British Food Journal

An exploration of the fruit and vegetable "foodscape" in a university setting for staff: A preliminary study

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Received 24 June 2013
Revised 15 September 2013
Accepted 19 September 2013

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Abstract

Purpose – The potential for the foodservice industry to be part of a public health strategy has led to a new understanding of this sector's role in a wider interdisciplinary health environment. The purpose of this paper is to evaluate the influence of the foodscape on fruit and vegetable choice by staff in a higher educational setting.

Design/methodology/approach – Foodscape mapping of fruit and vegetable provision on campus was conducted to provide context. Two focus groups with staff and two interviews with foodservice managers took place to gain depth of understanding. Thematic analysis was conducted to allow for pattern and meaning to emerge.

Findings – Results demonstrate two main overarching themes; personal influence and food operator influence that impact on fruit and vegetable choice. In addition connectivity, perceptions of freshness, food quality and display seemed to be strong categories emerging from the data. Interestingly, this research indicated that consumers were more likely to eat fruit and vegetables when part of a composite dish than if served separately.

Practical implications – Providing a positive foodscape to enhance availability of fruit and vegetables may be challenging but helpful towards health promotion. Nevertheless, no "nudging" can control choice made by individuals, responsibility for healthy selection must always remain personal.

Originality/value – Knowledge gained by this pilot study will add to the body of literature and evidence base for further research while contributing to foodservice strategies which may promote increased fruit and vegetable consumption.

Keywords Health promotion, Fruits, Vegetables, Consumer choice, Work

Paper type Research paper

The authors acknowledge focus-group participants and the CAPES/Brazil (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) for its financial support as scholarship to R.P.C.P.

British Food Journal
Vol. 117 No. 1, 2015
pp. 37-49

0007-070X
DOI 10.1108/BFJ-06-2013-0153

Background

A current determinant of EU health is the amount of fruit and vegetables consumed by the population where it is recognised that intake is low. The Second Action Plan for Food and Nutrition Policy 2007-2012, specifically recommended a daily intake of more than 400 g, identifying these foods as key components for the prevention of chronic disease (Jeurnink *et al.*, 2012). An increased consumption of fruits and vegetables could reduce, at population level, the risk of obesity, hypertension, coronary heart disease and Type 2 diabetes. Despite several initiatives designed to increase consumption, the UK has one of the lowest fruit and vegetable intakes in Europe (258 g), with more than two in five consumers struggling to eat the recommended five portions daily, particularly those aged 16-24 (Mintel, 2012).

A wide range of factors influence choice and consumption, such as aspects of the physical, social and cultural environment as well as personal aspects, such as taste and preference (Sobal *et al.*, 2006). Food choice has been described as a complex function of preferences for sensory and non-sensory characteristics combining individual and environmental issues. Food choice involves the selection and consumption of food and beverages considering when, what, how, where and with who people eat, considering biological, psychological, economic, social and epidemiological importance. The availability of a larger variety of fruit and vegetables positively affects choice and consumption while little variety has been reported as an obstacle (Bava *et al.*, 2012). Dietary habits and food choices are the result of decisions and actions that are based on both routines that require very little active decision making and reflective, elaborate decision making, where choice options are carefully considered. The dual process theories describe these two routes as automatic/heuristic and reflective/systematic processing of information as available in choice situations (Skov *et al.*, 2013). Choice architecture (CA) describes the way in which decisions are influenced by how choices are presented in these situations, and is often used interchangeably with other terms such as "nudging", libertarian paternalism and behavioural economics. It is a tool that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives (Skov *et al.*, 2013). Within public health nutrition this could mean altering the environment or foodscape in foodservice provision such as product placement or availability.

Environments where food is purchased and consumed create a landscape of food that takes different forms depending on where that activity is located. The notion of foodscapes has emerged from the acknowledgement that food environments are an independent and powerful determinant of food consumption behaviour (Swinburn *et al.*, 1999; Mikkelsen, 2011). Eating outside of the home takes place in both commercial environments such as restaurants and take-away businesses, and captive environments such as work or educational establishments. The workplace can be an influential determinant of food consumption behaviour as it provides convenient access to healthy and/or unhealthy food choices, and in a society experiencing time constraints provides an easy option for refuelling (Jabs and Devine, 2006; Blanck *et al.*, 2009).

