

HEDONIC STIMULUS IN PUBLIC ENGAGEMENT WITH NUTRITION SCIENCE:

Findings from a Coal Mining Town in rural/regional Australia

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Abstract

Despite widespread Government nutrition and food consumption advice in Australia, diet-related disease incidence continues to increase. This study examines public attitudes to food, nutrition, and well-being through the dual filters of populist gastronomy (Nigella Lawson) and traditional nutrition science communication with middle class/professional adults residing in a low Socio-economic Index (SEI) area of semi-rural NSW that is characterised by greater than average diet-related morbidity. Using a voluntary participatory research approach, a qualitative study was conducted with six focus groups (n=47) who self-identified as primary food providers. The topics examined were: perceptions of current dietetic or government nutrition advice; the importance of flavour versus health concerns in food choices; immediate gastronomical perceptions of a Nigella Lawson meal; and the effects of narrative on menu planning and consumption. This study demonstrates how the hedonic gastronomic narrative influences and enhances public food understanding and dietary practices. We conclude that current Nutrition Science communication narratives would benefit from a broader gastronomic focus emphasising flavour and pleasure in consumption.

Keywords

Nutrition Communication, Hedonic Narrative, Focus Group, Qualitative Research, Gastronomy.

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Introduction

In relation to other scientific fields, Nutrition Science is, in many ways, in its ‘alchemy days’ (Berardi 2018) compared to the timeline and advances of older disciplines like Chemistry and Physics. It is also a ‘messy’ science in that its alignment to reductionist empirical paradigms is only part of a much more complex tapestry that is the human relationship with food (Lockley 2018a; Kreps and Maibach 2008; Bernhardt 2011; Fischhoff 2013). While most people may not read their country’s official Dietary Guidelines (Brown et al. 2011), celebrity cooks and chefs reach millions of viewers (Caraher, Lang and Dixon 2000) and from this influential position are ideally placed to communicate nutrition science and pleasurable healthy eating to society (Arbolea et al. 2008). Nigella Lawson, an English food writer, journalist and broadcaster, is well known for her intimate, flirtatious gastronomical presentation (Williams 2006). She claims neither to be a chef nor a nutrition expert—but one that cooks for pleasure (O’Brien 2000) and enjoyment (Farndale 2001). Voted the “Sexiest Celebrity Chef” and appealing to both male and female viewers (Farndale 2001), recipes from her series ‘Nigella Kitchen’ were selected for this study as exemplary of a populist hedonic narrative in food.

Previous research indicates that popular entertainment, particularly filmic representation, influences public opinion/belief regarding science (Kitzinger 2010; Kirby 2009; Griffin 2017). One of the keys to this phenomenon is simply that stories tap into the audience’s emotions. This factor alone guarantees stronger impact than other forms of factual data presentation (Gow 2012). When we speak of food intake in popular media, we are more likely to represent nutrition under the umbrella of Gastronomy.

Food and Gastronomy have become a pop-culture phenomenon. As Lisa Abend said in *The Times* (2010): “our alienation from food and its preparation is matched only by our obsession with it”. There is a movement away from a reductionist approach to human food experiences and a realisation that a more realistic and holistic approach to food is required to effectively address the rising tide of

current global food/health problems (Maberly and Reid 2014). Despite the availability of evidence-based national government dietary guidelines in the majority of the countries of the world (WHO 2003), diet-related non-communicable diseases (NCDs) like cardiovascular disease, cancer, obesity and type-2 diabetes are increasing in incidence every year (Hyseni et al. 2017). The field of Nutrition Science is at a crossroads. Health communicators are increasingly frustrated over the inability or reluctance of significant portions of the public to accept and act on scientific findings relating to nutrition and obesity (Rowe and Alexander 2018). While both downstream (behavioural/individual) interventions and upstream (policy/healthier food environments) interventions have been proposed and implemented internationally (Brownson, Seiler and Eyer 2010), they are not working. People are getting fatter and sicker (Popkin, Adair and Ng 2012). This may well be partly because nutrition communication models still favour the unidirectional Public Understanding of Science (PUS) strategies that focus on increasing public science literacy (Ridgway et al. 2019) rather than bi-directional Public *Engagement* with Science (PES) models (Wray 2018; Stofer et al. 2019). Indeed, this very bidirectional engagement was highlighted in the findings and subsequent recommendations of the 2016 Food Forum of The National Academies of Science, Engineering and Medicine. The findings of the forum combined with the use of populist gastronomical narrative as outlined above were melded in this study to both effectively educate, to engage (PES) and to elucidate public understandings of food and nutrition (PUS):

- (1) It was identified that nutrition writing is convoluted and unduly complex, with less than 1% of qualified health claims being considered easy to read.
- (2) The vocabulary used by health professionals is ‘unfriendly’.
- (3) The story keeps changing leading to scepticism/disbelief in scientific messages.
- (4) The inherent neutrality embedded in scientific writing ignores the fact that emotion-laden texts are more likely to be engaged with.
- (5) Impersonal or generic messages meant for ‘everyone’ end up resonating with no one.
- (6) The primary reason for people resisting the consumption of healthy food is that they do not want to eschew flavour/pleasure. (Batat et al. 2019)

This study's decision to incorporate the aforementioned NASEM findings with a focus on hedonism/hedonic narrative is informed by current research into neurology and motivation. While 'health' may well be at the foundations of Maslow's hierarchy of needs (Hale et al. 2018), the repeated stimulation of neurological reward pathways is the best predictor of repeated behaviours (Murray et al. 2014; Colaizzi et al. 2020). In short, pleasure is the most reliable motivator for behavioural change (Sayin 2019).

