



**Attitudes and behaviours
towards healthy eating and
food safety:**

A scoping study

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Executive Summary

This discussion paper represents one output from a scoping study commissioned by the Food Standards Agency (FSA). The objective of the study was to map the extent of research which has been conducted in the areas of healthy eating and food safety; with a focus on survey research. The study's other outputs are:

- A data catalogue – which records food related attitudinal and behavioural questions asked in major publicly-funded social surveys;
- A bibliographic database containing social scientific studies that address factors relating to healthy eating and food safety, based on UK data, over the period 2000 to 2009; and
- A bibliographic database containing literature on methodological research, specifically looking at issues of validity and reliability in food surveys and social desirability bias, drawn from English language sources over the period 1990 to 2009.

This paper presents a discussion of a number of issues relating to survey methodology drawing on these outputs. Some of the more important conclusions emerging from the discussion in this paper are outlined here:

- Food-related behaviours are of low saliency for those responding to questions in food surveys
- Therefore lines of questioning should be as specific as possible; for example asking about particular behaviours over a short and recent period of time
- Social desirability biases are likely to be present in responses to some food-related survey questions. Such biases should primarily be tackled through good question design and survey practices
- It is recommended, however, the Agency considers testing the efficacy of psychological scales which purport to measure social desirability bias as a means of determining the extent of the problem
- In the light of the forthcoming FSA survey of behaviour and attitudes, the types of analyses of change over time and of causal effects which might be explored using repeat cross-section survey data are examined
- These analyses include exploration of trends over time, programme impact evaluation and, in certain circumstances, the use of multivariate statistical analyses to shed light on causal relationships
- Capturing the processes through which individuals make choices regarding the food they purchase and eat, using survey questions, has a number of problems
- Such questions are more likely to be successful in eliciting views about the factors which influence purchasing decisions than eating behaviours
- Consideration should be given to reviewing relevant social scientific theory that seeks to understand the processes through which individuals' decide what to eat. Results from such a review can be used to guide future qualitative work and the development of new survey questions
- In borrowing questions from existing surveys there are several issues which need to be considered, most prominent among which is that of order effects

- Order effects need to be taken into account particularly where questions are general in nature and where they are located in the originating questionnaire adjacent to items covering similar topics.

This paper also highlights a number of areas where the FSA might consider commissioning further research. The Agency might wish to consider commissioning a series of rapid evidence assessments in areas identified as a priority. Further exploration of the existing literature would appear particularly warranted in the areas of food safety practices and perceptions of food poisoning.

A number of suggestions are put forward for secondary analysis of existing data sources. In relation to these types of data sources, it is recommended that the Agency seek to influence the content of the Understanding Society study going forward, a source of data which offers great potential for detailed and insightful analysis.

Finally, the discussion paper presents a brief scan of current academic and survey work in progress, and that on the horizon, which appears relevant to the Agency's agenda and priorities. The ongoing Health Survey for England will continue to be of interest to the Agency. This is because it provides a rich analysis of trends in healthy eating, among other areas of interest. In terms of institutional funders, both the Wellcome Trust and the Medical Research Council have ongoing programmes of research that will be of interest. The Wellcome Trust's Society Awards, which focus in 2009 on 'eating', will not be awarded until the end of this year. The Big Lottery Fund and the European Commission were also identified as funding agencies that commission relevant work.

The scan of current and future relevant work also encompassed exploration of activities among individual researchers and research institutes known to be active in the area of food research. Full details can be found in Table 3 of this report.

Glossary

ALSPAC – Avon Longitudinal Study of Parents and Children

ASSIA - Applied Social Sciences Index and Abstracts

BCS – Birth Cohort Survey

BHPS – British Household Panel Survey

BIDR – Balanced Inventory of Desired Reporting – a scale which purports to measure aspects of social desirability bias

BSA – British Social Attitudes Survey

CAS – Consumer Attitudes Survey

Econlit - The American Economic Association's electronic bibliography of economic literature

ESDS - Economic and Social Data Service – national data service providing help and support across a wide range of data sources

