Barriers and facilitators to cooking from 'scratch' using basic or raw ingredients: A qualitative interview study [DOI: 10.1016/j.appet.2016.08.115.]

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Background: Previous research has highlighted an ambiguity in understanding cooking related terminology and a number of barriers and facilitators to home meal preparation. However, meals prepared in the home still include convenience products (typically high in sugars, fats and sodium) which can have negative effects on health. Therefore, this study aimed to qualitatively explore: (1) how individuals define cooking from 'scratch', and (2) their barriers and facilitators to cooking with basic ingredients.

Methods: 27 semi-structured interviews were conducted with participants (aged 18-58 years) living on the island of Ireland, eliciting definitions of 'cooking from scratch' and exploring the reasons participants cook in a particular way. The interviews were professionally transcribed verbatim and Nvivo 10 was used for an inductive thematic analysis.

Results: Our results highlighted that although cooking from 'scratch' lacks a single definition, participants viewed it as optimal cooking. Barriers to cooking with raw ingredients included: 1) time pressures; (2) desire to save money; (3) desire for effortless meals; (4) family food preferences; and (5) effect of kitchen disasters. Facilitators included: 1) desire to eat for health and well-being; (2) creative inspiration; (3) ability to plan and prepare meals ahead of time; and (4) greater self-efficacy in one's cooking ability.

Conclusions: Our findings contribute to understanding how individuals define cooking from 'scratch', and barriers and facilitators to cooking with raw ingredients. Interventions should focus on practical sessions to increase cooking self-efficacy; highlight the importance of planning ahead and teach methods such as batch cooking and freezing to facilitate cooking from scratch.

Keywords: Scratch Cooking, Qualitative, Skills, Barriers, Facilitators[1]

Introduction

Over recent years, there has been concern that the culture of domestic cooking has rapidly evolved alongside broader social, environmental and technological changes to the potential detriment of our diet and resulting nutritional health. Research has indicated: less time is being spent on domestic food preparation (Soliah, Walter, & Jones, 2012; Pettinger, Holdsworth, & Gerber, 2006), a breakdown of traditional meal patterns (Buckley, Cowan, & McCarthy, 2007), a greater availability and consumption of high energy ultra-processed ready-made foods (typically high in sugars, fats and sodium) (Monteiro, Moubarac, Cannon, Ng, & Popkin, 2013; Moodie et al., 2013; Monteiro, Levy, Claro, deCastro, & Cannon, 2011; Stuckler, McKee, Ebrahim, & Basu, 2012), and an increase in food produced and consumed outside the home environment (Mintel, 2014). Moreover, it has been suggested that whole cultures have experienced a dramatic change in their ability to select, prepare and consume food (Lang & Caraher, 2001), with fewer and/or different cooking skills (Beck, 2007; Worsley, Wang, Wijeratne, Ismail, & Ridley, 2015). Some researchers have also suggested a loss of the necessary skills to prepare a meal from raw ingredients (from 'scratch') (Caraher, Dixon, Lang, & Carr-Hill, 1999). In light of this, several community diet projects have been developed to increase cooking skills among the consumer. Although such interventions lack theoretical underpinning and rigorous outcome evaluations (McGowan et al., 2015) they do have the potential to reduce overreliance on convenience foods. Indeed, previous research has shown that

[1] **Abbreviations:** NI, Northern Ireland; UK, United Kingdom; IOI, Island of Ireland; ROI, Republic of Ireland, CFS, Cooking from Scratch.

those who frequently prepare a meal in the home (Wolfson & Bleich, 2015) and use a greater number of cooking skills make healthier food choices and have a better dietary quality (Chen, Meei-Shyuan, Yu-Hung, & Wahlqvist, 2012; McGowan et al., 2015), whereas a lack of cooking skills has been associated with increased consumption of convenience food products (van der Horst, Brunner, & Siegrist, 2011).

To gain insights into the state of domestic meal preparation, research has investigated the perceptions of what constitutes home-cooking and the barriers and facilitators to cooking (Wolfson, Smith, Frattaroli & Bleich, 2016a; Wolfson, Smith, Bleich & Frattaroli, 2016b; Bowen, Elliot & Brenton, 2014; Soliah, Walter & Jones, 2012). Previous studies have alluded to several barriers to home meal preparation, such as parental employment (Devine et al., 2006; Jabs et al., 2007; Devine et al., 2009), lack of time (Jabs & Devine, 2006), cost of convenience foods (Brunner, van der Horst, & Siegrist, 2010), poor cooking skills (van der Horst et al., 2011; Stead et al., 2004), and limited food resources (Vidgen & Gallegos, 2014). In a recent American study Wolfson et al. (2016b) found a continuum in what home-cooking meant to participants, from cooking from scratch (CFS) at one end to heating up a ready-made microwave meal at the other. Different use of terminology was debated by participants illustrating the highly individualised nature of the terms used. This lack of consensus has been previously highlighted (Short, 2006; Short, 2003). In addition, the motivators to home meal preparation have been explored using focus groups (Jones, Walter, Soliah & Phifer, 2014), highlighting the cost effectiveness of cooking in the home, having a cooking role model, familiarity with cooking techniques and having time for the preparation, cooking and cleaning.

