

Impact case study (REF3)

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| Institution: University of Bradford | | |
| Unit of Assessment: A4 Psychology, Psychiatry and Neuroscience | | |
| Title of case study: Insights from psychology research enables consumer-driven personalised nutrition | | |
| Period when the underpinning research was undertaken: 1 August 2013 – 31 Dec 2020 | | |
| 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: |
| Prof Barbara Stewart-Knox | Professor of Psychology (Food Behaviour) | August 2013 – present |
| Dr Jerko Markovina | Research Assistant | 13 June 2014 – 31 March 2015 |
| Period when the claimed impact occurred: 1 August 2013 - 31 July 2020 | | |
| Is this case study continued from a case study submitted in 2014? N | | |
| 1. Summary of the impact (indicative maximum 100 words) | | |
| <p>Results of consumer psychology research undertaken as part of the EU-funded Food4Me project stimulated a proliferation of start-up companies offering personalised nutrition direct-to-consumer (DTC) within Europe and beyond. The research captured the views of the European public and identified psychological principles driving adoption of personalised nutrition. In doing so, it boosted technological innovation and informed specifications for design and delivery of personalised nutrition services globally. Food4Me consumer research results have been translated into dietetics practice and are cited in the (USA) Academy of Nutrition and Dietetics Guiding Principles for registered dietician nutritionists (RDNs). The impact of this research was recognised with the 2014 EU CommNet Impact Award.</p> | | |
| 2. Underpinning research (indicative maximum 500 words) | | |
| <p>During the EU-funded LIPGENE project (2004-2009) on which Professor Barbara Stewart-Knox (BS-K) was a Co-I, it was revealed that the EU public was amenable to personalised nutrition for disease prevention. This case study is based on new underpinning research led by BS-K as part of the EU-funded Food4Me project.</p> <p>Professor Stewart-Knox joined the University of Bradford in August 2013 and carried out research on the Food4Me project until March 2016. Dr Jerko Markovina was employed at the University of Bradford as a post-doctoral researcher funded on Food4Me (2014-15). BS-K led the consortium Pan EU consumer qualitative research with collaborators Professor Lynn Frewer (U Newcastle), Professor Daniel Almeida (U Porto) and Dr Arnout Fischer (U Wageningen). Consumer psychological research conducted as part of Food4me sought to generate knowledge which commerce could use to design personalised nutrition services and associated technologies and meet the perceived dietary health promotion needs of the EU public.</p> <p>The main findings from Food4me consumer psychology Pan EU qualitative and Pan EU survey research indicated that the European public was favourable toward personalised nutrition (1-3) and that there were two markets, one preferring commercial delivery and the other, health provider delivered services (2,3). Although motivated by benefits more than risks, people were concerned about data privacy and required assurances about data security from service providers (5,6).</p> | | |

Both qualitative and survey findings indicated there was less trust in commercial than in government-led initiatives (5,6) and that health professionals, particularly dietitians, were most trusted and considered crucial to client uptake and effective delivery of personalised nutrition. The pan EU survey and qualitative research conducted in the UK both indicated that Social Cognitive Theory (SCT) was a good model upon which to inform the design of personalised nutrition services (1,4) and that in keeping with SCT, Nutrition Self-Efficacy, Health Locus of Control and Habit Strength were important traits determining uptake of personalised nutrition (1,4) and which would need to be considered when evaluating client need at the point of service delivery.

Qualitative and survey findings were fairly consistent across EU countries (1,5,6) indicating potential for these findings to have broad international impact.

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

1. Poínhos, R., van der Lans IA, Rankin A, Fischer ARH, Bunting BP, Kuznesof S, Stewart-Knox B, Frewer LJ (2014) Psychological determinants of consumer acceptance of personalised nutrition in 9 European countries. PLoS One (9) c110614.

<https://doi.org/10.1371/journal.pone.0110614>

2. Fallaize, R., Macready AL, Butler LT, Ellis JA, Berezowska A, Fischer ARH, Walsh M, Gallagher C, Stewart-Knox BJ, Kuznesof S, Frewer L, Gibney M, Lovegrove JA (2015) The perceived impact of the NHS on personalised nutrition delivery in the UK. British Journal of Nutrition 113(8), 1271-1279 doi: <https://doi.org/10.1017/S0007114515000045>

3. Fischer ARH., Berezowska A, van der Lans IA, Ronteltap A, Rankin A, Kuznesof A, Poínhos,R, Stewart-Knox B, Frewer LJ (2016) Willingness to pay for personalized nutrition across Europe. European Journal of Public Health 26(4) 640-644

<https://doi.org/10.1093/eurpub/ckw045>

4. Rankin, A., Kuznesof S, Frewer L, Orr K, Davison J, Vas de Almeida MD, Stewart-Knox BJ (2016) Public perceptions of personalised nutrition through the lens of Social Cognitive Theory. Journal of Health Psychology 22(10) 1233-1242 <https://doi.org/10.1177/1359105315624750>

5. Stewart-Knox BJ, Markovina J, Rankin A, Bunting B, Kusnezof A, Fischer A, Poínhos R, Vaz de Almeida MD, Panzone L, Gibney M, Frewer L (2016) Making personalised nutrition the easy choice: policies to break down the barriers and reap the benefits. Food Policy 63, 134-144.