There exists a research deficit in popular media/food behaviour, partly due to the boundary-work inherent in scientific specialisation, where gastronomy and nutrition have become entirely separate disciplines, despite their obvious connectedness (Neill et al. 2017). Nevertheless, the inherent dynamism and emotional engagement of populist gastronomy that demonstrates public engagement with science (PES) is a useful tool in uncovering public understanding of food and nutrition, or public understanding of science (PUS). It reflects both Brillat-Savarin's (1994) scientific domains as well as the wider binaries implicit in human food relationships that were embedded in the (2016) NASEM findings: pleasure/guilt in consumption, abundance and shortage, health and hedonism. In this study, Nigella is identified as embodying a hedonic gastronomic narrative (pleasure in food), while the language of Dietetics, Dietary Guidelines and Nutritionism is our template 'scientific language' (Figure 1). The primary research question addressed is as follows: *Do differences in narrative approach, hedonic language vs. scientific language, influence public perceptions and opinions regarding nutrition and healthy food consumption?*

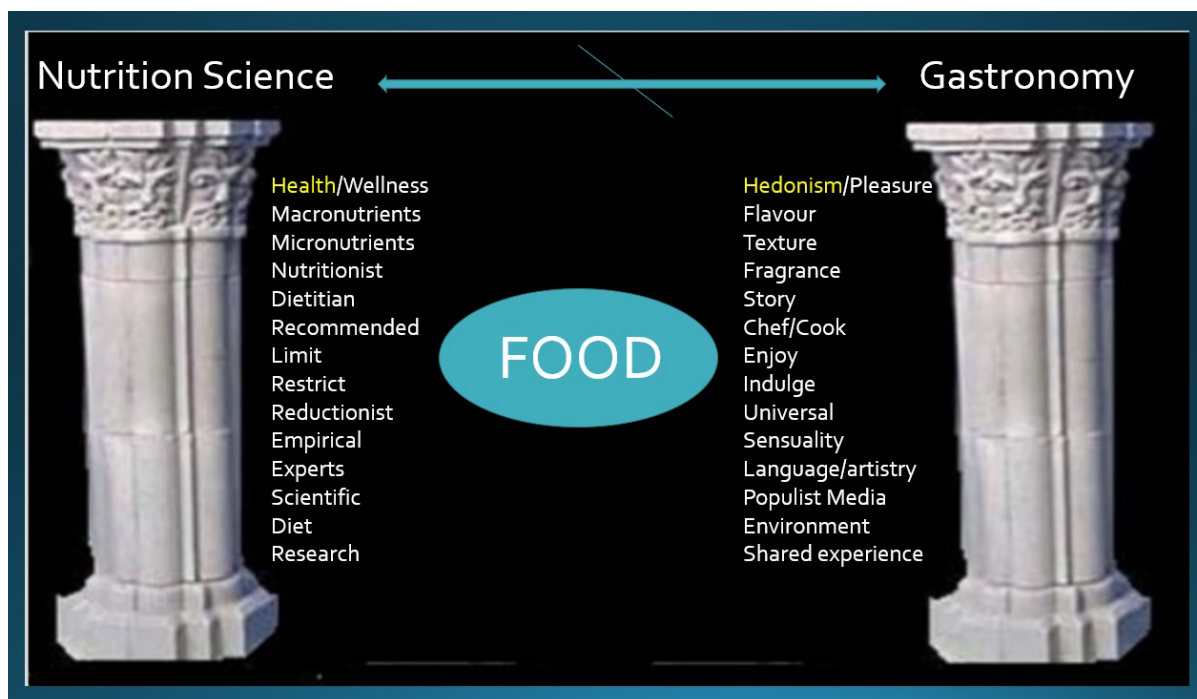


Figure 1: The common linguistic paradigms of Nutrition Science and Gastronomy.

Answering the primary research objective is intended to lead to further cross-disciplinary inquiries, building on recent research indicating that language/narrative forms actively change healthy food consumption behaviours (Turnvald et al. 2017), and that hedonic language descriptors can alter biochemical orexigenic hunger responses (Crum et al. 2011). Parallel research strongly suggests that *anhedonia*—a lack of pleasure in eating is a key constituent of affective eating disorders at both ends of the spectrum (Kringelbach and Berridge 2009; Chu et al. 2018) and as such makes hedonic narrative an important targeted narrative variable within this study.