In relation to the use of terminology, encouraging some to increase their home-cooking, may encourage the use of convenience products, as Wolfson et al. (2016b)

74 demonstrated that some view heating a ready-meal as home-cooking. Recent
75 European research found that only 30% of total household food expenditure was on
76 'scratch' ingredients (Daniels & Glorieux, 2015), with the rest being spent on
77 convenience food and meals consumed outside the home. Another study showed that
78 only 20% of Belgian families spend the majority of their food budget on raw or fresh
79 ingredients, with the remainder combining fresh ingredients with some level of
80 convenience food (Daniels, Glorieux, Minnen, van Tienoven & Weenas, 2015).
81 Convenience foods are normally high in saturated fat, sugars, sodium and additives
82 (Monteiro, Moubarac, Cannon, Ng, & Popkin, 2013; Moodie et al., 2013; Monteiro,
83 Levy, Claro, deCastro, & Cannon, 2011; Stuckler, McKee, Ebrahim, & Basu, 2012),
84 and the consumption of convenience food has been associated with overweight and
85 obesity (van der Horst et al., 2011; Smith, McNaughton, Gall, Blizzard, Dwyer &
86 Venn, 2009; Malik, Willett and Hu, 2013). Further, the additives in these products
87 have been linked to the increase in autoimmune diseases (Lerner & Matthias, 2015).
88 In light of this, it is important to understand what CFS means to the consumer and
89 what barriers consumers face moving away from convenience products towards using
90 basic or fresh ingredients in their cooking. Thus, this study explicitly explored the
91 barriers and/or facilitators to cooking with basic or raw ingredients and how they may
92 be different to the barriers faced in home meal preparation in general.
93 Interviews were chosen as the method of data collection as it would allow for
94 maximum individual clarity with the already confusing terminology, as participants
95 within a focus group can be influenced by other dominant participants. Therefore this
96 study qualitatively explored in a European population: (1) how individuals define
97 cooking from 'scratch', and (2) the barriers and facilitators to cooking a meal with
98 basic or raw ingredients.

Material and Methods

Participant Recruitment

Male and female participants from the island of Ireland (IOI) were recruited via convenience and snowball sampling with purposive acceptance to take part in a semi-structured interview. Recruitment methods included announcements in the form of an email circulated to staff at a NI (Northern Ireland) and ROI (Republic of Ireland) university, interviewer contacts, and face-to-face invitations at a range of ROI community classes aimed at the unemployed. Every effort was made to include participants from different educational backgrounds and age groups, with a range of perceived cooking abilities. Of the thirty-one participants that responded with interest and completed a screening questionnaire; three did not meet the eligibility criteria (i.e. aged between 18-65 years; not involved in professional cookery; responsible for preparing at least one household meal per week) and a further one was unable to commit the necessary time. In total, 27 participants (17 females and 10 males) were interviewed (Table 1). All participants provided informed verbal consent and the study was approved by the School of Biological Sciences Ethical Committee at Queen's University Belfast.

Table 1 Characteristics of interview participants.

Characteristic		**N = 27**	
		N	%
Country	Northern Ireland	15	56
	Republic of Ireland	12	44
Age	18-34 years	12	44
	35-44 years	5	19
	45-58 years	10	37
Highest Education level	Basic School (age 15/16, Junior Cert/GCSE)	2	8
	Secondary School (age 17/18, Leaving Cert/A Level)	4	15
	Professional Training	3	11
	Undergraduate level	9	33

	Postgraduate level	9	33
Occupational Status	Employed full-time (>30h per week)	18	67
	Employed part-time (8-29h per week)	3	11
	Retired	1	4
	Student	2	7
	Unemployed	3	11
Life Stage	Single/Married with children in the household	9	33
	Married with no children in household[a]	4	15
	Single	4	15
	Single with cohabitees	6	22
	Single lives with family	4	15
Number in Household	1	4	15
	2	9	33
	3	8	30
	4-6	6	22
Type of ingredients used in meal preparation	All Ready-made	2	7
	Mostly pre-prepared, some fresh/basic/raw ingredients	7	26
	Mostly fresh/basic/raw, some pre-prepared ingredients	17	63
	All fresh/basic/raw ingredients	1	4
Perceived Ability	1	1	4
	2	2	7
	3	2	7
	4	7	26
	5	9	33
	6	2	7
	7	4	15

[a] Includes couples with grown children no longer residing in their household.