<https://doi.org/10.1016/j.foodpol.2016.08.001>

6. Poínhos, R., Oliveira B, van der Lans IA, Fischer ARH, Berezowska A, Kuznesof S, Stewart-Knox B, Frewer LJ, de Almeida MDV (2017) Providing personalised nutrition: Consumers' trust and preferences regarding sources of information, service providers and regulators, and communication channels. Public Health Genomics 24(4) 218-228

<https://doi.org/10.1159/000481357>

Grants

Barbara Stewart-Knox, Food4Me. European Commission. March 2011 – April 2016. Total grant: EUR8,937,515. Institutional share: EUR138,677.75

AwardsFood4Me won the 2014 CommNet Impact Award for Engaging Industry

<https://cordis.europa.eu/article/id/116764-commnet-impact-awards-winners-announced/es>

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

The EU-funded Food4me project was the first in the world to investigate societal perspectives on personalised nutrition. Results of the Food4me consumer research have been widely

disseminated in non-academic settings, including 16 invited/plenary presentations delivered by BS-K since August 2013. Audiences have included the EU Commission (DG 5) (Brussels 26th Feb, 2015) and industry consortia conferences such as Federation of European Rice Millers (Lisbon 13th Sept 2019), Food Matters Live (London 18th Nov 2015 and 18th Nov 2014), Food Ingredients Global Summit (London Sept 2014), NutrEvent (Lille 17th June 2015), Health Claims Europe (Brussels 28th March 2017) (Basf; Bayer Healthcare; Campbell Soup Co; DSM Nutrition; Herbalife Europe; Coca Cola; EU Food Policy), Kisaco Research (London 5th Dec 2018; Amsterdam 22nd June 2016) (Nestle; Amway; Friesland Campina; Weizman Institute; Nuritas) and the ITaaU Network (2nd Sept 2013). Findings from the Food4me project have informed the design and implementation of global commercial personalised nutrition offerings.

Impact on Innovation

During the last five years, there has been a steady increase in direct-to-consumer (DTC) personalised nutrition services with the market estimated at around USD11,000,000,000 and growing at 7.1% CAGR. Food4me results have contributed to this boom by informing global health-tech industry innovation (A). Impact generated by Food4me consumer psychological research has led to a proliferation of start-up companies offering personalised nutrition DTC using designs informed by results of the Food4me consumer research. Food4me consumer psychology research boosted confidence in the market and global proliferation of companies offering personalised dietary advice. Results from Food4Me consumer research have been deemed significant and picked up by companies operating on a global level and which serve the nutrition health technology industry. These results have been translated into design of personalised nutrition services and applied in practice. Several examples are highlighted below.

Quisper is an on-line platform serving and providing resources for personalised nutrition companies across Europe. The findings from Food4Me have been influential in the design of its offering to companies which focusses on promoting consumer trust and enabling healthy dietary change. Quisper is an EU-funded not-for-profit initiative which (B) was 'built on outcomes from previous EU-funded projects (Food4Me, QuaLify) and aims to support high-quality personalised nutrition services for the consumer.' Quisper's presentation slide (C) directly references the underpinning research and depicts the model indicating the direct importance of perceived benefit and self-efficacy in determining attitudes and uptake of personalised nutrition.

shifN These presentation slides attest to the importance of Food4Me consumer psychology survey research findings to the design of Quallfy and Quisper (see above). Slide 17 cites the Poínhos et al. model (1) indicating the importance of perceived benefit and Social Learning Theory related factors (e.g. self-efficacy) to attitudes and adoption of personalised nutrition. Slides 18-19 present graphs supplied by BS-K showing survey data on consumer trust in agencies to inform and deliver on personalised nutrition.

Qina is a consultancy supporting personalised nutrition professionals and providers working in the personal nutrition field across the globe. Qina offers tools for client assessment the design of which have been informed by Food4Me consumer psychology research findings on the need to take into account individual eating context. 'Food4me qualitative research highlighted the importance to consumers of tailoring personalised nutrition services and advice to client lifestyle, social circumstances, employment (E4/D).' Taking Food4me research findings indicating the importance of tailoring services to individual psychology, Qina devised a 'checklist' (in consultation with BS-K) with which to assess social, psychological and lifestyle factors deemed important to dietary change by the Food4Me qualitative and survey research participants. 'Food4Me UK qualitative study indicated that taking individual psychology into account when setting dietary goals, monitoring and providing feedback was crucial to dietary change'. Qina is currently piloting this approach.

