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The importance of food issues in society: Results from a National survey in Australia

Abstract

**Aim:** It has been demonstrated previously that consumer attitudes about food issues influence and shape consumer behaviour. The aim of this paper was to identify demographic and socio-economic variables associated with a range of consumer opinions regarding the importance of four pre-selected food issues.

**Methods:** A National survey conducted in Australia (random sample n=1109; response rate 41.2%) was undertaken in 2009 to investigate consumer opinions regarding food issues that may influence food choice and behaviour. Respondents were specifically asked whether the following were important food issues in society; additives, genetically modified (GM) foods, unhealthy eating, and food allergies.

**Results:** Most respondents considered unhealthy eating (96.1%) and food allergies (92.1%) to be important issues in society. Fewer participants, but still the majority, regarded additives (78.5%) and GM foods (67.7%) as important. The study identified that specific food issues were of particular concern to women, older respondents, respondents with an income between $30,000 and $60,000 (AUD), and respondents living in a household of five or more people. Concerns about GM foods and additives were associated with the greatest number of demographic and socio-economic variables studied.

**Conclusion:** This paper has confirmed that the food issues studied were important to the participants surveyed. Demographic and socioeconomic factors were predictive of consumer opinion on the importance of individual food issues and may be useful to inform strategies and campaigns to address consumer concerns and public worries about food.
Keywords: food issues; additives; GM foods; allergies; unhealthy eating

Introduction

It has been demonstrated previously that consumer attitudes about food issues influence and shape consumer behaviour. Furthermore, consumer attitudes have been associated with a variety of demographic and socio-economic factors among Australians. The present article presents original research from a National survey in Australia investigating consumer opinions regarding food issues. As part of this survey, consumers were asked to respond to whether they felt that additives, genetically modified (GM) foods, unhealthy eating and food allergies were important issues in society. These four food issues formed the focus of this study as it was hypothesised that they were of particular interest to society and evidence indicates that consumers perceive these issues to influence their health.

The following provides definitions of the four pre-selected food issues, in addition to identifying the literature which led us to hypothesise that these issues might be of importance to consumers. The definitions are taken from Food Standards Australia and New Zealand (FSANZ), a bi-national government agency responsible for developing and administering the Australia New Zealand Food Standards Code, which lists requirements for foods such as additives, food safety, labelling and GM foods: 1) Additives, are chemicals commonly used to improve the taste and/or appearance of food, to improve the quality of food, and for food preservation (i.e. increasing storage life). Additives play an important part in ensuring our food is safe and meets the needs of consumers. However, previous research has identified that consumers have concerns about the regulation of additives. 2) GM foods are those which have had their genetic material altered in some way by making a copy of a particular gene from the cells of a plant microbe, and inserting the copy into the cells of another
organism to give a desired characteristic. The aim is to obtain food that is enhanced nutritionally or reduces time/requirements for production. GM foods are controversial aspects of modern food production and there is evidence to suggest that consumers remain sceptical of GM foods. 3) Unhealthy eating: FSANZ make reference to unhealthy food (rather than unhealthy eating) and by their definition, unhealthy food is inclusive of any food or food component which may pose a risk to the consumer. Despite the notion of unhealthy food by FSANZ, consumers have been found to identify with the term ‘unhealthy eating’ which they regard as products high in salt, sugar and fat. The issue of unhealthy eating may also be considered important given the present concerns in relation to rising obesity rates in Australia. FSANZ (2008) found that Australian consumers were more concerned with healthy eating (23.4%) than food safety (8.6%), reflected in the extent to which weight control and management of health dominated dietary concerns (55.8% and 46.9% respectively). 4) Food allergies commonly affect children and can cause severe allergic reactions including anaphylaxis. Common food allergens include peanuts, milk, eggs, shellfish and gluten. Within Australia, many of these common products must be declared on food labels. A number of articles published in the area indicate that food allergies are a growing concern to researchers and consumers.

Our earlier research outputs, for example, on regulation, production, safety, quality, price, taste, organic foods provide evidence to suggest that consumer opinions regarding food differ according to demographic and socio-economic variables such as age, sex, income, marital status and education. The aim of this paper was to identify demographic and socio-economic variables associated with the range of consumer opinions regarding the importance of the four food issues outlined above. The results may be useful to inform strategies and campaigns to address consumer concerns and public worries about food.
Methods