Interview Questioning Guide

Based upon a review of previous literature (McGowan et al., 2015) and a small number of interviews (n=4) with experts working to improve cooking and food skills (defined here as food planning, organising, shopping, budgeting), the research team developed the interview questioning guide. The interview guide was piloted for clarity, comprehension, reliability and timing with five individuals and refined prior to implementation. The questions were designed to elicit participants perceptions regarding their experiences with domestic cooking including terminology relating to cooking, their motivations and barriers for cooking with basic or raw ingredients, how

they learned their cooking and food skills, and how they had/could improve their cooking skills (See Table 2).

Table 2: Questioning route of interviewers

Introductory Question
• Please describe the most recent main meal you prepared or cooked at home?
Personal Definitions
• What does the term 'convenience foods' mean to you? • What would you consider a 'ready-made' product to be? • What would you consider cooking from 'scratch' to mean?
Perceived Cooking and Food Skills Practices
• I can see that you rated yourself as an x out of 7 for cooking from 'scratch', can you tell me why that is? • How would you rate yourself in terms of your wider food practices like shopping, planning meals, food safety and storing food or eating healthily? • How do you decide what to stock your fridge or cupboards with? How do you decide how to create a meal e.g. what to put on a plate to make up your meal?
Barriers/Facilitators to 'Scratch Cooking'
• What gets in the way of you cooking? *(and of wider food practices like shopping etc.)* • What motivates you to cook? • Are you confident with all foods/ingredients?
Learning Cooking Skills
• How do you believe you learnt your cooking skills, e.g., chopping, mixing? • If you wanted to improve on these or any cooking skills how would/have you do/did this?

Data Collection

Interviews were conducted by telephone (n=26) or face-to-face (n=1), between October and December 2014, by one of two experienced interviewers (FL; a Sport and Health Scientist: and LM; a Health Psychologist) who had completed courses on qualitative data collection. As an ice-breaker, participants were asked to introduce themselves and describe the most recent main meal that they had prepared. Interviewees were given some assurances (e.g. that there were 'no right or wrong answers', their anonymity would be kept intact and they could opt out at any point) before the interviewer proceeded to ask a series of guided open-ended questions (Table 2). The interview concluded when all topics had been covered and no new information emerged. Interviews were audio-recorded and lasted between 20 and 60 minutes (mean duration 36 minutes).

Data analysis

Audio recordings were professionally transcribed verbatim, checked for precision (FL, LM), and, coded thematically (Braun & Clarke, 2006) using the qualitative programme NVivo 10 (QSR International Pty Ltd, Victoria, Australia). Initially, interviewers (FL, LM) independently read and coded two randomly selected transcripts before jointly reaching a consensus on the validity and reliability of the application of their codes to the data. This process was repeated for a further three transcripts, afterwards, minor revisions were made to the terminology of some codes. The remaining transcripts were then coded (FL) and independently checked for coding consistency (LM) before consensus was reached (with FL). Both coders agreed that data saturation had occurred as no new codes emerged from the final six interviews. Subsequently, codes were grouped into potential barriers and facilitators and inspected for overlap to ensure that there were clear distinctions within and between barriers and facilitators. To increase intra-observer reliability, four members of the research team who were experienced in qualitative data analysis (FL, LM, MS; a Nutritionist and MD; a Consumer Psychologist) immersed themselves in the data and critically discussed the emerging barriers and facilitators, together with their interpretations. As a final step, FL, LM, MS, and MD discussed the results and selected key quotes to exemplify each barrier and facilitator. Socio-demographic data was summarized using IBM SPSS Statistics version 19 software (SPSS, Chicago, IL).

Results

The sociodemographic characteristics of the 27 participants are shown in Table 1. To ensure a wide range of cooking abilities (see Table 1), a question was included in the screening questionnaire on perceived ability; “On a scale from 1 to 7 where 1 means very poor and 7 means very good, how good are you at preparing and/or cooking

meals from 'scratch' at home (i.e. using basic/fresh/raw ingredients etc.)?". Participants responses ranged from 1 to 7 (Mean 4.6, SD 1.6). An overview of these participants' definitions of CFS and their barriers and facilitators to cooking with raw or basic ingredients is presented respectively.

Perceptions of cooking from 'scratch' using basic ingredients

Illustrative quotes of participants' personal definitions of CFS can be seen in Table 3, these appeared to be individualized with no clear patterns across perceived ability, gender or age. Perceptions of the degree of preparation allowed for classification of a meal as made from 'scratch' varied considerably. These perceptions spanned a continuum from traditional understandings of the term (using raw ingredients entirely) to a more inclusive modern version, which incorporated some convenience products (e.g. store bought pasta). There was consensus that CFS was the *"healthiest"* method of preparing a meal; with natural, fresh and unprocessed ingredients being key components, yet, for some, the use of frozen foods (such as frozen fish fillets) was also included. The degree of time and effort needed for CFS was perceived as being greater than that required for convenience products, however, for many, it was viewed as the goal to strive towards.