Workplace restaurants and food outlets are increasingly being identified as environments where better lifestyle habits can be promoted, although, it is also accepted that not all consumers will wish to engage in this positive change; it depends on health-related attitude and behaviour. The stages of change model (Prochaska *et al.*, 1992) identifies individuals' motivation in terms of pre-contemplation (not considering change), contemplation (emerging interest to change), decision (deciding to actively change), action (actively changing behaviour) and maintenance

(maintain the change). Hence, consumers such as the "Strugglers" who would like to make changes to their lifestyle but need gentle persuasion, "Happy Healthies" who are health committed, "Natural Alternatives" who are actively maintaining their healthy lifestyle and "Persistent Strivers" who have lifestyle problems but are willing to put in the effort to make changes will all benefit from a positive foodscape. While for the "Fatalists" who are the most likely to consume unhealthy foods and are not willing to make changes any nudging will have limited effect (Mintel, 2008).

Universities are a captive environment as staff and students are largely restricted to a campus where offices, classes and study facilities are located, and in addition where there is limited choice for food provision (Mikkelsen, 2011). The aim of this pilot study is to map the geographical provision of fruit and vegetables available to staff on a university campus and to gain insights into barriers and enablers of choice.

Methods

The research for this study was carried out at a university in the south of England and included a mapping exercise of fruit and vegetable availability and qualitative response gained from two focus groups conducted with staff and two interviews with foodservice managers. Observations were conducted and confirmed by photograph of the range of fruit and vegetables provided at the foodservice outlets on campus. This included fruit and vegetables presented as discrete items and also those incorporated into a composite dish. Studies do not always use a comparable definition for vegetables, therefore for the purpose of this project, the "eat well plate" criteria was taken as a guide (Food Standards Agency, 2012) and excluded potatoes, tubers, pulses and nuts.

Focus groups were conducted in the staff restaurant (which serves 50 covers a day) where a total of ten participants (seven male, three female) from three different academic faculties participated in two groups. Participants were recruited as they came for lunch in the university staff restaurant. The sampling was convenient with consent, taking place in or directly outside the university staff restaurant. The research was conducted using a rigid focus-group methodology; a protocol was designed taking a lead from the literature, pilot tested and refined from feedback. The sessions lasted an hour, were audiotaped and transcribed verbatim. The researchers vigilantly offered protections by encouraging participants to give freestanding opinions not influenced by coercion, conflict avoidance or acquiescence. An ending "insurance question" was asked at the end of each session, to insure that the critical information was clear and understood by the researchers and participants. Additionally, two interviews were conducted with the restaurant and store manager to add corroborating data to that derived from the focus groups.

Data analysis

Content analysis was conducted for the visual mapping exercise where dishes containing fruit and vegetable content were highlighted and presented as a proportion of the total dish provision that could potentially include these items. For example cakes and pastries do not feature within the mapping criteria because normally these would not contain fruit and vegetables.

Qualitative data were analysed for pattern and meaning allowing for developing themes and categories to be identified through a process of repeatedly listening to the tapes and reading the transcripts (Gibson and Brown, 2009). Coding identified commonalities which were then grouped into raw data themes and overarching categories. These were then related to the mapping exercise to provide an overall foodscape picture of the university campus.

Results

Foodscape mapping within the university

The food provided by the university is mainly catered by a contract caterer who has several outlets. However, there are other opportunities for purchase of fruit and vegetables. The overall context is presented in Table I.

Each food outlet is presented individually in the table alongside the time of availability and description of the food offered. Salads and composite dishes are then presented along with the percentage of the vegetables included. Dishes like salad were sometimes offered without containing any kind of vegetable, for example "pasta and tuna salad" or options of "cheese, croutons and rice" in the salad bar. This could confuse consumers, as the term "salad" generally relates to vegetable consumption. From an operator's perspective, the terminology "salad" is sometimes used which does not always reflect the "eat well plate" definition of a salad which contains fruit or vegetables (Food Standards Agency, 2012). Snack items such as sandwiches, pies, pizza and wraps were offered in some outlets with varying percentages of vegetables included. The same applies to fruits where over half of the outlets, seven out of 12, offered the option of purchase.