The data presented in this paper were collected as part of the ‘Trust in Food’ project, funded through the Australian Research Council (ARC). The project was primarily concerned with identifying the nature and level of consumer trust in the Australian food supply. A National survey examined the key theoretical claims about the relationship between food and trust, as well as factors that influenced food trust in different Australian demographic and socio-economic population groups. The research instrument was developed by replicating a previous instrument used in the European Trust-in-food survey 30. In line with the aims of the broader research project from which the data presented in this paper were taken, the European Trust-in-food survey sought to explore social and relational aspects of trust across all aspects of the food chain. The data variables from this survey were recoded and the descriptive categories were re-run for the purpose of the Australia research. In order to further investigate predictors of trust in food, questions from an instrument used previously by the authors (Social Quality Survey 31, 32) were used to investigate personal and systemic trust. The only questions taken from the Social Quality instrument were regarding levels of trust in a number of individuals and institutions. The instrument was piloted (n=52 randomly selected households) in order to test question formats and sequence, and to assess survey procedures. Data regarding trust in food are not part of the current analysis but publications from both the quantitative and qualitative aspects of this ARC project are reported elsewhere 6, 8, 10, 11, 17, 33-36.

All survey items relevant to the present analysis where framed as follows: ‘Would you say that the following food issues are important in our society?’ Participants were specifically asked to respond to whether the following issues were important: Additives; Genetically modified foods; Unhealthy eating; Food allergies. The survey contained a total of six items addressing perceptions of food issues in society, two of which (importance on free...
range products and unreasonable food prices) were not included in the present analysis; also, respondents were not provided with any definitions for the food issues surveyed.

Respondents were provided with the following response options: ‘important’, ‘not very important’, ‘not at all important’ and ‘don’t know’. The item addressing GM foods offered another response option, namely ‘have no knowledge of GM foods’. Refusals to answer a particular question were recorded as a further response option. Respondent-specific predictor variables included in the present analysis were age, sex, number of people in the household, number of children under 18 years of age in the household, marital status, work status, education, annual household income, the Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (IRSD) as well as the Accessibility/Remoteness Index of Australia (ARIA). These predictor variables have previously been associated with consumer opinions regarding food choice in previous literature \(^2, 15, 37-42\).

Households in Australia with a telephone connected and the telephone number listed in the Australian Electronic White Pages were eligible for random selection in the sample for this study. From October to December 2009 randomly selected household numbers were contacted by employing a Computer Assisted Telephone Interview (CATI) methodology. CATI is an interview method that enables the researcher to reach a high number of participants \(^43\). Participant responses are directly entered into the computer by the researcher at the time of the interview thereby eliminating the need to transfer data into software at a later date.

Participants across all Australian states and territories were interviewed, with the majority of participants coming from New South Wales, Victoria and Queensland (31.9%, 23.1% and 20.3% respectively). Both metropolitan and rural participants were contacted with 17.1% of participants living in outer regional or remote areas (see Table 1). After refusals,
terminated interviews, non-contactable households, deaths, unavailable respondents and respondents who could not speak English, 1109 interviews were completed. This generated an overall response rate of 41.2%. This response rate is acceptable for this type of methodology and our target sample size (n=1000) was achieved. The data were weighted by age and sex to reflect the structure of the Australian population 18 years and over using the Australian Bureau of Statistics 2007 Estimated Residential Population. Weighting was used to correct for areas of disproportion within the sample with respect to the population of interest. The weights reflected unequal sample inclusion probabilities and compensated for differential non-response.

All analyses were carried out using the statistical software package SPSS version 17.0. For analytical purposes, the response variables were dichotomised by collapsing ‘not very important’ and ‘not at all important’ responses to create ‘not important’ versus ‘important’. Responses of ‘don’t know’ and ‘have no knowledge of GM foods’ as well as refusals to answer a question were not included in the present analysis. Response rates for the individual questions varied for each of the four food issues (additives 97.9%, GM foods 87.2%, unhealthy eating 99.9%, food allergies 97.6). The reason for non-response may have been due to a lack of knowledge about the issue. We discuss this as a potential limitation later in the paper.

All demographic and socio-economic predictor variables were entered into the analysis as categorical variables, the individual levels of which are summarized in Table 1. Additionally the summary of sample size and response patterns across outcome variables is provided in Table 2. Bivariate logistic regression analyses were used to produce odds ratios to examine the relationship between the individual demographic and socio-economic predictors and the various food issues. An additional dependent variable was created which looked at a respondent’s level of importance for all of the food issues combined. We refer to
this as the index of all food issues combined. Only items showing an association at the \( p \leq 0.25 \) level were entered into multiple binary logistic regression analyses \(^{45}\). For the purposes of the present investigation the method of choice for conducting regression analyses was to enter relevant predictor variables in one block rather than stepwise procedures \(^{46}\). For each outcome variable, predictor variables included in the regression model were checked for multi-collinearity.