188 **Table 3: Illustrative quotes to demonstrate the spectrum of 'cooking from scratch' perceptions.**

Personal Definition	Perceived Ability	Gender	Age
"It means preparing sauces/condiments/everything from the raw ingredients top to bottom, so if you're making a curry it means preparing the paste and chopping up all the herbs and everything, making the paste and then adding the cream, doing it all completely from individual ingredients."(Participant 12)	4	M	32
"If you were making your own sauces, all like fresh food, using actual spices, I would consider made from scratch meals obviously the healthiest." (Participant 27)	1	F	21
"Once you've bought the ingredients organically, washing them and putting them together, so whether you're getting a full chicken and cutting it up, whether you're getting head of broccoli and cutting it up, stuff like that, same with your sauces with the least amount of stress." (Participant 25)	5	M	24
"Well something that hasn't been prepared in any way, where you're buying it fresh, well I say fresh, most of the stuff I cook from scratch is frozen but I mean hasn't been treated in any way." (Participant 19)	4	M	57
"Taking different ingredients, well for salad cooking from scratch would be washing cutting and then putting oil, maybe adding olives to the greens so it doesn't involve cooking on fire but it involves preparing the ingredients, like washing and cutting, for rice or spaghetti and stuff it involves boiling or put in the oven, so combining different ingredients that you have manipulated some way, so taking raw ingredients and either cooking them or washing, cutting, adding spices to them so that they make up a meal." (Participant 7)	6	F	30
"It would be essentially just using basic raw ingredients, I would include the spices, not prepared sachets of seasoning but possibly not grinding your own spices maybe using ready ground herbs and seasoning but not using like sauces which have been pre-made or dressing and certainly preparing the vegetables." (Participant 3)	4	F	28
"Anything that can easily be made from the raw ingredients, I'd still assume like vegetable stock or chicken stock or pasta to be from scratch even though in the past I have made these from flour and wheat and that but I'd still kind of dub these essentials as allowing to be from scratch. For example bolognaise…I could just buy a jar of Dolmio and that would be seen as cooking a meal but in my eyes it's not from scratch. From scratch is the main portion of the meal should come from raw ingredients with the minimum amount of pre-made ingredient, for example pasta takes quite a while to make from fresh so I use just a bag of that." (Participant 20)	7	M	24
"Cooking from scratch is doing it to what ability you feel like or how much effort you feel like putting in, if you chop and prep all your veg, depending on the size of the dinner you might cheat with some things like if you're making a pie, you might decide you won't use your own pastry, you'll definitely buy store bought but to me that's still cooking from scratch." (Participant 2)	5	F	35

"I suppose in the traditional meaning it is totally everything, practically growing your own, but I think times have moved on. I think cooking from scratch is…it's actually washing the vegetables, getting the earth off them and peeling them and cutting them yourself, it's more vegetables, maybe with chicken, I do buy whole chickens but chicken fillets are easier, I tend to go for ones that are marinated so that's really convenience too, I wouldn't be marinating." (Participant 14)	3	M	51
"For the curry I used mushrooms, onions, chicken fillets but I normally use a dry curry mix, Mayflower, you just mix it with about 10 ounces of water and it gives you a curry sauce which actually tastes like proper [bought/takeaway] Chinese curry but everything else would have been fresh ingredients." (Participant 4)	5	F	47
"Cooking from scratch means opening the jar and putting it into the saucepan, adding my own blend of herbs and spices to it, making the meatballs, I make the meatballs from scratch and then putting the pasta on." (Participant 23)	5	F	58

Barriers to cooking from 'scratch' using basic or raw ingredients

Five barriers to CFS using basic or raw ingredients were identified: (1) time pressures; (2) desire to save money; (3) desire for effortless meals; (4) family food preferences; and (5) effect of kitchen disasters.

(1) Time pressures

Almost all participants said that they were so busy that they found it difficult to cook from basic or raw ingredients. The strongest time pressure appeared to come from work and/or family commitments:

"…I don't get time to do that [cook from basic ingredients] now, because now I'm a dad…it's all rush rush rush now." (Participant 16)

"You've got a very limited amount of time to cook after work before you want to eat, so unless you're organised you don't have any time, and if you don't have any time you can't make things from scratch, it takes too long." (Participant 12)

The feeling that there was not enough time, especially mid-week, was implicated in the increased consumption of convenience foods:

"You'd probably have a little bit more processed food throughout the week just due to time constraints… just less time to prepare food." (Participant 25).

In addition, participants were not willing to spend the majority of their 'free' time engaged in meal preparation and compromised by moving away from using basic ingredients.