ESRC – Economic and Social Research Council

FFQ – Food Frequency Questionnaire

FSA – Food Standards Agency

GHS – General Household Survey

GM – Genetically modified

GUSS – Growing up in Scotland Survey

GSR – Government Social Research

HEPS - Health Education Population Survey

HSE – Health Survey for England

IBSS - International Bibliography of the Social Sciences

LIDNS – Low Income Diet and Nutrition Survey

MCSDS – Marlowe-Crowne Social Desirability Scale

Medline – citation index covering health and medical journals

MRC – Medical Research Council

MCS – Millennium Cohort Survey

NCDS – National Child Development Study

NDNS - National Diet and Nutrition Survey

NESSTAR – an online data publishing service

ONS – Office for National Statistics

PDF – Portable Document Format

PSENI – Poverty and Social Exclusion in Northern Ireland Survey

Psycinfo - citation index covering psychological research literature

PPFF - Public Perceptions of Food and Farming Survey

SCDS – Scottish Children's Diet Survey

SCI - Science Citation Index

SSAL – Scottish Schools Adolescent Lifestyle and Substance Use Survey

SHS – Scottish Health Survey

SSCI - Social Sciences Citation Index

SPABE - Survey of Public Attitudes and Behaviours Toward the Environment

TUS – Time Use Survey

UK – United Kingdom

US – United States

WHS – Welsh Health Survey

I. Introduction

Food-related decisions made by individuals are influenced by a complex array of factors and processes. These include demographic factors, familial and household influences, habit and price, health considerations, ethical concerns and wider societal trends. This paper covers a variety of issues and topics relating to healthy eating and food safety, and reports findings from a scoping study commissioned by the Food Standards Agency (FSA). The original aim of the study was to commence the process of mapping the existing United Kingdom (UK) survey data resources that seek to capture attitudes and behaviours toward healthy eating and food safety. In addition, to assess the scope of the UK-related research literature which examines healthy eating and food safety. The study also aimed to conduct preliminary searches for methodological literature.

This discussion paper represents one of four outputs from the scoping study. The other three outputs are:

- A data catalogue – which records food related attitudinal and behavioural questions asked in major publicly-funded surveys;
- An Endnote¹ database containing social scientific studies which address factors relating to healthy eating and food safety, based on UK data, over the period 2000 to 2009; and
- An Endnote database containing literature on methodological research, specifically looking at issues of validity and reliability in food research and social desirability bias, drawn from English language sources over the period 1990 to 2009.

The data catalogue initially set out to cover relevant healthy eating and food safety questions contained in large-scale, publicly-funded surveys as well as ad hoc specialist surveys, usually conducted by academics or researchers; and commercial surveys. Because of the large number of questions contained within publicly funded surveys, the decision was taken not to cover ad hoc and specialist surveys, or commercial surveys. Among large-scale publicly-funded surveys, many more questions were found on healthy eating topics than on food safety. Therefore, discussion of the content of the data catalogue proceeds mainly with reference to healthy eating, with a more limited discussion of food safety questions. The data catalogue was constructed in such a way that questions from other sources might be added in future. Full details of how the data catalogue was constructed are at Annex B to this paper².

¹ Endnote is a widely used bibliographic database computer program. For more details see: <http://www.endnote.com/>.

² There were two versions of the data catalogue released to the Agency; the first on 12th June and the second on 27th July. The discussion in this paper relates in the main to the content of the first release only. Surveys added to the data catalogue for the second release contained more questions on food safety topics.

The primary aim of the literature searches was to identify studies which looked specifically at healthy eating and food safety. In addition, searches were also undertaken to explore the scope of literature discussing survey methodology relevant to food research. The searches which looked at healthy eating and food safety used very general search terms, covered UK studies only, between 2000 and 2009, and focused on the social scientific literature. The methodological searches were limited to studies which discuss 'reliability' and 'validity' in food-related survey research as well as social desirability bias. Details of how the literature searches were conducted are at Annex C to this paper.

Turning now to the content of this paper; it commences with a discussion of the questions contained within the data catalogue and provides an assessment of some of the more important lines of questioning which have been identified. It briefly makes mention of the literature searches conducted and the outputs from these searches. Following this, the paper specifically addresses five key survey design issues of concern to the Agency. These are:

- Issues to consider in designing survey questions to capture behaviour
- Social desirability response bias in food-related surveys
- Identification of causal relationships and change over time in survey data
- Capturing influences on food choice in surveys
- Factors to consider in borrowing survey questions and order effects

Finally, the paper discusses some potential areas for new research and provides a brief overview of relevant forthcoming studies and work-in-progress which may be of interest to the Agency.

Because of the complexity and extent of social scientific food-related research, its close overlap with public health and epidemiology, and given the limited time and resources available for this scoping study, the work presented here should be considered a first attempt at getting to grips with the resources available. The main contribution of this study, as it evolved, was to identify the scale of the task in marshalling not just existing data sources but also relevant, existing academic and policy-related research. Many of the literature searches undertaken were restricted and time-consuming screening exercises were ruled out. As a result, this paper and the searches it describes make no claims to comprehensiveness. The explorations of the various sources described in this paper represent a first foray into a very large and complex literature, and this should be kept in mind by the reader throughout. What is clear is that the literature consists of work from researchers active in a wide-range of disciplines, from sociology and psychology, public health, anthropology, policy analysis, human geography, medicine and economics. Each discipline brings with it its own unique substantive concerns and methodological perspectives. Moreover, there is a lot of related survey activity in the commercial world. Here the emphasis is more on attitudes and decision making around food purchase rather than food intake and food safety.

Another key concern motivating the scoping study is the FSA's decision to discontinue the Consumer Attitudes Survey (CAS) which it has run since 2000 and replace this with a new survey of behaviours and attitudes. This scoping study aims to inform the development of this new survey and other future survey work, as well

as programmes of secondary data analysis and to help minimise duplication in the Agency's research effort going forward.

The role of surveys in food research

Large-scale sample surveys are a ubiquitous feature of modern life. In any given year a substantial fraction of the British public will be approached to take part in either a social or market research survey. Government and public sector bodies spend large sums of money asking the general population questions on an array of topics.

The practice of survey research, however, is under threat. The challenge comes mainly from declining response rates, which have been seen across almost all types of survey. So much so, that in some areas of research there is now increasing focus on the use of administrative data sets and web-based methods. In the case of the former, issues of confidentiality, usefulness of content and data protection issues give rise to new challenges.