Results of the multivariate regression analyses have been organized by demographic and socio-economic predictor variable. Fit indices of the individual regression models as well as parameter estimates for the predictor variables are reported in Table 3. Across analyses, information on respondents’ work and marital status, the number of children in the household as well as their geographic location (ARIA) did not contribute significantly to the fit of the regression models, thus can be concluded to have no predictive power for societal food issues perceived to be ‘important’. These demographic indicators have therefore not been reported in the results section.

Prior to data collection, ethics approval was obtained from Flinders University Social and Behavioural Research Ethics Committee.

**Results**

The results confirmed that additives (78.5%), GM foods (67.7%), unhealthy eating (96.1%) and food allergies (91.2%) were important to the participants surveyed. Concerns about GM foods and additives were found to be associated with the greatest number of demographic and socio-economic variables studied.

For the outcome variables additives, GM foods, food allergies and the index for all food issues combined, female respondents were more likely to indicate the different food issues to be ‘important’ than their male counterparts. Odds ratios ranged from 1.4 for GM
foods, 1.7 for additives and 3.2 for the food issues index to an almost fourfold increase when considering the importance of food allergies.

Household income was found to be a significant predictor for the importance attributed to additives. Relative to individuals with an annual household income of up to $30,000 (AUD), respondents with a slightly higher annual household income (i.e. between $30,001 and $60,000) were 90% more likely to indicate additives to be an important issue (OR=1.9, p<.05).

Response patterns also observed age as a marginally significant predictor of the importance attributed to additives. Specifically, compared to the youngest group comprising individuals under the age of 30, individuals between 30 and 44 years were 70% more likely to place importance upon this issue (OR=1.7, p<.05), with a similar result for persons between 45 and 59 years of age (OR=1.6, p<.05). The highest was found for respondents of 60 years and over who were close to two times more likely to consider this an important issue (OR=1.9, p<.05). Age was furthermore indicative of the importance attributed to GM foods, with respondents aged 30 to 59 years being more likely to indicate the matter to be ‘important’. Differences between predictor levels were significant for all groups when compared with the youngest group.

Education was found to be a significant indicator for the issue of additives and GM foods. Compared to individuals who indicated to have no schooling beyond secondary, respondents with qualifications comprising a degree or higher were twice as likely to judge additives an important issue in society (OR=2.0, p<.01). For GM foods however, higher levels of education were associated with a decreased likelihood of considering this to be an important food issue. In particular, compared to respondents who stated to not have education levels higher than secondary, those with trade, certificate or diploma levels were 40% less
likely to indicate GM foods to be important (OR=0.6, p<.01), while respondents with a degree or higher were 30% less likely to say so (OR=0.7, p<.05).

Analysis of the importance attributed to the issue of GM foods returned respondents’ socio-economic index as a significant predictor, where individuals from the most advantaged quintile were only half as likely to state GM food to be important as individuals from the most disadvantaged background (OR=0.5, p<.01).

The number of people cohabiting within the same household showed significant predictive qualities for the importance of food allergies and for the importance placed upon unhealthy eating. For both food allergies and unhealthy eating, the likelihood of deeming these issues important was lower for respondents living in smaller households compared to those living in households comprising five or more people. Turning to the matter of unhealthy eating, respondents living by themselves were 90% less likely to place importance upon unhealthy eating as a food issue than those from households which include five or more people (OR=0.1, p<.05), as were those from households comprising three to four people (OR=0.1, p<.05).

Discussion

On the whole, our cohort considered unhealthy eating (96.1%) and food allergies (91.2%) to be important issues in society. Where fewer participants, but still the majority, regarded additives (78.5%) and GM foods (67.7%) to be important issues, there was the greatest number of predictive demographic and socio-economic variables.

Within our sample, additives were found to be more important to women, older respondents (higher for 60+), respondents with a degree of higher education and respondents with an income between $30,000 and $60,000 (AUD). Our findings regarding sex are consistent with Australian and international literature which suggests that females are
significantly more concerned with additives (among other food issues) than men\textsuperscript{2, 40, 47}. Additionally, international research suggests that women are more resistant to eating foods with additives and contaminants\textsuperscript{48, 49}. Also consistent with the literature are our results regarding age. Williams et al. (2004) identified that participants aged 18-24 express significantly fewer concerns about food issues in general (additives, food hygiene, GM foods) than all other age groups. This conclusion has also been drawn previously in research conducted in Belgium, England and Norway whereby the older generations were found to be more reluctant to consume additives than younger generations\textsuperscript{48}.

Public perceptions of GM foods have been widely acknowledged and investigated in recent literature\textsuperscript{50}. Despite GM foods in Australia being heavily regulated, there is evidence to suggest that consumers remain sceptical of GM foods\textsuperscript{19}. Our results confirmed this, identifying that nearly 70\% of our sample find GM foods to be an important issue. However, GM foods were found to be more important to women, older respondents, respondents with no education and respondents from disadvantaged backgrounds (defined according to IRSD).