(2) Desire to save money

Participants, (particularly smaller households and ROI), felt that it was cheaper for them to eat partially or fully prepared foods. For them, price was a major disincentive to cook with basic or raw ingredients.

"It works out cheaper for me to buy pre-packaged dinners in Aldi." (Participant 23)

Moreover, their negative attitude towards cooking with basic or raw ingredients was further driven by the concern that cooking in this way would generate more food waste. Reasons for this concern stemmed from the observation that more food would be bought in excess and not used:

"*I didn't realise when I was buying all those fresh stuff in the summer like veg and like broccoli and chicken and that kind of stuff … I've gotten not much in my basket and this is coming to like 20 euro and I'd be afraid that I'm wasting…if I'm buying it for just me I wouldn't eat a whole thing of like broccoli or whatever so then I'd nearly feel like half the food would end up getting half wasted then."* (Participant 27)

Interestingly, some of these participants expressed their fondness for cooking in general and perceived that CFS may have the greatest health benefits, however, financial restraints and waste reduction strategies overpowered their positive dispositions.

(3) Desire for effortless meals

For some participants, cooking from basic ingredients was viewed as a "chore" which was not high on their list of priorities but cooking was seen as a necessity:

"[Cooking from scratch] is a lot of time and effort and if you're already hungry and you're standing there smelling the food and stuff, that's a nightmare so if it can't be prepped and cooked within 30 to 40 minutes I won't bother and it's the same at weekends." (Participant 2)

Their desire for effortless meals stemmed from a *'lack of energy*,' '*lack of motivation*' and '*laziness*' and led to participants choosing convenience products or consuming take-away food:

"There's no point in buying a whole turnip that's going to take me ages to cut into and cook so I would buy the convenient packs which are already diced up and washed and prepared." (Participant 15)

"My mood and energy levels would dictate how adventurous I would be with the meal or possibly I'd just have a takeaway." (Participant 3)

4) Family food preferences

Participants voiced that that their family's tastes and preferences for certain foods were highly influential in determining meal choices which, in turn, governed the degree to which they relied on convenience products and cooked with basic or raw ingredients. Participants felt that they had *'ate what they were given'* when they were growing up, whereas nowadays, children have their food preferences catered for. Some alluded to the food preferences of their family and their efforts to meet these in order to avoid power struggles about food as a result of food refusal and selective eating. An overreliance on certain foods and convenience products were often utilised as an easier way to cater to the varying food preferences of each family member. For example:

"I know what people like and what I'll get away with so I just make sure I don't stray too far from that…otherwise you're in revolt." (Participant 18)

".. last night we had pizza and I didn't want pizza but my daughter did and …I went with pizza because I knew she would eat it but with the pizza there was no extra vegetables… it was quite cardboardy so there was no thought in it really." (Participant 15)

Family influence also restricted participants' ability to experiment with new ingredients. Even if the participant felt inspired to try something new they often felt restricted:

"If I do something different like try something new in the house probably no one would eat so it's a bit disheartening making something and no one eat it." (Participant 24).

It seemed family preferences were more influential than the desire to experiment, so that meals will be eaten.

(5) Effect of Kitchen Disasters

When faced with personal cooking failures, such as strange tasting and unappealing looking dishes, participants recalled occasions in which they became discouraged and vowed not to make particular dishes from basic ingredients again. In these instances, partially or fully prepared convenience foods were often praised for their consistent taste and handiness. For example:

"I just got a basic recipe for cheesecake…my dad was sprinkling sugar on it and I didn't know why…I tried it, how disgusting it was! I was thinking they must really love me for having eaten that cheesecake… I'll not bother next time…I'll just buy one from the shop. Things like that can be a bit disheartening when you do try something and then it turns out awful…you can get food, for example, from a trusty Dolmio pack of sauce, put it in the microwave and it would of turned out nice and be ready in a minute." (Participant 27)

Personal disasters or stories from others appeared to instil fear in some participants in relation to raw ingredients and food safety and appeared to create a reluctance to use these ingredients:

"you hear about …people [who] have been touching raw meat or something and then cooked meat and then they end up with e-coli and ..[it's] to make sure that I don't poison anybody." (Participant 8)

Facilitators to cooking from 'scratch' using basic or raw ingredients

Four facilitators to cooking with basic or raw ingredients were identified: (1) desire to eat for health and well-being; (2) creative inspiration; (3) ability to plan and prepare meals ahead of time; and (4) greater self-efficacy in one's cooking ability.