Methods

Study Design

The study trialled seed protocols that may be utilised in further enquiry. Two separate groups, 'Nutrition' and 'Nigella' were created with participants randomly assigned. The Nigella group was

shown a ‘hedonic’¹ Nigella Lawson meal description and the Nutrition group a ‘scientific’² film stimuli, both describing an identical meal (‘slut spaghetti’ and ‘spinach and avocado salad’). Before consuming the meals, the films were shown to study participants as an enhanced gastronomic version of focus group protocols outlined by Krueger and Casey (2009). In addition, participants were able to see and interact with the primary researcher on arrival (acting as ‘Chef’), viewing and smelling the meal being cooked in order to recreate as closely as possible normal, real-world stimulus-to-consumption behaviour (Spence et al. 2015). Further, the free provision of pleasurable cuisine addressed potential problems in recruitment and attendance (Krueger 1994; Mansell et al. 2004) by providing a desired gastronomic and social experience instead of a financial reward (Eshun and Duah 2011). Recipes were trialled and researched in advance of the focus group by the primary researcher (Lockley 2018b) and cooked and served from scratch throughout the event. Cooking and preparation on site further encouraged deeper engagement with the questions and provided olfactory retrieval cues to recall emotional episodic memories from participants (Sullivan et al. 2015). Each of the six focus groups contained between eight and ten people.

The focus-group (FG) was selected as a methodology to gain insights into shared experiences and meanings about the impact of popular gastronomical narratives on food choices and consumption and to elucidate personal emotional influences related to ways of understanding broader food consumption relationships, eating practices and potential barriers to evidence-based healthy eating (Cornwall and Jewkes 1995; Hayward, Simpson and Wood 2004; Kitzinger 1994; Morgan 1996; Krueger and Casey 2000; Freitas et al. 1998). The FG was selected over individual interviews to allow for active discussion within the group. The research questions were arrived at using the dual focus points of PUS vs PES communications within a Nutrition Science frame and were as follows:

¹ <https://www.youtube.com/watch?v=mDMF8uHint0>

² <https://www.youtube.com/watch?v=kImIHfQDmFk>

- (1) What are the first words that come to mind when you hear the words ‘Dietitians advise you to...?’ (PUS),
- (2) How important is flavour to you when choosing a meal? (PES),
- (3) How important are health concerns to you when choosing a meal? (PUS),
- (4) Do you think the meal you just consumed would be considered ‘healthy’? why/why not? (PUS/PES),
- (5) When planning your home menu for the week, where do you go first for ideas? (PES),
- (6) Looking back on what we’ve said, would you describe the meal you just ate as more ‘healthy’ or ‘hedonic’ why? (PUS/PES).

The FG explored emotional and evidence-based barriers and facilitators to healthy dietary patterns within a specific middle-class, semi-rural adult population. The same healthy meals (Mediterranean diet model) were presented within a broad pleasure/hedonic frame (Nigella), or a reductionist nutrient/health frame (Researcher). The FG was conducted as exploratory work for further research and to uncover narrative tools useful in public health communication and dietary intervention. In particular, those that move understanding from the ‘bench side’ (laboratory and professional peer-reviewed Journal conversations between professionals) to the ‘race side’ (what is happening in the real world in real food settings) (Gray, 2015).

Participants

The FG event was disseminated by social media (Facebook) (Amon et al. 2016; Gelinas et al. 2017; Bender et al. 2017), local news outlets (the Lithgow Mercury), word of mouth, printed flyers at local cafes and libraries and expressions of participatory interest were followed up via email. Study eligibility requirements included self-identifying as the primary food provider and cook for either individuals or families, being over eighteen years old, being willing to participate in an FG with both and unknown members of their community and providing informed consent. We included both males and females as non-statistically dominant viewpoints were of interest. Although women are 90% more likely to dominate food purchase decisions and cooking in Australian households (Roy Morgan 2015), men are equal consumers and more likely to develop diet related NCDs (Melaku et

al. 2019). Lithgow, NSW was explicitly targeted as the region displays far higher non-communicable dietary disease rates than the rest of NSW (Wentworth Healthcare 2017).

Procedure

Each FG was led by an experienced moderator trained in FG protocols. Two separate moderators were used on different occasions due to moderator availability, though both worked from an identical script and instructional materials about the study. A note-taker (the primary researcher) was present at each session in a non-participatory observational capacity. Each FG session ran for two hours inclusive of both the film viewings, meal consumption and discussion, with the discussion occupying seventy minutes of the total time allocated. Twenty-three participants watched an amalgamated clip of Nigella Lawson's 'Slut Spaghetti' (S01 E05 "*Nigella Kitchen*", 2010) and 'Spinach, Avocado and Pumpkin Seed Salad' (S01 E10 "*Nigella Bites*", 2007)³ which were chosen both for the hedonic script and accompanying filmic diegesis, as well as for the food's adherence to both the NHMRC's (2013) Australian Dietary Guidelines and the Mediterranean Diet model (WHO 2018) (Figure 2).