Food-related survey work has been conducted in the UK since at least the 1940s, first in the shape of the Wartime Food Survey and then the Family Food Survey. The National Food Survey started in 1950³. A key motivating factor for these studies was a concern to assess the population's diet; with an initial focus on the 'urban working-classes' (Vernon 2007). At the present time the National Diet and Nutrition Survey (NDNS) is the government's main survey-based instrument to assess the nation's dietary in-take. The survey uses a four-day un-weighed diary to record dietary behaviour among respondents.

The concern of this scoping study, however, is less with formal measures of nutrition but more the capture of behaviours and attitudes. However, even where the concern is the capture of broader behaviours, diaries are often viewed as the preferred research instrument to provide an accurate record. The use of diaries is not without problems. There are concerns as to whether the diary 'conditions' the behaviour of those completing them and completion rates can be low. For example, individuals filling-out a record of their consumption may become more aware of their need to eat healthily and therefore change their diet accordingly, despite instructions to the contrary.

Setting aside concerns surrounding completion rates and conditioning effects, diary research instruments are often beyond the scope of most multi-purpose behavioural surveys due to cost and time considerations. This leaves the researcher in the position of relying on the appropriate design of survey questions⁴ in order to elicit accurate information⁵ and begs the question as to how valid and reliable data on food-related behaviours captured through general surveys are?

³ See http://www.statistics.gov.uk/ssd/surveys/national_food_survey.asp.

⁴ Where it is assumed that current best methods are adopted in terms of sample design, sampling, fieldwork, analysis and reporting.

⁵ In some cases it may be possible to find external data sources against which to assess the validity of behavioural responses to self-report questions.

The general survey research literature offers 'best practice' guidance on survey question wording and design. However, there is undoubtedly more that can be learned. The general survey design literature and food-specific methodological work which has been considered in this scoping study suggests that food-related behaviours are likely to be of low salience to respondents, habitual and only partially rational in the sense that subjects are consciously aware of what is influencing their decisions and choices. Moreover, social desirability bias in responding does appear to be a legitimate concern.

Given these issues, it is important to note that all survey research is subject to both sampling and non-sampling errors; food surveys are not unique in this regard. Researchers need to be fully aware of the challenges faced in their specific area of research and adopt best methods in attempting to address these challenges subject to the budgets available to them. As long as these basic principles are adhered to, surveys will continue to provide an important source of information for policy makers on behaviours, attitudes and dietary intake. Being cognisant of the limitations of the data is vitally important but ultimately surveys are essential because there is no alternative in gaining insights into behaviour and attitudes. In the final analysis, some information, no matter how qualified, is better than no information at all, and methodological advances offer the prospect of improving our ability to record attitudes and behaviours with increased accuracy in the future.

II. The data catalogue

This section focuses primarily on providing an overview of the types of questions contained in the survey data catalogue. Only those questions included in the version of the data catalogue released to the FSA on 12th June, 2009 are referred to in this discussion with the exception of the section on food safety questions, which does draw on examples from the second release of the data catalogue. As mentioned previously, food safety questions are fewer in number generally and therefore the emphasis tends to be on questions around healthy eating. Details of how the data catalogue was created are provided at Annex B.

The data catalogue takes the form of an Excel spreadsheet. Each survey source identified has a separate tab within the spreadsheet. Within this tab, a list of relevant questions from the survey is provided. Where there are multiple waves of data collection for a given survey, an indication is given of the wave in which a particular question was asked. An index is provided for each survey, which enables the user to navigate around the content.

The data catalogue fulfils two main functions. First, it enables FSA researchers to search for questions which have been asked on previous surveys in order to aid the development of new questionnaire items. Thus the catalogue can help inform the new FSA survey of behaviour and attitudes, as well as future survey work more generally. Second, it facilitates the development of new ideas for secondary data analysis by giving an indication of the types of analysis that it may be possible to undertake.

An overview of questions

In this section an overview of the types of questions recorded in the data catalogue is provided. There are a very large number of questions and only a brief summary is provided. The emphasis is on questions that are typical of those asked and on one or two lines of questioning which may be of particular interest to the Agency.

The available questions are divided into those relating to behaviour, which are further sub-divided into those around food intake, food purchase and eating practices. The other groups of questions examined are attitude and opinion questions, questions that test respondents' knowledge, and questions that address concerns over food safety.

The discussion in this section is primarily descriptive, though some good practice pointers are provided and the limitations specific to some of the questions discussed. However, it is important to bear in mind that 'when scrutinized, almost every question is subject to criticism' (Schuman and Presser 1996). The discussion of food-related behaviour questions in this section is supplemented in Section IV with an overview of issues to consider in crafting questions to capture behaviour as well as with discussion of questions relating to food choice.

Behaviour questions – food intake

The vast majority of questions included in the catalogue address food intake or consumption. In order to give a sense of the different approaches taken, questions that attempt to measure the extent of fresh fruit intake are discussed by way of illustration. Examples of such questions taken from the Avon Longitudinal Study of Parents and Children (ALSPAC), Birth Cohort Survey (BCS), and the Health Survey for England (HSE) are set out in Box 1.