(1) Desire to eat for health and well-being

Within this theme, participants described how they cooked with "*as much basic ingredients as possible"* in order to improve the health and well-being of themselves and their families *(e.g. "A desire to be healthy drives you to cook")*. Specifically, compared to convenience foods, participants viewed that preparing food from basic or raw ingredients was healthier as it contained less undesirable components (i.e. fat, added sugars, salt, additives and preservatives) and more fruit and vegetables. For example:

"I've become aware…about cooking from scratch to reduce the salt content and to reduce the sugar content because a lot of pre-prepared food is high in salt or sugar." (Participant 14)

Various factors motivated participants' to eat for health and well-being, such as their: nutritional knowledge; bad health (e.g. cancer); and a desire to reduce and maintain body weight while avoiding the negative physical side effects of processed food on the body ("reflux", "bloating", "migraines", "poor athletic performance").

"I know that if I cook it… natural ingredients, proper ingredients that I can eat it and it doesn't irritate my stomach." (Participant 22)

Some participants voiced that their motivation and behaviour towards eating more healthily had increased with age:

"As I've got older I've noticed that sometimes processed foods and things …doesn't always agree with me the best, so I try to do the best for my family; we're trying not to use processed food." (Participant 4)

(2) Creative inspiration

Participants voiced that they often received inspirational meal ideas and recipes from numerous sources which encouraged them to cook with basic or raw ingredients. Recipes available through traditional (TV, newspapers, magazines, cookbooks) and

digital media (social media, internet search engines) both clearly impacted upon the cooking habits of those who viewed them. In many cases, participants described coming across recipes *"by chance"* and being inspired to cook them (or a modified, simplified or achievable version):

"When I'm sort of flicking through the papers at the weekend and you see a recipe and you think and you look at that and ok well actually I might not actually fancy doing that particular recipe but what they are suggesting you might do there I might bring into something which I've cooked another time." (Participant 1)

When participants' did actively seek recipes, they showed a preference for digital media (such as webpages and websites) in contrast to print media (such as cookbooks) as it was viewed as being *"handy"* and *"in-front"* of them:

"I would look up a recipe on the internet…I would look up to see some sort of chicken dish and maybe get ideas on that BBC good food website. But yes I would tend to find myself looking up the stuff on the internet as it's easier than reading a cook book." (Participant 6)

In addition to print/printable recipes, some participants noted getting a '*spark of inspiration*' from browsing in the shops. Individuals also received inspiration from meals that they had tried in a restaurant or seen a friend make:

"You know if I tasted something maybe nice in a restaurant and I thought that's lovely I would kind of look up how to do it and maybe try and make a wee bit of it myself." (Participant 13)

(3) Ability to plan and prepare meals ahead of time

Within this theme participants described how organising (meals planning and grocery shopping) and preparing meals ahead of time permitted them to cook with basic and raw ingredients more frequently. Specifically, by batch cooking (refrigerating or

freezing portion(s) for another meal) and using left-over ingredients, participants were able to minimise the time and energy required to cook in this way:

"It's just convenience more than anything else you know if I'm going to cook I might as well cook you know a big load of it so I don't have to do it every night." (Participant 19)

"I have to sort of plan ahead…one reason why I like to do a roast on Sunday is because then I know I've got leftovers and it makes it easier for me for my lunches". (Participant 8)

(4) Greater self-efficacy in one's cooking ability

Participants who self-identified as a good cook tended to cook more from basic or raw ingredients and enjoy doing so:

"I can cook anything really, a bake or make pizzas or make bread, whatever; I don't mind, I enjoy it." (Participant 18)

This greater self-efficacy appeared to enable these participants to experiment more with different food combinations and flavours. As a result they had a greater repertoire of dishes that they were able to make and were able to take full advantage of supermarket special offers:

"I can cook a variety of things and combine in different ways and make some different tasty things." (Participant 7)

"Shop smart, and don't go out with set things in your mind…such as 'I'm going to cook this and this'. You can often shop off what's on offer and that can then dictate your rough menu for the week so then you get a more efficient shop; bang for your buck." (Participant 20)

In most cases, participants who had confidence in their cooking ability attributed this to earlier visual and experiential learning opportunities. Specifically, participants

talked about how their home and/or school environment had enabled them to learn by "seeing" or by "doing":

"I think sometimes you pick up things that you maybe would have watched your mum cook when you were a kid and you know they're there in the back of your memory and you don't realise until you're doing them yourself." (Participant 4)

"We'd be in pairs and the teacher would be at her station at the top of the room and she would just kind of be guiding us, like obviously, after in our first second or third times we kind of knew how to chop stuff properly but for the first few times she'd guide us and then she would walk away and if we needed any help she would show us." (Participant 21)

Discussion

To the best of our knowledge, this is the first study to specifically explore how individuals define CFS as well as the barriers and facilitators to cooking a meal with basic or raw ingredients. Our rich descriptive data highlighted that CFS lacks a single definition, however, participants viewed it as a goal to strive towards. Overall, nine themes meaningfully hindered or enabled participants to cook with raw and basic ingredients.