Table I.
Food outlets within the university: vegetable and fruit availability in each setting

Food outlets	Time of availability and description	Salads and composite dishes	Sandwich, pies, pizza and wraps	Fruits
A	11:30-14:30: pasta, pizza, sandwich and salad bar	Salad bar – OIV: 35% Composite dish – OIV: 67%	OIV: 77%	Offer: 5
B	08:30-14:30: breakfast: traditional breakfast or a cereal option. Lunch time: jacket potatoes with selected fillings, hot cooked meals	Composite dish – OIV: 50%	None	Offer: 3
C	8:30-15:30: pre-packaged sandwiches, hot and chilled drinks, cakes and confectionery	Salad – OIV: 31%	OIV: 68%	Offer: 0
D	8:30-19:00: drinks, coffee, pastries and snacks	No salads and composite dishes	OIV: 25%	Offer: 3
E	9:00-00:00: hot food, alcoholic and non-alcoholic beverages	Burger dishes – OIV option: 78%	OIV: 75%	Offer: 0
F	11:30-18:00: pizza and drinks	No salads and composite dishes	OIV: 50%	Offer: 0
G	8:30-20:00: pre-packed sandwiches, chilled drinks and snacks (primarily crisps and chocolate)	Salad – OIV: 100% Composite dish – OIV: 50%	OIV: 51%	Offer: 0
H	Vending machine: drinks, snacks, chocolate, sweet pastries	No salads and composite dishes	None	Offer: 0
I	9:00-17:00: hot food, alcoholic and non-alcoholic beverages, coffee, pre-packed food	Salad offer – OIV: 63%	OIV: 22%	Offer: 1
J	12:00-14:00: lunch time: salads, panini, hot dishes	Salads without vegetables Composite dish – OIV: 67%	None	Offer: 3
K	9:00-17:00: coffee, drinks, pre-packed food, pastries and snacks	Salads – OIV: 60% Composite dishes – OIV: 100%	OIV: 70%	Offer: 6
L	9:00-17:00: coffee, drinks, pre-packed food, pastries and snacks	No salads and composite dishes	OIV: 63%	Offer: 2

Notes: OIV, offer include vegetables. Composite dish is defined as a main meal which includes one or more food items

Focus groups

Data from both the focus groups and interviews were analysed and themes organised under two main dimensions namely that of "personal influence" and "food operator influence". Using content analysis seven themes emerged from the data including: "connectivity and freshness", "composite dishes", "food associations", "time restrictions", "availability", "quality and display" and "food combinations". A thematic analysis is presented in Table II.

Personal influence

Connectivity and freshness. Many participants identified the importance of the food on offer being "fresh" and looking nice as opposed to "wilted" or "colourless". The notion of freshness was important to participants and this was the quality they commented on the most. It influenced their choice and enjoyment of the food:

> I think recently they [vegetables] have been frozen and not fresh (participant).
>
> I bring fruit with me as it is fresher, here the apples tend to be mushy and horrible (participant).
>
> […] the vegetables on the counter are frozen, just beans and sweet corn, there is nothing fresh like cabbage or cauliflower, or anything like that (participant).
>
> We try to supply fresh fruit and vegetables but there is so much wastage in preparation (restaurant manager).

Participants also identified that they would like more of a connection with the food on offer and that there needed to be "more local fresh foods" (participant).

Composite dishes. Participants identified that where vegetables are integrated into a dish they are more likely to be eaten and enjoyed, rather than being offered separately, particularly as many identified that the vegetables on offer were uninviting:

> If vegetables are in the food I will eat it rather than separately, such as spinach which I would not make for myself (participant).
>
> […] if it is in the dish you eat it anyway, but as I said some of the veg here are not attractive (participant).

Food associations. Participants grouped foods together, in particular they identified that cake and pastries go better with tea and coffee than do fresh fruit or vegetables:

> When you go for coffee, fruit does not go with it, more pastries, cakes etc., it is a better match (participant).
>
> Costa does nice pastries with their coffees – it's a cultural thing, fruit just does not go together [with coffee] (participant).