The first two questions set out in Box 1 are typical of general questions whose purpose is to capture variation in fruit intake across a sample of respondents. Those being surveyed are typically asked to select a response from a show card which best describes the frequency with which they eat fruit (and many other food items). Questions such as these are sometimes administered through self-completion instruments.

The ALSPAC question asks respondents for the number of pieces of fruit they eat in a week. The question does not appear to mention a reference week or a typical week, though the latter may be implied. Some evidence suggests that allowing respondents to simply record the amount they have consumed may be preferable to providing respondents with a range of pre-coded options or responses to choose from⁶ (see further discussion in Section IV).

The problem with these questions is that ideally they should be more specific about the behaviour they are enquiring after. Broad questions are not always easy for respondents to answer because, for example, the pattern of fruit intake among individuals may vary considerably, making it difficult for respondents to generalise.

⁶ This evidence comes from studies validating food frequency questionnaires.

Moreover, the kind of answer elicited is an impressionistic one and therefore particularly prone to inaccuracies. Because respondents may find questions such as these difficult they look for cues in the rest of the questionnaire for help thus making responses to questions such as these dependent on questionnaire context. In other words, the types of preceding questions asked during the interview can influence the type of response given (Schuman and Presser 1996). This is an important consideration in borrowing questions for a new survey and one which is discussed in more detail in Section IV. Generally, although these questions may be limited in terms of providing accurate point statistical estimates of behaviour, they may still be useful for tracking trends over time.

From 2001 onwards, the HSE asked specifically about fruit consumption on the day before the survey interview – that is over a specific 24-hour period⁷. Thus we can see a development in terms of asking questions which are more specific and away from more general lines of questioning. This item is part of a line of questioning to establish whether respondents are eating five portions of fruit and/or vegetables per day. As such these questions have a very specific purpose, to quantify intake according to specified definitions. In total 6 items are asked in order to determine fruit intake. Generally specific questions, aiming to uncover particular, well defined, behaviours are preferred (Sudman and Bradburn 1982). However, even with more specific lines of questioning, recall errors, varying assessments of portion size and social desirability bias remain problems.

Throughout this scoping study a distinction is maintained between diet and nutrition surveys, and general food behaviour surveys. The literature searches conducted as part of this scoping exercise uncovered a number of studies exploring the validity of research instruments in the case of diet and nutrition surveys. No such methodological studies were found in relation to general behavioural surveys. Whilst not all findings from methodological studies of diet and nutrition surveys will be relevant for more general social food research, these studies emphasise systematic probing of respondents and multiple-pass techniques to improve validity⁸ (Smiciklas-Wright, Mitchell et al. 2002). There are also studies which have examined broader issues of response bias. Smiciklas-Wright et al. (2002) conclude that energy intake tends to be generally under-reported. This under-reporting has been identified where self-reports are compared to separate assessments of energy requirements. Broadly, energy intake appears to be under-reported by:

- Women
- Older people
- The overweight and those previously obese

⁷ Other surveys ask about quantities of food consumed over longer periods. For example the Low Income Diet and Nutrition Survey ask about fruits eaten over a seven day period. Clearly the longer the period over which respondents are asked to recall their eating behaviour the greater concern there must be over recall error; though as we shall see so called ‘telescoping’ becomes less of an issue over longer periods.

⁸ Multiple-pass techniques provide respondents with several opportunities in the questioning process to recall behaviours.

- Those concerned about their weight
- Those with literacy problems; and
- Those suffering from depression (Smiciklas-Wright, Mitchell et al. 2002)

It is likely that these groups may also under-report in more general behavioural, social research surveys and not just in more technical dietary surveys.

Behaviour – shopping and food purchases

Next, examples of questions which seek to elicit respondents' behaviour with regard to food purchases are discussed. The focus is on questions concerning food bought to be consumed at home; though surveys such as ALSPAC and others contain questions on eating outside the home, for example in restaurants and in institutions such as schools. Further attention is paid to survey questions that seek to explore influences on food intake and food purchases in Section IV.

ALSPAC contains a question asking respondents how often they buy fresh fruit, structured along similar lines to the broad questions discussed above on fruit intake (see Box 2). As a result this question suffers from a similar set of limitations. Purchases of other forms of fruit, such as dried fruit were not asked about in the series of questions from which this example is taken.

The British Social Attitudes (BSA) survey asks questions on shopping and travel, and attitudes to the purchase of genetically modified (GM) foods. It also contains questions looking at attitudes to the purchase of highly processed foods.

Box 1: Example of questions examining intake of fresh fruit and vegetables

“In total how many pieces of raw fruit e.g. apple, banana, orange, Satsuma, peach, grapes, strawberries etc. do you eat in a week? (For small fruit such as grapes etc, one “piece” will be a “helping” e.g. a small dish of strawberries or a small sprig of grapes.)” (ALSPAC, 2004)

“How often do you eat fresh fruit?

- More than once a day
- Once a day
- 3-6 days a week
- 1 or 2 days a week
- Less than 1 day a week
- Occasionally
- Never” (BCS, 2000)

“How often on average do you eat a serving of fruit, including fresh, tinned or frozen?