³ <https://www.youtube.com/watch?v=mDMF8uHint0>

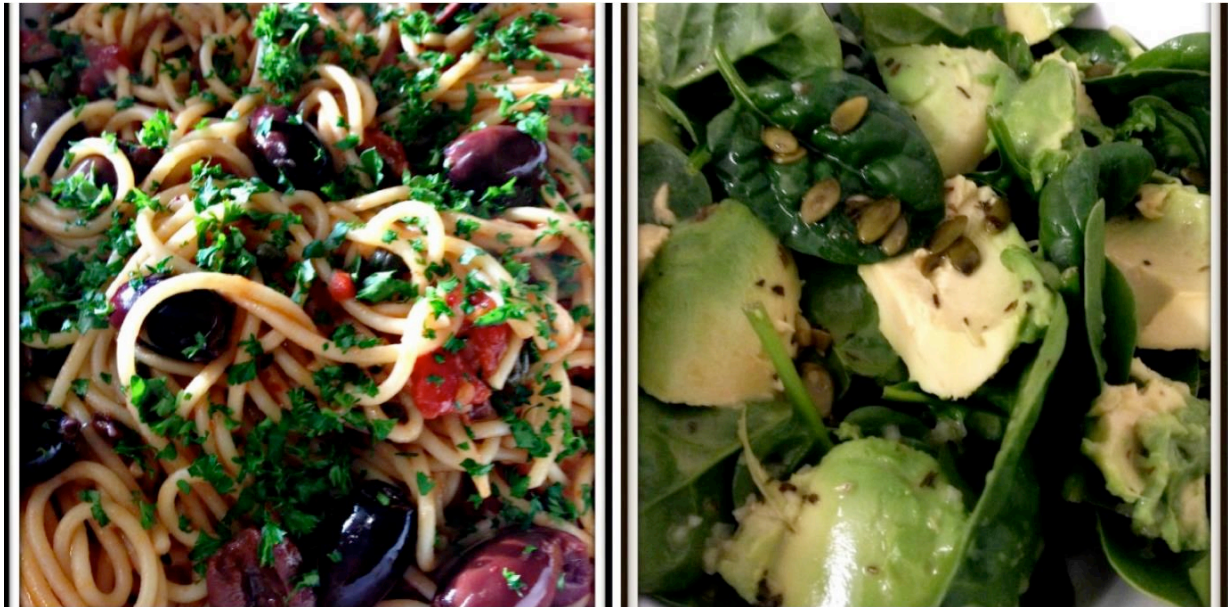


Figure 2: Foods served and prepared on site and in full view/smell of FG participants (photograph by C. Lockley)

Twenty-four participants watched a clip prepared by the primary researcher detailing the nutrition science of the recipes. This clip avoided hedonic language and film elements and concentrated on macronutrient ratios, serving sizes, and food adherence to the Australian Dietary Guidelines⁴. Both dishes were served in generous quantities buffet-style, with the participants serving themselves from communal bowls placed centrally on the tables. For each group of 8–10 participants, 2.3kg of the pasta and 0.9kg of the salad were distributed. 1.15kg of pasta was prepared according to Nigella Lawson's recipe, and a separate bowl of 1.15kg of pasta was prepared without anchovies for vegetarian participants. The 'Nigella' participants were given no recommendations regarding serving sizes. The 'Nutrition' participants were encouraged via the film clip to exercise portion control in both script and image (Figure 3). Uneaten portions were weighed against original serving weights to determine how much food had been consumed.

⁴ <https://www.youtube.com/watch?v=kImIHfQDmFk>



Figure 3: Spaghetti puttanesca (left), Spinach, Avocado and Pumpkin Seed Salad (right). Recommended serving sizes as presented in the 'Nutrition' film clip (photograph by C. Lockley).

Both FGs occurred in a comfortable, decorated dining room environment with food served immediately after the film viewing and the dessert on completion of FG protocols. The focus group questions were conducted around a decorated kitchen dining table with food service and iced water provided (Figure 4).



Figure 4: FG #1 (Nigella stimulus) (Photograph by C. Lockley). Participant's images blurred to preserve privacy. Written permission was granted by all pictured participants for image use in publication.

The FG sessions were digitally recorded with permission and in order to maintain the robust linkage between specific verbal recorded portions and field notes, sessions were transcribed within 24 hours of the FG discussion. Transcriptions were made available for participant viewing via a password protected website. Participation was voluntary, and all participants provided both oral and written informed consent with ethics approval by the University Human Research Ethics Committee. Participants received no financial rewards for their time.

Qualitative Analysis

The FG transcript and field notes provided the data for qualitative content analysis (Breen 2006) and grounded theory (Strauss) provided the scaffold for coding and analysis of responses. Analysis was performed via an interpretive reading of the transcript to identify manifest and latent content before a coding frame was arrived at based on the frequency of relevant categories. Trial coding was further developed into main coding using Krueger and Casey's long-table technique (1996). Cross-

coding was undertaken by one of the academic moderators, and patterns in conditions and processes were identified and integrated according to our primary research question (Gläser and Laudel 2013, Mayring 2000, Blatter and Blume 2008). The code's themes and sub-themes were then applied to deriving participant's perceptions of food consumption, health and nutrition through the lens of both the gastronomic narrative provided by Nigella Lawson and the scientific narrative provided by a nutritional breakdown (macro and micronutrient profiles, energy [kcal], and dietary modelling [Mediterranean]) written and recorded by the primary researcher.

In total, 47 (24 'Nutrition', 23 'Nigella') people participated in the focus groups, comprising 15 males, and 32 females [ages 18–78]. Names have been omitted within this manuscript to preserve participant's anonymity.

Themes

The identified nutrition communication themes were highly congruent with the nutrition communication issues identified by the NASEM (2016) findings and recommendations. Other emergent themes included: The importance of tradition/personal history and experience on food choices; anxiety in adherence to evidence-based guidelines; and that "health" and "hedonism" were identified by the majority of participants ($n = 38, 80.85\%$) as mutually exclusive or antithetical concepts, despite the same majority identifying the personal importance of flavour/hedonic experience as a central motivator in food choice and consumption.