It was also noted that participants said they would match a pastry or cake with their tea or coffee even if fruit was available on the counter because of this food association.

Time restrictions. Not surprisingly, being busy and unable to get to the cafeteria or take time away from work desks appears to negatively affect food choices, in that most of the quick option foods are high in fat and sugar:

> […] yes because if you miss it, a lunch then you have to go for chocolate bar, it is sometimes so often we are busy at lunch time, we either have meeting, we have teaching, we have a student (participants).

Codes	Raw data themes	Categories	General dimension	
Freshness Local food sourcing	Locally sourced fresh foods important	Connectivity and Freshness	Personal influence	Foodscape
Personal choice Taste	Vegetables within the meal more appealing	Composite dishes		
"Coffeefied" culture Matching foods	Fruit and vegetables not associated with coffee	Food associations		
Busy Lack of time	Job demands and lack of time influences food choices	Time restrictions		
Poor variety Lack of salad provision	Poor quality foods easily available Convenience influences food choices Lack of healthy food available Lack of variety	Availability	Food operator influence	
Frozen vegetables Aesthetics Consistency Tasteless Cold Overcooked and mushy	Presentation of food influences choice Food appears colourless and overcooked How the food is cooked affects satisfaction with the meal	Quality and display		
Chips with everything Not enough salad choices	Poor combinations such as chips with everything	Food combinations		

Table II.
Thematic analysis of focus-group responses

Food operator influence

Availability. Participants identified the availability of foods as a factor in their choices. Vending machines and the ease of obtaining chocolate and other high-calorie foods made these the food of choice when time is tight or in the afternoons when tired:

> […] I think availability makes a difference […] (participant).

> […] you can get fruit at Costa, you have just never noticed, it is where you actually pay and hand your money over the bowl (participant).

Quality and display. The appearance and quality of food, how it is cooked and tastes made a difference to participants' satisfaction with a meal or dish offered:

> […] [need] more attractive displays of food (participant).
>
> At the risk of upsetting someone, the vegetables here are generally overcooked and mushy […] (participant).
>
> Often I find cauliflower, carrots, broccoli overcooked […] not nice, and that does put me off, perhaps it is because they are hanging around for a long time in the warmer. Quality does affect your appetite (participant).
>
> We offer fruit but often it is left (restaurant manager).

Food combinations. An area of concern was that sometimes it was necessary to ask particularly for salad as some dishes automatically came with chips, for example "lasagne and chips":

> Yes it would be better if it came with salad it is double carbs (participant).
>
> I asked for salad because I do not want chips (participant).

Discussion

The results of this study demonstrate that fruit and vegetable selection and intake in a work environment is a complex process and includes a number of cues which may influence choice. Increasingly efforts are being made to re shape the environment in which consumers make their food decisions. The concept of "nudging" has been gaining in popularity, partly because as an intervention it is relatively easy to implement but also because it allows consumers to maintain their liberty of choice (van Kleef *et al*., 2012) and, along with other factors, individual influence emerged as a strong influencer on fruit and vegetable intake in this research.

Participants were critical of the perceived freshness or lack of, in the fruit and vegetables on offer, however, in a foodservice situation processed fruits and vegetables, including, canned and frozen varieties provide a convenient way to help promote intake. They have a longer shelf life than their fresh counterpart, are available out of season, can take advantage of surplus or over production, can have cost advantages and are easy to use in commercial meal preparation and dish development. This latter aspect enables fruits and vegetables to be incorporated into production schedules where labour is limited or unskilled or equipment is not available. Processed vegetables constitute a way for a population to meet their dietary needs affordably. They also provide a convenient way to promote intake, especially in a foodservice situation, as studied. Nevertheless, it appears there is a mismatch between what makes financial sense from an operator perspective and what is acceptable to the consumer. Within commercial foodservice there always needs to be a "trade off" between these two competing business drivers (Pridgeon and Whitehead, 2013).

