which mealtime behaviours can reduce children's fussy eating [R2, R3, R6], to understand how to encourage diverse food consumption. Moreover, research led by Haycraft piloting a family-based intervention (2012-2016) for the first time revealed a variety of child-based and environmental factors which drive parents' feeding behaviours. This research resulted in the identification of key behaviours to target for intervention and support [R2].

Together, Haycraft and Witcomb's research has advanced our understanding of how parents/caregivers feed children and which modifiable behaviours need targeting to support them to improve their feeding practices and thereby facilitate healthier child outcomes. These research findings underpin the Child Feeding Guide (CFG).

3. References to the research (indicative maximum of six references)

- R1.** Brunstrom, J.M., Mitchell (**Witcomb**), G.L., & Baguley, T.S. (2005). Potential early-life predictors of dietary behaviour in adulthood: A retrospective study. *International Journal of Obesity*, 29, 463-474. doi: 10.1038/sj.ijo.0802890.
- R2.** Holley, C., Farrow, C. & **Haycraft, E.** (2018). If at first you don't succeed: Assessing influences associated with mothers' reoffering of vegetables to preschool age children. *Appetite*, 123, 249-255. doi.org/10.1016/j.appet.2017.12.026.
- R3.** Mitchell (**Witcomb**), G.L., **Haycraft, E.**, & Farrow, C. (2013). An 'app'ropriate resource? Using mobile apps to provide feeding advice and support to parents. *Appetite*, 71, 482. doi.org/10.1016/j.appet.2013.06.047.
- R4.** Farrow, C., **Haycraft, E.** & Blissett, J. (2015). Teaching our children when to eat: How parental feeding practices inform the development of emotional eating. A longitudinal experimental design. *American Journal of Clinical Nutrition*, 101(5), 908-913. doi: 10.3945/ajcn.114.103713.
- R5.** Palfreyman, Z., **Haycraft, E.**, & Meyer, C. (2014). Development of the Parental Modelling of Eating Behaviours Scale (PARM): Links with food intake among children and their mothers. *Maternal and Child Nutrition*, 10, 617-29. doi: 10.1111/j.1740-8709.2012.00438.x.
- R6.** Powell, F., Farrow, C., Meyer, C., & **Haycraft, E.** (2017). The importance of mealtime structure for reducing child food fussiness. *Maternal & Child Nutrition*, 13(2), e12296. doi.org/10.1111/mcn.12296.

Research outputs R1-R6 are all published in peer-reviewed journals and were supported by competitively awarded funding from the Garfield Weston Foundation (2011-13) £40,000.

4. Details of the impact (indicative maximum 750 words)

The impacts claimed flow from our research findings which have identified strategies that improve child feeding behaviours to support children's healthy development [R3, R4, R5, R6]. The **pathway mechanism** from research to impact is the Child Feeding Guide digital guidance (www.childfeedingguide.co.uk), produced at Loughborough University. **The CFG has led to the following impacts.**

1. Child Feeding Guide adopted nationally within NHS resources

Following a rigorous approvals process, the CFG was selected for adoption by the newly-launched 'NHS Health Application Library' which provides trusted online health tools for different user groups. Notably, the CFG was the sole source of guidance on child feeding included in the new library. From there, the CFG was added to the NHS Start4Life resources which are the NHS's primary source of digital guidance and support for families and professionals. Use and recommendation of the CFG by NHS healthcare professionals across the UK is evidenced by testimonials, personal communications, and requests for flyers to share with patients/clients, and the CFG is also a recommended support resource on NHS Trust webpages (e.g., Dorset Healthcare *Maternal and Child Nutrition Guidelines*; Hampshire CAMHS *'Eating Difficulties'* resources; and resources shared by NHS City and Hackney, NHS Mid-Cheshire, NHS Northern & Eastern Devon, NHS Ayrshire and Aran, plus others around the UK). [S1]

The CFG's reach to over 100,000 users [S2] was achieved via targeted promotion in key outlets (e.g., the Institute for Health Visitors publication), invited presentations / webinars / workshops (e.g., to the Scottish Government's Family Nurse Partnership conference; Primary Care and Public Health Conference), through media engagement and dedicated social media accounts [S3], and accelerated via positive public feedback [S4, S5], for example:

"Anyone with a #fussy eater should visit the @ChildFeedGuide website. Great, practical tips on positively approaching picky eating" (Clare Baseley, Registered Nutritionist)

"We love this @ChildFeedGuide website compiled by researchers at Loughborough University. It's full of practical tips and tools to help deal with fussy eaters. A fantastic resource for parents and Early Years workers alike!" (Mairi McLachlan, High5ForFruit)

"It has all the basic information that a parent might need" (Nutritionist)

"The @ChildFeedGuide provides "real strategies and tools to tackle fussy eating and create happy mealtimes"" (Nottingham College)

2. Improved ability and practice of parents, caregivers, and professionals to support healthy eating behaviours in UK preschool children

Our research identifying the feeding behaviours linked to optimal child outcomes has underpinned much-needed provision of guidance and support for over 100,000 different stakeholders [S2].

a) Parents and caregivers

Before the creation of the CFG, parents/caregivers reported an absence of information, guidance or support about how to feed children once children start eating solid foods. The CFG addresses this need and supports parents/caregivers, first, to change their understanding about how best to feed children, which parents attest to:

"I didn't realise how much I used food as a reward so these [tips] have been great to change that."; "Knowing what is normal is reassuring. There are lots of opinion-based websites that are not based on fact which can be misleading when looking for information." [S4]

By providing parents/caregivers with opportunities for personal development, through educating, informing, and changing their awareness, this brings about improved feeding behaviours. Parent JB commented: *"We have already started taking the pressure off my 4-year-old son and mealtimes feel less stressful for me!"*. And another parent explained that the CFG:

"...made me think a lot about portion size and I stopped making her finish what's on her plate...I didn't think we had any real issues but now I think we did but I didn't recognise it. It's made me think differently about food." [S4]

b) Healthcare and childcare professionals

Our research has also increased the ability of healthcare professionals - including nurses, nutritionists, dietitians, and health visitors working across the UK [S1] - to support families to feed children responsively. Nutritionist Charlotte Stirling-Reed said:

"The information contained within the Child Feeding Guide and provided by these subject experts underpins many of my current practices and the recommendations I share with families". [S6].

The CFG meets professionals' need for "evidence-based, independent information ... in front line practice" (Public Health Nurse) [S5] which is also novel ("Innovative thinking!") and accessible ("This is an excellent resource tool and parents can access information via the internet - this info is credible and accurate") [S5]. Healthcare professionals also report that the CFG addresses a previously un-met need as there are no other credible, comprehensive, sponsor-free resources available to support families with feeding children:

"I work with parents and I now feel I have reliable information about fussy eaters to share" – Health Professional; "This is an excellent resource tool when so many parents are accessing info via the Internet" - Health Visitor, Belfast, Northern Ireland; "I love it!!! It's been so helpful, I can happily say it's independently produced :) The clients have found it informative and it has helped them to feel that they were making changes and helping their children in a way that works for them. ... It has really helped me to support my clients in feeling they are being listened to. Thank you" - Specialist Community Public Health Nurse. [S5]

Registered nutritionists Julia Wolman and Charlotte Stirling-Reed commented that their ability to support healthy eating behaviours in UK infants, toddlers and preschool children had increased as a result of using the CFG: "This helpful website has enhanced my knowledge and understanding of how to effectively feed children" [JW] and "Having this evidence-based, accessible support and information is so valuable to professionals like me for keeping my knowledgebase current" [CS-R] [S6]. CFG training was endorsed for CPD by the Association for Nutrition, with the assessor commenting:

"Many nutritionists' work involves children, and how to persuade them to eat a healthy diet is important. However, this is an area not generally covered in detail in university nutrition courses, meaning that newly qualified nutritionists often have to learn about this vital area 'on the job'. The in-depth and practical nature of the course will mean that inexperienced nutritionists will be able to acquire a sound and evidence-based grounding in best practice." [S7].