Theme 1: Understanding of current evidence-based nutritional guidelines

Despite recent findings that some Australian populations poorly understood evidence-based dietary guidelines (Bookari et al. 2016; Farringdon et al. 2018), FG participants exhibited a solid understanding of what it means to consume a healthy diet, despite the questioning protocols not explicitly focusing on this aspect. Recommended dietary components, portion control, limiting discretionary foods and the importance of regular, enjoyable exercise were identified confidently

throughout the proceedings. Field notes indicate that participants were keen to demonstrate their understanding and mastery at every available opportunity. The majority displayed a level of pride, personal ownership, and accomplishment in their knowledge and personal dietary practice. The following representative quotes are annotated with an [Ni] for 'Nigella' participants, and an [nu] for 'Nutrition' participants.

One thing we have managed to achieve –or I hope we have –is that someone asked me today “Did you go on a diet?” and I said “No, we just started to eat different things and now we’re going to do that for the rest of our lives” [Ni].

It’s really paid dividends. I have to uh, keep an eye on weight, and I like that sorbet—even though I know it’s high in kilojoules, I love it—so I just limit it. I eat heaps of fruit, and I do enjoy fish actually, a good sort of fish that has the right fats and all that sort of stuff, so over the years I’ve just acclimatised to it, and I’ve found it’s um...just having the good health –it’s very valuable [Ni].

Um, usually when I cook, I usually base it around like, how much vegetables I can get into it. Um, like a standard kind of three meals I go to is like a satay chicken and vegetables, or maybe like um, steak and vegetables, but it’s always kind of like ‘what can I put with vegetables?’ [nu].

Two serves of fruit and five serves of vegetables is perfectly sound advice. Drink some water, eat things that are mostly green, which I think is pretty plain, sensible, easy to understand [Ni].

Um, well it’s based on the Mediterranean eating pattern I think, and they are renowned for being quite a healthy bunch in terms of population in comparison to other countries around the world and so the olive oil, the olives, the tomatoes, the pumpkin seeds, you know there’s a lot of healthy components and so I couldn’t argue...perhaps the use of wholemeal pasta might up the ante a little, but in terms of y’know what um, what we class ‘healthy’ to be, I would consider this to fulfil the requirements of a healthy meal, certainly. And I very much liked it, yeah thought it was lovely [Ni].

Participants demonstrated that it was not lack of understanding that informed poor dietary choices, but broader psychosocial health determinants that tended to impact healthy food choices, including food availability outside the home (local restaurant and fast-food availability), emotional motivations differing with regard to preparing food for yourself or others, and psychological stress.

Unfortunately, we live in a world where sometimes you have to pick something that can be cooked in ten minutes...because you've got reports to write, and you've got assessment tasks to write and seven boxes of marking, and you feel like crying, and you can't cry and cook for a long time simultaneously, so you cook something that takes 10 minutes and even if it isn't necessarily the greatest thing –it's not the Sistine Chapel of food, it's nutritionally sound [Ni].

You know, we go out a lot. We tend to eat a lot more too so that's not always a good thing for your health, I think. Depends on your choices [Ni].

We're of a generation where we grew up and our parents had vegetable gardens in the back yard. You'd go out and you'd eat from those. You didn't have the takeaway meals that you have today, and the snack foods. You know, you go into a shop now and you come out with packets of chips and everything else. The choices we have in this day and age are immense, and I think kids being brought up in this day and age –that's normal to them [Ni].

I think our society's changed quite a bit. We're now more selfish in our desires of how we spend time outside of work, so whereas outside of work we used to engage more in communities, we used to go and try those things and whatnot –I mean my parents, they used to throw dinner parties every week as well. I don't. I want to be alone in my house. I want to eat what I want to eat. Go away [Ni].

Participants correctly identified that the foods presented for consumption and within the Nigella Lawson narrative were representative of an evidence-based, healthy Mediterranean diet model, and further identified macronutrient breakdown, the importance of quantity in healthy choices, and the

impact of refined carbohydrates on diet-related illnesses like Type II diabetes and sustainable weight-loss.

Theme 2: Frustration and scepticism over scientific language and perceived inconsistency in dietary recommendations.

The language paradigms of Nutrition communication held little appeal to most participants.

When you hear ‘Dieticians advise you to...’ it sounds like a disclaimer typed at the bottom of something. It doesn’t sound conversational. It’s a public health service warning or something [Ni].

The dominant language forms commonly used in nutrition information dissemination are identified in the preceding example as legalistic, negative, and impersonal.

I often think, y’know when they say ‘red meat’s no good for you’ or ‘no eggs’, ‘one egg a week’ –this sort of thing –it may be science and it may be progress, but I don’t think you can generalise with it [nu].

I think to some extent, what we’re getting in our dietary advice is kind of ‘diet-by-best-seller’ [Ni].

I think they change their minds, sorry, I think they change their minds a bit, like one week you’re hearing that coffee’s really good for your mental stimulation and then the next week they’re telling you not to drink too much coffee. So it’s too flip flop for me [nu].

My other question is: how do you know you’ve got it right this time? Because I’m 63 years old now so I’ve seen a heck of a lot of fads and advice come and go on the TV and so forth, and it’s what I ask when they introduce new curricula in school –what was wrong with the last one that you said was better than the one before that, and the one before that? [Ni].