- 6 or more times a week
- 3-5 times a week
- 1-2 times a week
- Less than once a week
- Rarely or never” (HSE, 2000)

“Did you eat any fresh fruit yesterday? Don't count fruit salads, fruit pies, etc.

- Yes
- No

What kind of fresh fruit did you eat yesterday?

- Very large fruit
- Large fruit
- Medium-sized fruit
- Small fruit
- Very small fruit
- Not on coding list

What was the name of this fruit? (Text max 50 characters)

How much of this fruit did you eat? (Text max 50 characters)

Compared with the amount of fruit and fruit juice you usually eat and drink, would you say that yesterday you ate and drank...

- less than usual
- more than usual
- or about the same as usual?” (HSE, 2001-2007)

The NDNS 2008 questionnaire contains a section on the food shopping habits of the ‘main food provider’. Examples of some of the questions contained in the NDNS are provided in Box 2. Social desirability and social approval are likely to be important issues to take into consideration in assessing these questions. Evidence suggests, as we have seen, that in the case of dietary re-call, women are more likely to be influenced by the social desirability response-set than men (Hebert et al. 2001). As women tend to be the ‘main food provider’ it is likely that the social desirability response-set is important in the case of these questions.

Box 2: Examples of food purchase questions from ALSPAC and NDNS

How often did you (or the shoppers in your household) buy the following items in the last month (4 weeks)?

a) Fresh fruit

- Most days
- 2-3 times a week
- Once a week
- Once a fortnight
- Once in the last 4 weeks
- Not at all (ALSPAC)

“Where do you (does your household) mainly buy fresh fruit and vegetables from?

- Large supermarket, including home delivery from supermarket
- Mini supermarket e.g. Tesco Metro
- Local/corner shop (including newsagents)
- Garage forecourt
- Independent greengrocer
- Independent butcher
- Independent baker
- Independent fishmonger
- Market (including stalls or farmer's markets)
- Farm
- Home delivery (including vegetable boxes – not from a supermarket)
- Other
- More than one of these (SPONTANEOUS ONLY)

How often do you buy fresh fruit and vegetables?

- More than once a day
- Once a day
- 2 or 3 times a week
- Weekly
- 2 or 3 times a month
- Monthly
- Every 2 months
- Less often than every 2 months

How often do you usually have FRESH FRUIT available in your home? Would you say...

- Most of the time
- Sometimes
- Or never?” (NDNS, 2008)

The Survey of Public Attitudes and Behaviours Toward the Environment (SPABE) considers the types of shopping respondents undertake. Questions contained within this survey look at fair-trade shopping and barriers to purchasing more environmentally friendly food.

Behaviour – eating and cooking practices

The data catalogue also contains a range of questions exploring the circumstances in which respondents eat and how they prepare food. One study, which appears to contain a lot of items on food preparation and eating within the home, is the Low Income Diet and Nutrition Survey (LIDNS), suggesting that there has been particular policy concern around eating habits in poorer households. Generally, there appears to be a greater variety in approaches to eliciting information about respondents’

behaviours in these areas, reflecting possibly a wider range of concerns or less of a consensus about how best to ask such questions.

One type of question frequently asked of respondents in a number of surveys concerns the patterns of eating through the day. A typical example of such a question from the LIDNS is presented in Box 3. Again, note that no specific time frame is mentioned other than a 'week day'. In such cases there may be advantages to asking about such behaviour over a specific time period such as the preceding 24 hours.

Box 3: Examples of questions relating to eating and cooking behaviour

“On a weekday at which of the meals or snack times would you normally eat or drink something?

Early morning (before breakfast)
Breakfast time
Mid-morning
Mid-day
Mid-Afternoon
Late afternoon
Evening time
Late evening
Late night or during the night” (LIDNS, 2007)

“I would now like to ask some questions about things your family may do together. How often do you eat together as a family. (By family I mean you ([Spouse's/partner's name]) and any children aged 16 or under who live in your household whether or not they are your natural children?)

More than once a day
Once a day
Not every day, but at least once a week
Not every week, but at least once a month
Never/hardly ever
It varies
Can't say” (BCS 2000 and 2004)

“Please describe how you usually prepare beef steak, that is if you (or anyone in your household eat(s)) it.

Boil, Stew or Casserole
Steam
Roast or Bake
Fry
Stir-fry
Grill
Microwave
Sauté
Any other way of cooking
Do not prepare/eat this food” (LIDNS, 2007)

**“Would you be able to make the following foods and dishes from beginning to end?
... A main dish from basic ingredients (e.g. shepherd's pie, curry)?**

Yes, with no help at all
Yes, with a little help
Yes, with a lot of help
No, not at all” (LIDNS, 2007)

There are a number of questions asked about the extent to which families eat together. In this vein, the second question in Box 3 comes from the Birth Cohort

Survey (BCS) and was asked in the years 2000 and 2004. In a number of studies, for example in the British Household Panel Survey (BHPS), children and young people are asked whether they eat with their families. As we have noted elsewhere, some studies specifically explore the extent to which respondents eat out (for example ALSPAC).

