



Attitudes and behaviour towards convenience food and food waste in the United Kingdom



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ABSTRACT

Households in the UK discard much food. A reduction in such waste to mitigate environmental impact is part of UK government policy. This study investigated whether household food waste is linked to a lifestyle reliant on convenience food in younger consumers. A survey of 928 UK residents aged 18–40 years and responsible for the household food shopping (male $n = 278$; female $n = 650$) completed an online questionnaire designed to measure attitudes to convenience food and to quantify household food waste. Cluster analysis of 24 food-related lifestyle factors identified 5 consumer groups. General linear modelling techniques were used to test relationships between the purchase frequency of convenience food and household food waste. From the cluster analysis, five distinct convenience profiles emerged comprising: 'epicures' ($n = 135$), 'traditional consumers' ($n = 255$), 'casual consumers' ($n = 246$), 'food detached consumers' ($n = 151$) and 'kitchen evaders' ($n = 141$). Casual consumers and kitchen evaders were the most reliant on convenience food and notably were the most wasteful. The demographic profile of kitchen evaders matched the population groups currently targeted by UK food waste policy. Casual consumers represent a new and distinct group characterised by "buy a lot and waste a lot" behaviour. Household size, packaging format, price-awareness and marketing all appear to influence levels of food waste. However, it seems that subtle behavioural and sociocultural factors also have impact. Further research is needed to elucidate the factors that mediate the positive association between the purchase of convenience food and reported food waste in order to inform food waste policy and initiatives.

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1. Introduction

Reducing household food waste has been a central tenet of UK environmental policy since 2007 (DEFRA, 2007, 2008). Such a goal stems from the environmental costs of food production, processing, distribution and cooking, which drain limited land, energy and water resources, generate greenhouse gases (GHG) and reduce ecosystem diversity (Garnett, Mathewson, Angelides, & Borthwick, 2015; Macdiarmid et al., 2012). Additionally, food waste that goes to landfill has significant GHG potential; some 250 kg of CO₂ equivalents are emitted per tonne of food-based landfill (DEFRA, 2008). In the UK 15 million tonnes are wasted in the food chain annually, of which 7 million tonnes are generated at a household level (Quested, Ingle, & Parry, 2013).

A government-funded charity the *Waste and Resources Action Programme* (WRAP) has been actively working across the UK to

reduce household food waste. WRAP instigated a national consumer education campaign in 2008 – *Love Food Hate Waste* – in the wake of a government report showing that householders were generally amenable to changing their food waste behaviour (DEFRA, 2008). However, further to this conclusion, segmentation analysis revealed that there were several consumer groups variously resistant and ambivalent to food waste reduction messages (DEFRA, 2008).

WRAP have identified a number of sequential stages in a 'domestic food cycle' at which food waste occurs; these stages included planning, shopping, storage, preparation and consumption (Flower & Collett, 2014). The causes of avoidable household waste in the cycle are largely due to a combination of organisational and other skills-based constraints that consumers face, as well as external factors such as advertising, packaging format and importantly, confusion over 'use by' and 'best before' dates (Aschemann-Witzel, de Hooge, Amani, Bech-Larsen, & Oostindjer, 2015; Graham-Rowe, Jessop, & Sparks, 2014; Parfitt, Barthel, & Macnaughton, 2010). In a number of surveys it is evident that consumers recognise their food buying behaviour is wasteful, and

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further there are strong feelings of guilt associated with discarding erstwhile usable food (Lyndhurst, 2007; Evans, 2012; Parizeau, von Massow, & Martin, 2015; Qvested, Marsh, Stunell, & Parry, 2013).

The volume of food that a household wastes has been linked to demographic factors and particularly to household size; on a per household basis, total avoidable food waste increases directly with each additional household member, however larger households produce less waste than smaller households on a *per capita* basis (Joerissen, Priefer, & Braeutigam, 2015; Koivupuro et al., 2012; Parizeau et al., 2015; Qvested, Ingle et al., 2013). Overall, single person households waste the most food *per capita*, which suggests that economies of scale relating to retail packaging formats are important (Joerissen et al., 2015; Koivupuro et al., 2012; Parizeau et al., 2015; Qvested, Ingle et al., 2013). There are also some indications that younger people have a greater propensity to waste food (Brook Lyndhurst, 2007). The traditional target groups for household food waste campaigns in the UK are young single professionals, young families and the younger members of lower socioeconomic groups (Brook Lyndhurst, 2007).

Despite an understanding of when waste occurs within the domestic food cycle, the factors and motivations that underpin food waste behaviour are complex. A qualitative research study of English consumers reported that minimising food waste was driven by a desire to save money, however the motive to be a 'good' provider, particularly amongst mothers, led to over-purchasing and consequently greater food wastage (Graham-Rowe et al., 2014). A propensity to waste food has also been aligned to consumerism and the notion of a throw away society, although clear evidence for this link is lacking (Evans, 2012).