Apparent contradiction in dietary advice was identified as causing confusion in participants, leading to a desire to personalise food choices despite evidence-based recommendations. Participants were more likely to favour individual 'trial and error' approaches to their health. Many responses were outright vituperative. When the moderator asked, "What are the first words or thoughts that come to mind when you hear the words 'Dietician advise you to...'? responses included "Fuck off!" [Ni], "They just make you feel nothing but guilt" [nu], "Unrealistic. They are top-down dogmatic, and my rebellious genes respond to that" [Ni].

Dieticians are primitive individuals who have been trained many years ago, and who don't really understand how diet affects mood and the whole body [Ni].

Theme 3: Emotional Texts are more broadly engaging

Participants strongly identified with the broader psychosocial and political food messages embedded both within the Nigella film text in addition to those prevalent in the modern, western, 21st century dietary landscape (Uhlmann, Lin and Ross 2018). In particular, the connection of food and love/pleasure/family/tradition/history (Nigella) and environmentalism/sustainability/nature connection (broader dietary landscape). Many FG members enthusiastically shared lengthy descriptions of their own experiences. Participants shown the Nutrition text focused almost exclusively on nutrition science aspects and exhibited limited emotional responses to the presented food, broader environmental concerns, or other participants.

I think it made me—not the food that she was cooking, but just that idea of in the kitchen cooking with your family and that sort of thing. It got me thinking like "Oh, I've got my grandmother's cookbook somewhere packed up", so it was more those memories, but not necessarily of the exact food [Ni].

For me, and this might sound a bit strange, but cooking is actually the way that I show my love...one of the ways at least. I enjoy cooking—I'm from a family that does it professionally and yet it horrifies me, the thought of cooking for a living. Just can't do it. But I really do love cooking in my own kitchen [Ni].

The study's field notes, recorded by the primary researcher, focused on identified non-verbal observations; body language, posture, openness, frowning, smiling, and appearance of disconnection/boredom (Knoesen et al. 2014). During this phase of discussion (questions 2 and 5), 'Nigella' participants became increasingly animated and engaged with the conversation. Pauses between contributions were substantially reduced compared to the 'Nutrition' cohort, with less probing and specific questioning required from the moderator to evoke responses. 'Nigella' participants were keen to share their particular version of a remembered emotional reaction to food. 'Nutrition' participants showed far less animation and engagement, with the moderator often having to 'dig' for individual responses to questions. Recalling the emotional and hedonic aspects of the Nigella film text evoked the strongest and most detailed responses from all participants, with each member emphasising the personal impact of story and felt experience on their relationship with food. Further, it was not just interpersonal/familial narratives that were identified as important. Participants also emphasised the intrinsic importance of the psychosocial narratives associated with the foodstuffs themselves.

I think she's just, y'know, enjoying it so much. If you watch Nigella and then go cook, you're like, I dunno, you have a spring in your step. I'm going to be seeing olives as teddy bear's noses forever now [Ni].

When I go and buy food from shops that I know might be local, or ethically sourced or whatever I feel better. Or if I know that person's grown my food. I have a really great relationship with food and what I'm eating, and I want to eat that. If I go to the shops and I buy something that's wrapped in plastic—I've no idea where it's come from, and it's some sort of 'processed'—I will have a terrible relationship with whatever that is and whatever I cook is never as good. So for me, finding out where my produce comes from is part of my whole journey of eating [Ni].

You're eating seasonal, but (a), one—they last. Lettuce can last three weeks, and you've got that crisp stuff, the tomato's tasty, you've got the tang to it, so out of the garden, fresh [nu].

I don't think I'd take a bowl of pasta to bed, but um it says 'comfort food' doesn't it? It says you're going to enjoy this, and I don't know about anyone else, but bed means total comfort for me, so I'd try cooking this just for that reason [Ni].

Theme 4: a primary barrier to consumption of healthy food is fear of losing the hedonic experience.

'Nigella' participants identified strongly with the importance of flavour and further hedonic relational aspects of food consumption. Similarly to the previous theme, field notes and recordings showed that conversational engagement within this period of focus was animated, heightened and flowed smoothly and rapidly with minimal moderator involvement, often with participants forgetting the instruction to have one person speaking at a time. 'Nutrition' participants focused primarily on health concerns, with a notable dearth of descriptive language for either flavour or experience. Field notes and recordings identified that 'Nutrition' participants had to be actively 'drawn out' by the moderator. Lengthy periods of silence often followed questioning, and moderators had to employ 'going around the table' and actively asking for responses from participants by name, or in some cases, a show of hands. In these circumstances, the 'active discussion' aspect of the FG protocol was rendered ineffective, and the technique turned more towards an 'in-depth-interview' protocol (Boyce and Neale 2006). While affording relevant information about individual thoughts and behaviours, the FG advantages of consensus, debate, point-counterpoint discussion or drawing out latent issues were effectively subdued (Azzara 2010).

I think you go for enjoying a balance of food and being healthy, but yeah—I do want to enjoy it and I will absolutely make a decadent, horrible for me [technically] thick chocolate dessert because I love it and I don't think we can separate them completely, can we? [Ni].