Other questions ask about cooking practices and individuals' confidence in preparing food. Examples of these are also given in Box 3. The LIDNS survey asks how respondents' usually prepare 'beef steak' giving a number of potential responses. A problem with this approach is that respondents may use a variety of cooking techniques and find it difficult to say which approach they 'usually' adopt. The fourth question in Box 3 addresses the ability of the respondent to cook; that this, the respondent's assessment of their proficiency. Here respondents, particularly female respondents, may be unwilling to admit their inability to prepare food dishes from scratch. Moreover, respondents' views as to what constitutes 'help' may also vary. The NDNS has a large range of questions on food preparation and cooking skills. Surveys also contain questions asking whether respondents are attempting to change their eating patterns, and if so, how successful they are at maintaining such behaviour over time. Questions typically ask whether respondents are trying to cut down on the amount of food they eat, eat less fat or eat more fruit and vegetables. Examples of such questions can be found on the Health Education Population Survey (HEPS).

The variety of questions on eating practices can be illustrated further through considering the 2007 LIDNS questionnaire. Aside from those questions discussed above, the LIDNS questionnaire also contains questions on dieting and vegetarianism and questions asking respondents and their children whether they eat the skin on fruits and so forth. The survey contains an interesting set of questions about how respondents eat, whether they change their behaviour in response to weight gain, eat in response to stressful events and how much self-control respondents' exercise over their eating.

Attitude and opinion questions

Attitude and opinion questions tackle subjective views and understandings. Thus an assessment of their reliability and validity comes less from how far they measure 'true' attitudes and opinions (because these are unobservable) but ultimately from the extent they possess explanatory power. In other words, knowledge of a person's attitude or opinion concerning a particular issue may be of little use unless that knowledge helps us understand their subsequent behaviour.

In this section we examine attitudinal questions that can be found in the data catalogue. For the sake of brevity, our discussion excludes items in an obvious source of attitudinal questions – the BSA – but instead focuses on the types of items found in other survey sources, which the Agency may be less familiar with. It is worth keeping in mind that responses to attitude questions are generally considered more sensitive to wording than behavioural questions (Sudman and Bradburn 1982). This is because attitude statements, unlike behavioural questions, do not concern matters of fact and are susceptible to a wide range of influences and effects. Moreover, questions very often cover issues which respondents may be

unfamiliar with and therefore find it difficult to answer, leaving them open to the effects of question wording and placement. Furthermore, there can be confusion in the minds of the respondent as to what the 'attitude object' is – in other words, the respondent may understand the question in a different way to the researcher and understandings may be prone to subtle influences stemming from questionnaire context.

There are a diverse range of attitude or opinion questions included in the catalogue. Many of them focus on parents' attitudes to their children's food-related behaviours, examples of which can be found in the ALSPAC, Growing up in Scotland Survey (GUSS) and the Office for National Statistics (ONS) Omnibus surveys. These questions often extend to seeking parents' views about how easy it is to manage the diet and eating behaviours of their children, and questions asking parents to assess their child's general relationship with food. The ONS Omnibus survey has also contained questions exploring parents' views of food advertising targeted at children. There are also a lot of questions assessing attitudes and experiences around alcohol consumption. Questions are addressed to both adult and teenage respondents. Many of these types of questions are administered through self-completion instruments.

Both HEPS and HSE, among others, contain whole sections dedicated to exploring attitudes toward healthy eating. Box 4 contains examples of some of the questions asked on the HSE. The questions are based on a Likert-type scale approach. They allow for no-opinion or 'can't choose' and contain a middle position of 'neither agree nor disagree'. It is not uncommon, however, to find attitude questions without either of these options. The general advice on question wording and design is to offer a no-opinion option as there is a noted tendency for respondents to 'manufacture opinions on the spot' (Converse and Presser 1986). Similarly, the general view among researchers is that without a middle position some respondents are forced to overstate the intensity of their opinions.

Other types of attitude items to be found in the data catalogue include those which specifically address dieting, and opinions about how a respondent's diet might be improved (HSE). Other questions seek respondents' views on how important healthy eating is to them. Such questions are often included in order to determine a respondent's intensity of attitude or opinion. The LIDNS seeks respondents' opinions on how easy it is to have a healthy diet. Some opinion/attitude data are collected in order to determine the extent to which respondents are likely to under-report energy intake in dietary surveys; for example in the NDNS. (Reinne, Siervo et al. 2006).

One line of questioning, which it may be helpful to consider in the future is to seek respondents' views as to whether they believe a more healthy diet might improve their health or other aspect of their wellbeing. There *do not* appear to be any examples of such an approach in the surveys examined here. This suggestion follows from an understanding that respondents are more likely to change their behaviour if they can see clear benefits from doing so.

Box 4: Example of questions on attitudes to healthy eating taken from the HSE (2007)

Here are some statements about eating. Please could you say whether you agree or disagree with them.

The tastiest foods are the ones that are bad for you

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Can't choose

Healthy foods are enjoyable

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Can't choose

I get confused over what's supposed to be healthy and what isn't

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Can't choose

I really care what I eat

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Can't choose

Healthy eating is just another fad

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Can't choose

If you do enough exercise you can eat whatever you like

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
- Can't choose

Overall, would you say that what you usually eat is...