Wolfson et al (2016b) found that there was a continuum in home-cooking definitions from CFS to heating a microwavable meal. Our results show that even within 'scratch' cooking, participants' definitions spanned a continuum from traditional understandings of the term (the entirety of the meal from basic or raw ingredients) to a modern version which included some 'essential' convenience products. This heterogeneity in CFS perspectives is reflective of previous literature which explored meal preparation in the home environment (Wolfson et al., 2016b; Short, 2006). Wolfson et al. (2016b) concluded a definition for CFS as *"all or almost*

392 *all scratch ingredients are used and time and energy are invested,"* however, our
393 results show that this still leaves room for ambiguity. Daniels and Glorieux (2015),
394 also had difficulty concluding on what constituted a convenience product and created
395 six categories, with one category being labelled other. This 'Other' category consisted
396 of food products that may be considered as staples in our current cooking and eating
397 habits such as bread and milk products, which are original convenience products. Our
398 findings show the necessity for interventions, researchers and public health
399 practitioners to clearly and consistently define what it means to cook from 'scratch' or
400 an open acknowledgement that a continuum exists and that the aim of the intervention
401 is to move people along the continuum towards the use of as many fresh ingredients
402 as possible. This is an essential first step in acquiring a more accurate understanding
403 of the relationship between cooking and healthy eating behavior in the broader
404 population.
405 Similar to results recently reported by Wolfson et al. (2016), participants viewed
406 cooking from basic and raw ingredients as the best method of cooking, 'real cooking'
407 (as mentioned by participants in Wolfson et al. 2016), and they placed a higher value
408 on this method in terms of health and nutritional quality. In the American population
409 it was accepted that although CFS had high importance, it was not seen as the norm
410 standard for cooking (Wolfson et al., 2016b), whereas, in this current sample, some
411 participants considered it quite common depending on their definition. Interestingly,
412 motivations for cooking with basic and raw ingredients did not extend beyond
413 concerns for nutritional health and well-being. This suggests that while familial
414 motivations for home-cooking (Simmons and Chapman, 2012) addressed social (i.e.
415 connecting to family and friends), cultural (i.e. retaining family culinary traditions
416 and practices and/or breaking away from them to explore new ways of eating) and

417 personal factors (i.e. gaining independence through cooking skills) the main motivator
418 for CFS is primarily health. Further, Simmons and Chapman (2012) showed that the
419 ability to cook enabled the 'cook' to regulate the family food supply, whereas, our
420 results highlight a shift where the family decides the choice of food to be made rather
421 than the 'cook', similar to the findings of Soliah et al. (2012) and Dixon and Banwell
422 (2004).
423 The emergent barriers to cooking with basic and raw ingredients suggest that
424 participants require meals that are time efficient, convenient, reasonably priced, and
425 in alignment with their family's food preferences. Some of these factors were also
426 found in Wolfson et al. (2016) with cost and time being barriers to CFS. Effort also
427 appeared to act as a barrier to cooking from scratch as mentioned in previous research
428 relating to home meal preparation (Wolfson et al., 2016b; Kaufmann, 2010;
429 Lappalainen et al., 1997; Gatley, Caraher, & Lang, 2014). Some participants in this
430 study felt meal preparation was a necessity, and the effort needed for CFS was too
431 excessive. Daniels and colleagues (2012) also found that half the time spent cooking
432 is purely out of necessity. Interestingly, Wolfson et al. (2016) noted a link between
433 time, cost and health in home-cooking, where one of the elements was sacrificed to
434 prioritize the others. However, in relation to CFS this was not apparent. Here, those
435 that cooked from 'scratch' for health reasons did not mention time and cost although
436 time and cost were inevitably linked to other facilitators such as planning and
437 preparing ahead of time to compensate for time and cost.
438 The fear of failure associated with previous negative cooking experiences acted as
439 a barrier to some to CFS. Fearfulness has been previously noted in cooking (Stead *et*
440 *al*., 2004) but not explored in detail. The use of convenience products to overcome
441 possible negative cooking experiences appears to be a form of avoidance motivation

442 rooted in the psychological concept of approach-avoidance. Elliot (2006) defines
443 approach-avoidance motivation as *"Approach motivation may be defined as the*
444 *energization of behavior by, or the direction of behavior toward, positive stimuli*
445 *(objects, events, possibilities), whereas avoidance motivation may be defined as the*
446 *energization of behaviour by, or the direction of behavior away from, negative stimuli*
447 *(objects, events, possibilities)."* Those using avoidance for survival (using
448 convenience products instead of risking a potentially disastrous meal), forgo
449 opportunities for development and improvement (learning new cooking skills) (Elliot,
450 2006).