So, when I tried a vegetarian diet for two weeks, I couldn't sleep properly for two weeks because I was just craving that meat. So, I don't think about my health, I think about food [nu].

Like, when we're making dinner and we know that we've really hit the money, is when we can look at the dish and we know that oh there's crunch, and there's cream, and there's spicy and there's salty and there's sweet and there's zest and there's all in the same thing, and then we go 'Oh! Look at all this stuff we can have' and we know we've hit the money on that day [Ni.]

Food does have to be part of your story every day otherwise you're not going to enjoy the big part of what we need to sustain us [Ni].

—if you can get into someone's emotive state and make them think about something through emotion, you can change things. If there's no emotional engagement, people are just looking at things blankly [Ni].

*Well, scent and taste are two of the biggest memory-triggers there are, and memory is all emotion, there's nothing **but** emotion to memory. Uh, sure—you'll get data, but even that is coloured by emotion [Ni].*

A large volume of responses echoed current dietary advice and paradigms but exhibited an anxiety in balancing healthy food choices with more hedonic impulses. Many respondents described their decision-making process in great detail, citing precise macronutrient breakdowns, allergy avoidances, and a real desire to 'get it right'.

Does it mean that I eat better? –no, it probably means I feel more guilty about the things I eat more often. For example, you know—it's Christmas, there's lots of sweets around, it means I'm constantly walking around going 'I wonder what that will do?', 'I'd love that, but I can't'. I also think like I know I'm running a lot of mental equations all the time on that front [murmurs of agreement from group] [nu].

My young kid just had a blood test and it spit up all these things you can't have, and last night we were looking through it and he was saying 'mum this is very depressing, what can I eat?' and he can't have rice and that's our main staple, and I thought 'this is very hard' [nu].

Theme 5: “Health” and “Hedonism” are perceived by most as antithetical concepts.

Only 10 per cent (5/47) of participants identified that food could be both healthy *and* hedonistic. The remainder of both cohorts perceived the concepts to be mutually exclusive. Among the small number of participants that married the concepts, the language used to describe the combined experience was confident and definitive. Field notes indicate a great excitement in these participants tone of voice, posture, volume of expression and gestures.

See, in this case, you can have an entirely healthy meal which is also hedonistic! [Ni.]

I've never enjoyed anything so much, which surprised me given the quantities. I'm completely full, but it's more to do with the flavours... [Ni].

It just tasted beautifully, even though you know it was healthy, it was absolutely gorgeous [Ni].

*I think it was healthy **and** hedonistic. A perfect combination of both [Ni].*

Can it be both for me? –because this is the kind of meal, I would love to indulge in. The kind of meal I'd love to eat and eat and eat until I'm nearly passed out on the floor. Um, and also healthy because yeah, it's not the kind of meal that I would cook all the time at home, and the picture on the video of having the 50/50 spread of the salad and the pasta doesn't always happen on my plate, so yeah –I would say both [nu].

Amongst most participants (n=42, ninety per cent), hedonism was most frequently associated with over-indulgence, sweet dessert foods, and loss of control in eating behaviours.

Um, a hedonistic meal would be like eating custard with chocolate cake floating in praline...or chocolate chocolate sorbet with chocolate sprinkles... [nu].

I'm thinking of like the emperor's feast and all this stuff, but this is nothing like that, and I mean Nigella's putting up a show with the background music and yeah, but no, no [Ni].

I always think of hedonism as like, a Roman orgy, y'know –kinda rolling around in food until you make yourself sick [nu].

Theme 6: Expressed anxiety regarding healthy food choices, weight management and ‘getting it right’.

Food choices can be traced through a genealogy of historical, social imperatives and panics (Coveney 2006), and pleasure, or hedonic impulse, is crucial to human happiness, both neurobiologically and psychologically (Kringebach and Berridge 2010). However, in the current climate of nutrition communication that focuses on stern warnings of obesity as epidemic and individual responsibility for correct or healthy food choices, our appetite for food as pleasure makes us anxious. Participants in the Nutrition Science stimulus group demonstrated this anxiety at almost three times the response rate of those in the Nigella/Hedonism response group [N=17, n =50]. Ironically, this anxiety to ‘get it right’ and maintain ‘healthy’ behaviours has been shown to actively contribute to increased body weight via increased cortisol secretion, post-prandial blood-ghrelin levels remaining high, and increased body fat storage (Rangel, Dukeshire and MacDonald 2012; Scott, Melhorn and Sakai 2012; Chao et al 2017; Abraham et al 2013).

Yeah, I’m always very mindful about healthy, healthy. Healthy...keeping my cholesterol down, keeping my Doctor happy, my dietician happy, ‘are you all happy with me?’ [Ni].

Nothing is cut and dried, and I do look for the research –all the time, but I’ve discovered you also need to be careful of the research itself. It’s a minefield [nu].

but sometimes I don’t stop. I’ll make myself sick and go ‘Why did I do that?’ and go off chocolate for a week or two and then...yeah, so it’s very driven by guilt [nu].

There’s conspiracy theories that come out sometimes...something new, seems to like doing this will kill you or something... [nu].

I constantly weigh up the pro’s and con’s. Is it full of stuff that’s going to make my blood sugar go wild? Um, yes, no? Do I have to adjust my insulin? Always. Am I going to get in trouble from my doctor because I haven’t been eating healthy? Usually [nu].