- Very healthy
- Quite healthy
- Not very healthy
- Very unhealthy

Questions exploring respondents' knowledge

There are some general issues which need to be considered in thinking about questions which seek to determine a respondent's knowledge. The following points are worthy of note:

- Respondents can find such questions threatening – particularly when they have little knowledge of the subject
- Respondents can guess or 'over-claim', particularly where they are seeking to hide their lack of knowledge
- The 'threat' knowledge-testing questions represent can be reduced by including 'fake' easy items
- Questions can be worded to make them less threatening and 'don't know' can be mentioned as a possible response
- In order to detect whether respondents are guessing, fictional question items can be included

The BSA contains a range of questions which test respondents' knowledge of genetic modification, understanding of new food technologies and issues around food safety. It also contains a question which seeks to determine whether respondents' attitudes to new food technologies are dependent on their familiarity with the technology. In the 2008 survey, respondents were asked whether they are concerned about eating food which has been microwaved and in a second question whether they are concerned about the use of a magnetron (a device contained within a microwave) in food preparation.

The HEPS contains questions testing respondents' knowledge of recommended intake of fruit and vegetables and alcohol consumption. The HSE also contains questions testing respondents' knowledge of recommended guidelines for alcohol intake and an assessment of respondents' understanding of what constitutes a unit of alcohol. The same study tests respondents' understanding of various issues around healthy eating – for example, what constitutes a portion of fruit? What behaviours might be important toward healthy eating? And what the official guideline amount of daily salt intake is? NDNS asks respondents questions concerning the storage of food. Finally, the ONS Omnibus survey in February 2002 asked respondents a number of questions about their understanding of both healthy eating and alcohol consumption.

In some ways knowledge questions are similar to attitude questions, in that the interest is ultimately whether knowledge influences behaviour. In this regard, it should be noted that some recent studies uncovered through this scoping exercise show that healthy eating behaviours are related to knowledge (Wardle, Parmenter et al. 2000; Holdsworth, Raymond et al. 2004). In fact, the relationship between healthy eating and indicators of social class, which tend to show that those in higher socio-economic groups eat more healthily, is often mediated through knowledge. In other words, individuals from higher socio-economic groups eat more healthily partly because they are better informed, which may further stem from being highly educated.

Food safety questions

The initial version of the data catalogue submitted to the FSA contained very few examples of questions eliciting respondents' views on food safety issues. As mentioned in the previous section, a small number of such questions have appeared on BSA and were included in the catalogue. In completing the data catalogue for final release, however, more examples of food safety questions were uncovered. It was decided therefore to use these examples together with those questions from BSA contained in the initial release of the catalogue as examples in a discussion of examples of food safety questions. It should be noted that this is the only point in this paper where examples are drawn from the finalised data catalogue.

Box 5 contains three examples of the types of questions concerning food safety found in the data catalogue. These are general questions seeking to capture broad concerns about the UK food supply, concerns relating specifically to GM foods (which appear to make up the majority of food safety questions) and questions relating to specific food scares. Not shown in the Box, are questions which elicit views on novel foods, which often have a food safety dimension to them.

The general question on food safety concerns comes from BSA. Given its broad nature, it is possible that responses to it are influenced by its location in the BSA questionnaire and the items that immediately surround it. As a result, if it is to be borrowed for use in a new survey, this should be done with caution. Respondents may also not be clear about what 'food safety' actually means at an abstract level and it might be advisable for this question to focus instead on concerns individuals might have in purchasing or eating specific foods.

The second question in Box 5 contains a number of statements concerning GM foods, which respondents are asked whether they agree or disagree with. Some of these items clearly relate to concerns over the safety of GM foods. Respondents are asked whether eating GM foods is likely to be harmful to them and whether existing regulations are adequate in terms of protecting the public. Together, it appears that these items might represent a scale which measures the extent to which respondents are positively disposed to GM.

Finally Box 5 contains a question which looks specifically at issues surrounding a specific food-related crisis, in this case foot and mouth disease. It asks respondents to assess the government's effectiveness in handling the crisis. Responses to this question will clearly be affected by framing effects. In other words, how the media reported the crisis and general levels of expectations with regard to the effectiveness of government.

In summary, there are far fewer examples of questions which attempt to capture attitudes and behaviours around food safety. It is possible, that specialist surveys not covered in the data catalogue do ask questions regarding food safety. The majority of the questions uncovered in this scoping exercise, however, are attitude or opinion questions. This may be because it is inherently difficult to ask respondents about their behaviours in terms of food safety.

Box 5: Questions on food safety

“Generally speaking, which of these best describes your level of concern about food safety in Britain? By food safety, we mean things like food allergies and hygiene when storing and preparing food.

Very concerned
Fairly concerned
Not very concerned
Not at all concerned
(Don't know)” (BSA, 2008)

“Please tell me whether you tend to agree or tend to disagree with each of the following statements?