Food combinations on the restaurant menu were criticised as being too high in carbohydrates, for example "lasagne and chips". Participants would have liked to have seen salad offered with lasagne and this presented as the default option. Providing healthier food combinations through default is one of the steps on the Nuffield ladder of intervention identifying increasingly persuasive strategies towards improved health behaviour change (Nuffield Council on Bioethics, 2007). The concept of "nudging" is an

attractive proposition for health promoters as it embodies individual empowerment and reduces any criticism of the "nanny" state.

The notion of local food and local food systems has been gaining much consumer and industry attention as an alternative to the global corporate models where producers and consumers are separated through a chain of processors/manufacturers, and retailers. The locality of food is becoming increasingly important, influencing both marketing practice (e.g. adding value to brands) and policy (e.g. accreditation and other name protection schemes) (Mirosa and Lawson, 2012). Even so, there is clear distinction between "local" and "locality" foods (Ilbery and Maye, 2005). Local foods are produced, sold and consumed within a limited geographical area; usually 30-50 miles radius of the point of retail. Whereas "locality" foods are identified as having been produced and processed in a particular place but often circulated more widely (Ilbery *et al.*, 2006). The consumer does not always appreciate the difference, regardless, the idea of local food is attractive and something that participants in this study would like to support. Clearly this is a marketing tag that could be used by the operator to encourage fruit and vegetable selection. In addition, related to freshness was the importance of presentation where "the first taste is almost always with the eye" and where visual sensation should not be underestimated. Human perception of quality is dependent on this and it is well established that colour and appearance can have a halo effect that modifies subsequent acceptability (Hetherington and MacDougall, 1992). "Wilted, tired" looking fruit is obviously not attractive in comparison to cakes and pastries. Unfortunately on this campus the selection of fruit and vegetables on offer is minimal and rather pedestrian in choice with no reflection of season or variety or geographical connection.

Although fruits can be regarded as a snack, they were not considered substantial enough when offered with coffee. In fact the main association at coffee time was with cakes and pastries. This could in part be due to product positioning in that "eye line is buy line" and in the case of the coffee shops on campus although fruit is prominent greater emphasis is given to the more calorie-laden alternative items. Regardless, the participants were most emphatic about discrete food associations and their allegiance to coffee and cake. The identification of association between specific fruit types and rhythm of intake has been introduced in the literature (Bava *et al.*, 2012) where bananas are consumed at breakfast time and apples "any time" and "any place". This also applies to where vending machines are situated and what they have to offer. A vending machine is featured in the mapping exercise, situated in the university library where other food is not available but contains high-energy dense foods such as chocolates, crisps and biscuits. Recently, the lens has been on snacks provided by vending machines, where schools in the UK are required to cease offering unhealthy foods that provide only empty calories in them (School Food Trust, 2007). Unfortunately due to financial considerations, management reluctance and "pester power" by children this has not always happened (Devi *et al.*, 2010). Changing the content of vending machines in the university would likely encounter similar obstacles, nevertheless offering healthy options such as water and fruit, alongside existing provision would provide at least an alternative choice.

Interestingly this research has identified a key role where the foodservice industry may contribute to increasing fruit and vegetable consumption. Participants suggested that if fruit and vegetables were part of a composite dish this would be more appealing and may influence their food choice. This is a new finding and highlights where health promotion and the foodservice industry can work together. Accessibility manipulation is an emerging area of study where "nudging" has been identified as a justifiable

strategy to encourage consumers to make better food decisions. The incorporation of fruit or vegetables within a dish is an example of adding value to the food provision and an example of where choice is enabled. Historically, the foodservice industry has not seen itself as part of the public health agenda and although collaboration between the food industry and health promotion is becoming more apparent the potential benefits of this approach have not been fully realised from the service aspect.

The current literature review has shown the need to gain a greater understanding of the relationship between consumer food choice and health through the framework of CA. Furthermore the construction and implementation of such new interdisciplinary approaches and dialogue calls for knowledge transfer between these research areas. This in turn will require the development of new methods and metrics that bridge the interdisciplinary boundaries more effectively.