451 Further, participants who had a greater self-efficacy in their cooking ability and
452 experienced greater inspiration from multiple sources were more inclined to cook
453 with basic and raw ingredients and have a greater repertoire of dishes that they were
454 able to make. Stead et al. (2004) also found that confident cooks had a wider
455 repertoire of recipes and had more knowledge of cooking techniques. Wriden et al.
456 (2007) also found that some of those that had an increase in cooking confidence after
457 a practical cooking intervention reported using more basic ingredients in their
458 cooking.

459 Our results collectively suggest that it is essential to provide opportunities for
460 people of all ages to gain hands-on experiences with food (i.e. cook) to both acquire
461 and perfect their food preparation skills (i.e. menu-planning and food shopping skills)
462 in order to organise and prepare a meal from basic and raw ingredients. Indeed, in this
463 study, those that self-identified as a good cook attributed their ability to cook from
464 scratch to earlier visual and experiential learning. These skills provide consumers
465 with strategies to overcome the barriers identified. Specifically, strategies such as
466 shopping more thriftily (e.g. bulk buying, taking advantage of supermarket special

offers), batch cooking (refrigerating or freezing portion(s) for another meal), and being able to easily adjust recipes to meet family preferences all facilitate CFS.

Thus, the best way to facilitate a shift from using convenience products towards basic ingredient cooking, points in the direction of teaching basic cooking and food skills. This need for practical cooking experience has been previously noted both in research and the media (Jones et al., 2012; Caraher, Seeley, Wu, & Lloyd, 2013; Oliver, 2015). These opportunities provide an environment where people can experiment, fail and learn from their failure, and may enhance their ability to cook from scratch which in turn may boost their cooking self-efficacy. The content of these cooking interventions should focus on teaching strategies (such as ones employed by the participants in this study) to overcome barriers and emphasise the facilitators such as the health benefits of using fresh ingredients over convenience products and they should also be tailored to the individual as previously stressed by Daniels et al. (2012). Interventions should include components on: 1) the cheapness of using basic ingredients; 2) batch cooking without the use of convenience products whereby reducing the immediate effort required ; 3) enabling individuals to cook simplified versions of scratch meals they have been inspired by or their usual convenience product; and 4) family interventions allowing the children to experiment and handle new food. Children helping has been shown to increase their willingness to try new food (Nicklas et al., 2001) increasing variety in food choice. These suggestions add to the work of Short, Caraher, Lang and Halkier (Short, 2006; Caraher & Lang, 1999; Halkier, 2009) who advocate the importance of home-cooking. Alternatively, or concurrently, hospitality and food industries should be encouraged to continue product reformulations of convenience foods to make them healthier.

An important strength of this study was that it employed qualitative interviews to directly assess consumer perceptions about their definitions of CFS and their barriers and facilitators to cooking with basic ingredients. A few limitations deserve consideration. Firstly, despite our efforts to recruit a range of education levels, our sample where highly educated which may limit the transferability of our findings to those with lower education. However, Daniels et al. (2015) found no difference in consumption of convenience products between different levels of education. It would be interesting to repeat this study in those with a lower level of education to identify additional barriers and facilitators. Furthermore, the participants volunteered without any incentives for the study thus the majority of our participants indicating a level of interest in food and/or cooking, although a number of participants noted that they actually had no interest in cooking. Although a wide range of participants from varying backgrounds were included in this study, it is worth noting that these results need to be considered within the cultural context of the UK and Ireland. Participants also self-rated their cooking abilities so caution must be taken considering over-inflations and socially desirable responses. This was addressed, with reassurance to the participants that all answers were valid and that the study was about the participants' personal understandings and barriers and facilitators. Further, due to the nature of the study design and the sample size, direct comparisons between age, gender and abilities is not applicable, a survey of 1000 individuals on the IOI was conducted as a follow up (McGowan, Pot, Stephen, Spence, Raats, Lavelle et al., *Under Review*).

Conclusions

Our findings contribute to a greater understanding of how individuals define cooking from 'scratch', and barriers and facilitators to cooking a meal with basic or

raw ingredients. Interventions should focus on practical sessions to increase self-efficacy in cooking skills; highlight the importance of planning ahead and teach methods such as batch cooking with basic ingredients and freezing. More research is needed to explore these parameters in other diverse populations to fully understand potential further barriers, any additional interpretations of cooking from 'scratch' and to implement these strategies within interventions to evaluate their effectiveness in increasing cooking with basic ingredients and in turn improving dietary quality.

Competing interests

The authors declare they have no competing interests.

Authors' contributions

MD, MS, LH, MR, MC, AM and EM were involved in the conception of the research and funding acquisition; LM and FL drafted the interview schedule and conducted the research; FL, LM, MS and MD performed the analysis and interpreted the data; FL and LM drafted the manuscript and MD and MS edited. All authors read and approved the final manuscript, and agree to be accountable for all aspects of the work.

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