Habit.com and Nlumn

Habit.com adopted an approach suggested by the Food4Me consumer research whereby clients are offered professional coaching along with personalised dietary advice. Habit.com drew on findings from 'Food4me qualitative studies indicated the importance of household, workplace

and other social contexts to uptake of and compliance with personalized nutrition'...this rendered Habit.com 'an industry leader in taking an individual's social environment into account in the design of personalised nutrition' producing 'tailored meals and recipes that could meet participant needs and which can also be enjoyed by family and friends.' Taking the Food4Me qualitative and survey findings indicating the importance of taking individual perceived benefit into account habit.com adopted an individualised goal-oriented approach to personalised nutrition 'understanding what is important to a person informs on how to deliver personalised nutrition.' Habit.com also applied in practice Food4Me qualitative and survey results which highlighted the need for data privacy and trust between the client and the service provider 'in the absence of trust, it is unlikely that advice will be followed (E).'

Also as suggested by 'qualitative and survey research conducted as part of Food4me identified a need for individualised goal setting when providing nutrition advice. At Habit, understanding individual goals was an important input into the advice system... when developing specific, actionable recommendations. The way in which progress toward goals is assessed and fed back to clients was also personalised, drawing on qualitative and survey findings indicating the importance of SCT principles in 'identifying individual drivers of behaviour change.'

Nlumn provides consultancy to assist companies in adopting a client centred approach to personalised nutrition. As implied by the Food4Me consumer qualitative and survey research approaches centre upon perceived benefits and ways of motivating clients. Drawing on results of the Food4me consumer research indicating the importance of the social context of eating, when personalising nutrition advice consideration is given to - 'how can a person eat this way and still eat with other household members?' The aim is 'to avoid the social isolation that can come with prescriptive nutrition programs (E).'

Impact on Practice and Policy

ANA published Guiding Principles for the Implementation of Personalised Nutrition in 2020 (F). Food4Me research (R3) is cited indicating the need for guidelines to enable personalised nutrition as part of health care provision and available to those in all socioeconomic groups.

The Journal of the Academy of Nutrition and Dietetics (AND) is the professional journal for nutrition professionals in the USA. The Guiding Principles for RDNs cites two peer-reviewed publications arising from the Food4Me consumer psychology research (F). These guidelines refer to Food4Me consumer research indicating that dietetics professionals are the preferred and most trusted agents to deliver personalised nutrition. These published guidelines also refer to Food4Me consumer research results implying the importance of social cognitive principles to healthy dietary behaviour change, are being translated into the practice of promoting healthy eating.

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

A. [The Next Green Thing: Personalised Nutrition](#) (January 2016)

"The subject provided a fertile topic for conversation at November's Food Matters Live event where, in a session dedicated to personalised nutrition, Dr Barbara Stewart-Knox, a professor of psychology at the University of Bradford neatly summarised its premise: "If you have this particular genetic propensity and if you do nothing then this is the possible outcome."

B. Quisper: [Bridging the gap between consumers and scientifically validated personalised nutrition advice](#) (see Quisper home page conference poster presentation - November 2019).

"An increasing number of companies are developing apps, wearables and web-tools to meet consumer demand, but the scientific basis for these approaches is often unclear, which can lead to poor consumer trust. Quisper is a new initiative...which builds on the outcomes of previous EU-projects (Food4Me, QuaLiFY) and aims to facilitate the provision of high-quality personalised nutrition services to the consumer".

C. [Personalised Nutrition: Introduction and concept: Quisper/shiftN](#)

This presentation by shiftN shows how Food4Me consumer psychology findings informed the design of Quisper. Slide 17 cites the model in (1) indicating the importance of perceived benefit

and Social Learning Theory related factors (eg. self-efficacy) to attitudes and adoption of personalised nutrition. Slides 18-19 present graphs supplied by BS-K showing consumer trust in agencies to inform and deliver on personalised nutrition.

D. Qina

This testimonial describes ways in which findings from the Food4Me psychological research have informed innovation and commercial practice. Constructs identified by the consumer psychology qualitative and survey research have been applied to the evaluation of client need and taken into account in the personalisation of service delivery.

E. Habit.com and nlumn

This testimonial indicates ways in which findings from the Food4Me consumer psychological qualitative research have been translated into innovation and design of personalised nutrition services and commercial practice.

F. Rozga M, Latulippe ME, Steiber A (2020) Advancements in personalised nutrition technologies: Guiding principles for Registered Dietitian Nutritionists. *Journal of the Academy of Nutrition and Dietetics* <https://doi.org/10.1016/j.jand.2020.01.020>

This peer-reviewed paper cites two articles (R4 and R6) reporting findings from the Food4Me consumer psychology research. Translation of this research into practice guidelines represents a significant step toward personalised nutrition being made available to all sectors of society as part of mainstream health care delivery. The journal (JAND) is published in the USA and reaches out to dietitians and other nutrition professionals, based in public health services and involved in the delivery of commercial offerings, all over the world.

Adams SH, Anthony JC, Carvajal R et al. (2020) Perspective: Guiding Principles for the implementation of personalised nutrition approaches that benefit health and function. *Advances in Nutrition* 11, 25- 34. <https://doi.org/10.1093/advances/nmz086>

This journal article presents guiding principles for personalised nutrition and cites Food4Me consumer psychology research indicating a need for personalised Nutrition to be provided as part of dietetics practice. *Advances in Nutrition* (ANA) is the official journal of the American Society for Nutrition which reports the 'current state of knowledge in the field, identifies gaps and future directions' for those working in clinical nutrition.