The literature identifies a range of measures of interventions developed in health and social sciences that may be associated with manipulating food choice. These need to be examined more carefully within the context of out of home eating and in particular relative to the notion of CA. Complementarily, there is growing research and development of theoretical and empirical frameworks that evaluate consumer behaviour in the area of "nudging". These, however, have focused for the most part on individuals rather than population settings especially within public sector foodservice such as universities and workplace canteens. Public health and behavioural nutrition research can have an important role in the development of this area of study, being in itself an interdisciplinary research field but drawing substantially from the humanistic and social sciences. On the other hand, this discipline often depicts a biased approach, with strategies and projects being structured regardless of the applied context. Hence, a CA approach applied in a real life situation can contribute in a significant way to a more holistic development of improved public health. In fact, this comes as a necessity, as the disease burden associated with poor food choice is becoming increasingly important in societies across Europe, and sustainable improved food habits need to be considered to maximise both social and economic benefits (Selinger and Whyte, 2011; Skov *et al.*, 2013).

Health and well-being in the workplace benefits both employees and companies (European Network for Workplace Health Promotion, 2010), and is the ideal setting to promote healthy lifestyles particularly from a fruit and vegetable perspective (Bull *et al.*, 2008; Hannon *et al.*, 2012; Quintiliani *et al.*, 2010). Most people now spend more time at work than at home, 60 per cent of adult waking hours (Clark, 2010), and with work patterns becoming more variable meals are required at different times of the day. In addition, eating habits are changing, particularly in the work environment where the idea of a one hour sit down lunch has changed to shorter breaks and "grazing" on the job (Paton, 2008). Providing healthy options at work is a challenge, requiring food providers to rethink how those healthy foods should be delivered for maximum uptake. It is accepted that there is insufficient fruit and vegetable consumption amongst the population and that there is a disease burden associated with this, however, there is also a growing interest in the future sustainability of current dietary patterns in light of expected climate change and an expanding global population. Although only one facet of a very complex picture, plant foods are typically associated with fewer greenhouse gas emissions than those of animal origin.

Factors influencing fruit and vegetable choice/intake are numerous and linked to each other in complex ways. Different intervention programmes have adopted different strategies with variable success but previous action has not been focused on public

sector foodservice and foodscape despite this sector providing 40 per cent of all meals served outside the home in the UK (Quest and Needham, 2008). In broad terms the results of this research agrees with previous studies that have identified influencers of food provision and healthy eating in the workplace such as structures and systems; choice and availability (Pridgeon and Whitehead, 2013). However, despite this there has been a lack of a systematic approach to the evaluation of fruit and vegetable availability within a foodservice situation, there is a relationship between the food we eat and the food choices surrounding us. Carrying out a mapping exercise to establish fruit and vegetable availability from a consumer perspective is innovative and improves the ability to analyse the food environment although currently no comparable data are available from other settings. It is difficult to establish the link between cause and effect and to assume that the potential changes in behaviour are the result of certain interventions; capturing learning or useful data which contributes to evidenced-based policy is challenging. The application of these results will contribute to operational benefits for workplace foodservice environments, while adding to the body of knowledge regarding barriers and enablers towards consumer choice of fruit and vegetable selection.

Conclusion

Any initiative provided by staff restaurants that informs and encourages better decision making among motivated employees could play a large role in a healthier workforce. Providing a positive foodscape to enhanced availability of fruit and vegetables may be challenging but helpful towards health promotion. Nevertheless, no "nudging" can control choice made by individuals, the responsibility for a healthy selection must always remain personal. Knowledge gained by this pilot study will add to the body of literature and evidence base for further research. Any health promotion strategy needs to be fit for purpose to deliver the improvement in diet for all the population through engaging everyone responsible for shaping and providing food within the workplace setting. Making the physical environment more conducive to healthy behaviour is an important part of health promotion, where the CA approach could be central to achieving health behaviour change. Further research is needed to confirm this causal pathway and to evaluate whether consumers' claimed importance of composite dishes leads to a healthier food choice. In addition, understanding the food association with "coffee", for example could be explored further and have implication for foodservice practice.

Limitations

It is acknowledged that the sample size for this study is small and that results depended on self-report. An inherent limitation of the methodology used is that potentially the research could suffer from social desirability bias, which in itself could deviate from actual behaviour. Notwithstanding, participants were recruited in a real life setting as they came for lunch and the focus group conducted as they ate, a sample representation that is appropriate and relevant.

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