Use of convenience food in the UK has been recognised as central to domestic food provision (Burnett, 1979; DEFRA, 2015). There is a substantial literature on the factors underpinning demand for convenience food (Brunner, van der Horst, & Siegrist, 2010; Buckley, Cowan, & McCarthy, 2007; Shove, 2003). Its popularity can be explained by changes in household demographics such as larger numbers of working women and an inter-generational shift in domestic cooking skills (Brunner et al., 2010; Hartmann, Dohle, & Siegrist, 2013). However, the concept of a convenience food culture integrates aspects of food preparation such as ease of acquisition, serving, eating and storage with management of daily life (Gofton & Ness, 1991; Warde, 1999). It has been proposed that today's complex scheduling of family life gives rise to an unstructured, fragmented approach to eating and meal times; convenience foods reduce cooking responsibility and can address the diversity of food habits within households (Warde, 1997). The use of convenience food might be expected to reduce household food waste as it circumvents the purchase of multiple meal ingredients; however a Swiss survey reported that convenience food consumption was inversely associated with waste avoidance (Brunner et al., 2010).

This study seeks to explore levels of household food waste against a range of food management activities and attitudes to food consumption that resonate with and reflect a lifestyle dependent on convenience food. A constellation of food management behaviours and attitudes to shopping, cooking and food consumption has been formally developed into a scale, which quantitatively assesses constructs of a convenience food culture (Buckley et al., 2007). We used this scale to measure *inter alia* enjoyment of cooking, meal planning, attitudes to food preparation and clearing up, perception of time-stress, eating-out and food purchasing practices in an attempt to tease out the relationship between the espousal of a convenience food culture and food waste behaviours. The present study explores this axis in a population sample of younger UK consumers who are both known to favour convenience food and report high levels of food waste (Barker, McClean, Thompson, & Reid, 2007; Brook Lyndhurst, 2007).

2. Methods

2.1. Questionnaire development

The 250-item questionnaire comprised four sections: section 1 related to respondent demographics and section 2 evaluated food waste behaviour. Sections 3 and 4 comprised validated scales (Buckley et al., 2007); these measured attitudinal and behavioural traits associated with food-related activities, as well as items that assessed consumption frequency of convenience food. Sections 3 and 4 were incorporated with the kind permission of Dr McCarthy, University College Cork, Ireland.

Section 1 relating to respondent demographics contained items, which measured household income, household structure, occupational status, educational attainment and regional location along with anthropometric data sufficient to calculate body mass index (BMI; body weight (kg)/height (m)²).

Section 2 comprised questions regarding food waste behaviour. The quantity of food waste was measured for 14 food categories: fresh fruit, fresh vegetables, salads, milk, cheese, cream and yogurts, eggs, bread, ready cooked meals & other convenience food (pizza, soups etc.), fruit juice, meat and fish, sandwiches, fizzy drinks and cakes and biscuits. Firstly, the number of food items purchased over a weekly period was recorded, followed by a question asking what percentage of that food was discarded. This frequency scale allows the calculation of the discarded amount relative to the amount purchased and adopts the approach previously taken by Stefan et al. and Visschers et al. (Stefan, van Herpen, Tudoran, & Lähtenmäki, 2013; Visschers, Wickli, & Siegrist, 2015). Ten additional questions were posed to assess attitudes to food waste and ascertain reasons for discarding food.

Attitudinal and behavioural traits associated with food-related activities were measured using multiple series of convenience and food lifestyle statements, to which respondents were required to indicate their degree of agreement on a seven-point Likert scale (1 = completely disagree; 7 = completely agree). Questions were phrased both positively and negatively to corroborate answers, and questions were posed randomly to mitigate 'order' effects. These items comprised Section 3.

To measure consumption frequency of convenience food (Section 4), respondents were asked how often they bought certain categories of ready meals such as frozen or chilled, the frequency with which they went out for a meal, bought a takeaway to eat at home and cooked a meal from ingredients. The seven-point frequency scale ranged from 'every day or almost every day' to 'never'.

2.2. Data collection

Ethical approval for the study was obtained through the School of Medicine's ethical review procedure at the University of Sheffield. Respondents were provided with online information about the study prior to their participation and their consent was affirmed before they had access to the online questionnaire. The study information emphasised that all responses would be used for academic research only and that no identifying information would be collected. Repeat participation was prevented by eliminating duplicate IP addresses; IP data were subsequently removed from the downloaded survey file.

The questionnaire was implemented using a proprietary online survey tool (Qualtrics; Utah, USA). The questions were encoded onto the Qualtrics platform, which supports logical, sequential questioning based on prior responses; respondents, for example, who report they live alone were not asked questions relating to other members of the household.

Suitable participants were recruited by Qualtrics that met three

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