Awareness around how best to feed children has also increased in childcare professionals, who report that benefits from using the CFG include changing their understanding of fussy eating and - consequently - their mealtime interactions with children they care for: "The way in which we approach children at eating times [has changed]".

Childcare staff now know how to change their behaviours to improve children's eating: "...raising staff awareness of the impact their behaviour towards food can have on children" [S5] and pre-post data from a representative sample of nursery staff [S8] demonstrated increased modelling of healthy eating habits, teaching children about nutrition more often, and re-offering refused foods after engaging with the CFG training. These are all responsive feeding practices which our research [R5, R6] has shown promotes children's healthy development.

Following positive feedback and outcomes from Children’s Centre staff (commissioned by Rushcliffe Borough Council) who used the CFG training, the Loughborough University team was approached as subject experts for support to tailor Nottinghamshire Public Health team’s activities as part of the UK Government-funded obesity Trailblazer campaign. Fussy eater training was identified as a key need by early years settings and the public health team recognised the expertise of the Loughborough University research team. Although roll-out was delayed due to COVID-19, the CFG training has been licenced for use for children’s centre staff and early years professionals (EYPs) within childcare settings across Nottinghamshire, with Andy White, Public Health Officer, commenting: *“The research and development you and your team do is vitally important to raising knowledge and standards in the early years so we want to support this as much as we can”* [S9].

3. Children’s eating behaviours have improved across the UK

Our research has generated positive changes in UK children’s eating behaviours. We have shown that children’s eating habits can be a significant concern for parents [R2] who have requested help to improve this. The CFG has solved this issue for families.

Use of the CFG by parents/caregivers has been associated with significant reductions in children’s fussy eating behaviours. For example, parent NNK said *“I have a fussy eater who is now 4 and very stubborn but improving with your advice”* and a mother of a 3-year-old reported that using the CFG had *“helped with [her child’s] fussy eating”*, while a Twitter user needing guidance on improving their child’s eating behaviours reported that the CFG was *“helping already!”* [S3].

Another CFG user shared: *“Hooray! Littlest little one has finally decided that this soup stuff is actually edible. Yesterday she ate a little, today ‘I love soup’, [it’s] only taken 2 and half years of trying!!! This great tool from @ChildFeedGuide can help you keep track of offerings”* (SugarSwaps) [S3]. Further evidence from some of the Child Feeding Guide’s >100,000 users demonstrates that repeated offering of a food, as advocated in the CFG based on our research evidence [R2], results in positive changes in children’s behaviours - where they go from refusing foods to accepting and eating foods [S10]. Together, this highlights how use of the evidence-informed CFG has improved UK children’s eating behaviours.

5. Sources to corroborate the impact (indicative maximum of 10 references)

- S1) Examples of NHS Trusts, hospitals, and services across the UK advocating use of the Child Feeding Guide to patients and families (e.g., through inclusion of the CFG in their materials plus Trusts/professionals requesting resources (flyers/postcards) to share the CFG with their patients and testimonials about usefulness of CFG in their practice).
- S2) Google analytics data showing >100,000 unique users of the Child Feeding Guide.
- S3) Evidence of outputs in key publications, invited conferences / workshops, and engagement with a range of media.
- S4) Examples of testimonials from parents/caregivers.
- S5) Examples of testimonials from health/childcare professionals.
- S6) Testimonials from two registered nutritionists: Charlotte Stirling-Reed and Julia Wolman
- S7) CPD accreditation from the Association for Nutrition highlighting that the Child Feeding Guide meets an unmet need and provides key CPD for professionals.
- S8) Example of feedback following delivery of Child Feeding Guide training to childcare staff commissioned by Startwell Birmingham; Evaluation report documenting improvements in nursery staff practices after engaging with the Child Feeding Guide and its training.
- S9) Nottinghamshire Public Health team’s confirmation of an identified need for fussy eater training and intention to roll-out the training in 2021 (delayed delivery due to COVID-19 but licence was fully signed on 6 November 2020).
- S10) Evidence that use of the CFG changes children’s eating behaviours.