Discussion

This FG study is one of the first to qualitatively explore how different food narratives impact current dietary habits and food beliefs in rural/regional Australian adults. The congruence (or lack thereof) between the gastronomic diegesis and the individual's felt experience was highlighted. It explored how the broader psychosocial aspects of food consumption embedded in narratives uncommon to scientific nutrition communication play a central role in the human food experience. Prior research has suggested that sub-optimal dietary choices in the Australian population may be primarily due to a lack of understanding of evidence-based nutrition communication under the PUS model of science communication (Bookari et al. 2016; Farrington et al. 2018). However, the 2016 NASEM conference findings implied that a key aspect to this communication gap may well be in the specialised and field-specific language paradigms we employ to disseminate evidence-based nutrition messages (NASEM 2016). Our cohorts demonstrated that it was not *understanding* (PUS) that was lacking, but *engagement* (PES) with key messages. The communication disparities highlighted by previous research (Kreps and Maibach 2008; Bernhardt 2011; Fischhoff 2013) were also present in our findings with participants emphasising that the personal impact of hedonic and psychosocial narrative (as embodied in Nigella Lawson's mode of gastronomic communication) on their personal food experience was of greater importance than the 'health' narrative alone. In particular, respondents exhibited a strong affinity with narratives that emphasised pleasure/hedonism, a complete story of the foods they were consuming (production/ethics/location), family/tradition and love as primary motivational aspects of their wider dietary choices. Anxiety responses were notably more significant within those exposed to a targeted Nutrition/Scientific message than those exposed to the Nigella/hedonic stimulus. 'Hedonism' and 'health' as antithetical concepts emerged strongly, despite the recognition of hedonic and psychosocial narratives as strongly influential. This finding in particular, is crucial to the further development of Nutrition and Health Science communication narratives. Turnvald (2011) and Crum et al. (2011) found that narrative and language choice *alone* affected both food choice and neurological/biochemical hunger responses, which further supports these findings. Interestingly, it was observed that the 'Nigella/Hedonism'

participants self-moderated their food intake and consumed less food overall than the 'Nutrition/Science' group, who were explicitly advised as to serving sizes and portion control.

Implications for Research and Practice

The findings of this study indicate that 'health' and knowledge of evidence-based Nutrition Science is far from being the sole, or even the primary determining variable in the food choices of rural/regional Australian adults, and that effective emotional narrative that engages passion, memory and deep feeling cues exerts a much stronger influence than scientific narrative alone on the food choices that individuals exhibit. Finally, our study supports a move toward a far broader nutrition communication strategy that incorporates the wider human emotional and lived experience to foster meaningful public *engagement* with healthy eating communications.

There are several limitations pertaining to the sampling and recruitment methodology. Only six FG's (total participants n=47) within a relatively narrow range of ethnicity were conducted, therefore the results cannot be taken as broadly representative across a multicultural population. In a more extensive, funded study, similar FGs would ideally be repeated across broader social sectors and wider geographic subsets to enable comparative analysis. Many FG participants were known, or semi-known to both the researcher and moderators, which avoided some of the known pitfalls of focus groups (Krueger and Kasey 2009) like non-participation due to awkwardness/shyness. However, the same parameter may have skewed participation and openness in a manner that may be difficult to replicate. It should also be acknowledged that using two separate moderators (Male, 40 years and Female, 40 years) may have impacted orientation in group relations and subsequent data outcomes (Farnsworth and Boon 2010). Although this study deliberately avoided a reductionist approach within its methodology (Campbell and Jacobson 2013; Scrinis 2013; Fardet 2014) to elucidate real-world reactions to food and language, it is acknowledged that the two stimulus videos varied in more aspects than only the variable of interest (scientific vs hedonic language. We also acknowledge that 'hedonism' is not a static concept that can be defined or delivered in a single

narrative stimulus. However, we felt that it was a justified exemplar according to our review of literature and Nigella's familiarity and broad audience reach for this exploratory work. Finally, we recognise that while there is an obvious gender distribution anomaly in the participants, gendered responses were not analysed or coded for in the analysis.

Conclusion

To conclude, our study confirms the findings of previous research (NASEM 2016) that current professional public nutrition narratives are publicly perceived as 'unfriendly' and engender public/consumer distrust due to a perception that messages are contradictory. Additionally, the neutrality and absence of emotion embedded within the language paradigms of the discipline are considered unengaging and condescending. Flavour, pleasure and the hedonic aspects of the human/food relationship are equally or more important to our subset of rural/regional Australian adults in 2019. Of crucial importance, both biochemically and neurologically is the perception that "pleasure" and "health" are mutually exclusive, and that and that scientific nutrition communication stimulus resulted in notable anxiety responses among participants. As implications for practice, we suggest that nutritional health promotion programs focus on Public Engagement with Science models rather than the methodologies associated with Public Understanding of Science. This involves engaging food consumers as bi-directional participants in knowledge exchange rather than unidirectional 'targets' of evidence-based health messaging. Personal connections to food, pleasure in consumption, tradition and family-based narratives have long been used in commercial food marketing strategies, but for profit not public health. Future studies are needed with diverse socio-economic and cross-cultural cohorts and further inquiries into individualised notions of pleasure/hedonism, biochemical/hormonal response, and message effect.

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