The only significant predictor variable found for unhealthy eating was for respondents living in households of five or more individuals. As noted above, the finding regarding household size may be indicative that larger households were made up of families with children whereby food issues were likely to be of greater concern. The lack of predictor variables for unhealthy eating and food allergies is indicative of general agreement across demographic and socioeconomic variables that these issues were important.

Health professionals (dietitians and general practitioners) within Australia are reported to see nutritional information and allergy warnings as the most important information on food labels\textsuperscript{51}. There is a gap in the literature regarding consumer opinions about food allergies within Australia. However, international empirical literature has identified that the unintended effects of consumption, such as allergies, are some of the most
prevailing risks noted by consumers. Our investigation identified that women, and respondents living in households of five or more individuals are concerned about food allergies. The findings may relate to the role of women as carers of children, and the likelihood that children live in the majority of households with five or more residents. The incidence of food-induced anaphylactic reactions has risen over the past several years which may be why it is of such concern to parents.

It is also important to note that work and marital status, number of children in the household, and geographic location (ARIA) were found to have no predictive power for societal food issues perceived to be ‘important’. Findings regarding these four variables are in need of further investigation as the results conflict with some of the data noted in the literature, for example, our previous research has identified that consumer opinions regarding the production and regulation of food differ according to geographic location (ARIA). This difference in findings might suggest that attitudes towards the four food issues studied would also differ; however this is not evident in our results. The finding regarding the number of children in the household also remains obscure. Based on previous literature, we have made earlier arguments that the presence of children in households would be likely to affect the level of importance individuals place on food issues. It is evident that there is a need for further investigations, perhaps through qualitative research.

Within this research we asked participants to answer questions that specifically asked them about four pre-selected food issues. We acknowledge that this method precluded other food issues worthy of investigation and that any other issues of concern to our participants remain obscure. For example, the issue of food ethics (e.g. fair trade, treatment of animals) has been identified as shaping food choice and behaviour. Previous research also suggests that the food system, federal food and agriculture policy, local and institutional policies, and the culture of professional nutrition organizations are factors that may impact on
consumer behaviour. An investigation of consumer opinions of the role of these structural factors may be an important contribution to the literature on factors affecting consumer behaviour. Additionally, no definition for the food issues studied were provided to our participants. The likelihood that respondents may have defined and understood differently the four food issues in question is a limitation of this research. Indeed research within the UK has suggested that consumers’ understandings of additives are underdeveloped, in that consumers were found to have misunderstandings about what constitutes an ‘additive’. Similarly, research has identified that consumers’ reported opinions of GM foods are determined by a number of factors including the knowledge regarding GM technologies, awareness of the risks and benefits of GM foods, and the usefulness versus riskiness of GM foods. This limitation is problematic in that the concerns around food issues may be over or underrepresented. For instance, the absence of predictor variables for unhealthy eating may be a reflection of the lack of distinction made between the notions of unhealthy ‘food’ and unhealthy ‘eating’ in the lay populace – the former implying a specific unhealthy item while the latter referring to an unhealthy overall intake. We recognise that the lack of findings may be the result of the instrument design. While the aforementioned are limitations of the study, this acknowledgement highlights the importance of understanding consumer opinions of food issues which may involve more in-depth qualitative investigations.

Consumer attitudes about food issues influence and shape consumer behaviour. We have confirmed that the food issues we investigated were related to demographic and socio-economic variables, such as sex, age, social class, income and education. This is significant because much of the health communication literature that has examined consumers’ concerns assumes a ‘generic’ consumer – one who is neither age, sex nor class-specific. Such an assumption may be detrimental because, as we have shown, it is highly likely that social context plays an important role in consumers’ views on food issues. For example, previous
research has identified that the strategy of increasing communication with the public about scientific uncertainty regarding food risks negatively impacted consumer confidence of food risk management in the UK and Norway but had a positive impact in Germany. In this case, greater disclosure and transparency of the potential for food risks (e.g. the potentially harmful effects of additives) decreased consumer confidence in food risk management in the UK and Norway. Our findings can be used for better tailoring of communication strategies regarding food issues on the basis of social characteristics and may lead to programs which provide the public with information that will minimise concerns. For example, we have identified populations that find food allergies to be important which may be used for the development and tailoring of strategies to minimise concerns of food allergies (e.g. banning of specific foods in schools).

The findings may also be used as baseline results for future research. Our limitations have highlighted the need for the investigation of food issues unexplored in this research which may require a more in-depth qualitative methodology.

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