Genetically modified food will be useful for me and other consumers
Genetically modified food will be useful in the fight against third world hunger
Genetically modified food and crops will only be good for industry and not for the consumer
In the long run, a successful (NATIONALITY) genetically modified food industry will be good for the economy
Genetically modified food poses no threat to future generations
Eating genetically modified food will be harmful to my health and my family's health
Genetically modified food threatens the natural order of things
I think it is safe for me to eat genetically modified food
I will be able to choose whether I eat genetically modified food or not
Whatever the dangers of genetically modified food, future research will deal with them successfully
Current regulations are sufficient to protect people from any risks linked to genetically modified food
Growing genetically modified crops will be harmful to the environment
I am sure about my opinions about genetically modified food
It is easy for me to form an accurate judgement on genetically modified food
It is important for me to have an accurate judgement on genetically modified food” (Eurobarometer)

“Do you think that the government handled the recent Foot and Mouth Disease situation adequately? (please select one answer from the BOXES BELOW)

definitely not
probably not
neither no nor yes
probably
definitely” (Public Perceptions of Food and Farming - PPFF)

III. Literature searches

This brief section describes the outputs from the literature searches which formed part of this scoping study. As described in the introduction to this paper, the scope of the searches is limited. Annex C describes in detail the methodology employed in undertaking the searches.

Two Endnote databases form the outputs from the literature searches⁹. The first contains the results of searches that sought to uncover studies exploring attitudes and behaviours around healthy eating and food safety. 258 studies are included on this database and the studies are organised into groups based on a categorisation of the types of research questions addressed (further details in Annex C). The objective of the database is to allow FSA researchers to identify and access recent literature on healthy eating and food safety, in order to inform thinking on the direction of future research.

As has been described, searches for methodological studies were also undertaken and also saved in an Endnote database. In total details of over 300 studies are included. These studies cover issues of 'reliability' and 'validity' in food-related survey research (mainly diet and nutrition studies) and other studies uncovered through preliminary searches, as well as studies looking at social desirability bias. The studies can be interrogated in order to aid the FSA in developing new surveys through drawing on findings from the methodological literature.

Endnote enables the FSA to search the databases for relevant studies. The citations in most cases contain links, over the Internet, to a Portable Document Format (PDF) version of the relevant paper (access to the PDF will be available where the appropriate subscriptions are in place). Citations contained within the databases in most cases include abstracts which can be searched for relevant content using Endnote's search facilities.

⁹ See footnote 1 above for further details on Endnote.

IV. Survey design issues

Attention now turns to a number of methodological issues identified as priorities by the FSA. These issues are:

- Capturing or recording behaviour accurately in surveys
- Social desirability bias
- Causation and assessing change over time in surveys
- Questions capturing influences on food choice
- Borrowing questions from other surveys and question order effects.

The material which follows touches on some of the main issues in relation to these areas.

Reported behaviour

One of the primary concerns of the Agency is the measurement of food-related behaviours in surveys. That is, how accurately can respondents to surveys report their food-related behaviours? Discussion of issues in measuring behaviour with regard to *specific questions* contained within the data catalogue was provided in Section II. In this section, a more general discussion of question design is provided. In doing so, the discussion draws heavily on material from some of the classic survey question design texts (Sudman and Bradburn 1982; Converse and Presser 1986; Schuman and Presser 1996). An attempt is made to relate insights from these texts to pertinent issues in food-related research faced by the Agency.

In almost all cases, questions regarding behaviour require respondents to remember or recall their behaviour. This is no less the case in food research except where food diaries are concerned. As a result, approaches to question wording and design that aim to help respondents recall information are, in the main, the focus of the discussion here. Question wording issues as they relate to attempts to reduce social desirability bias are discussed in the following section.

Useful strategies to improve the reporting of behaviours include:

- Making questions specific
- Getting the wording right
- Providing cues in the question wording that might aid recall
- Identifying the most appropriate time period over which to ask about behaviours
- Obtaining information from records held by the respondent
- Using diaries
- Adjusting question length
- Systematic probing.

As has been suggested elsewhere in this paper (see Section II), questions that are specific rather than general are best in eliciting information regarding behaviour. Respondents will find specific questions easier to answer, encouraging their cooperation with the survey. General questions often require respondents to make a

number of decisions about what is meant by the question and thus the potential for respondents to come to different understandings is greater. As has been seen, respondents often struggle to answer broader questions and this can lead them to look for cues on how to answer the question from the survey interview itself. Broadly speaking, it is good practice to ask respondents about their behaviour over a specific time period, e.g. 'in the last 24 hours ending midnight just gone', and to make sure that the term 'you' is properly understood. There can often be confusion between 'you' referring to the collective household or family, and 'you' referring to the individual (Sudman and Bradburn 1982).

It may seem obvious but it is also important to make sure that familiar words are used in the question. Researchers can sometime be surprised at how respondents interpret certain words. Pre-testing of questions is particularly important in uncovering problems with the form of words used in survey questions.

In many types of research where respondents are asked to report their behaviours, cues can be provided within questions in order to aid recall. This often takes the form of providing examples or sometimes show-cards to prompt respondents. Recall cues should be used very carefully, however. Where examples are given any list should be comprehensive, otherwise the researcher risks prompting respondents to recall certain behaviours at the expense of others. So for example, a question worded 'Did you eat any fresh fruit yesterday? For example at breakfast, lunch or evening meal?' may lead respondents to under-report fruit eaten between main meals.

One of the main concerns is the time period over which respondents are asked to recall the relevant behaviour. There are two key issues driving recall error: the amount of time which has passed since the behaviour or event, and the saliency of the event (Sudman and Bradburn 1982). Saliency in turn relates to how commonplace or routine the behaviour is, the costs and benefits associated with the behaviour and the consequences which flow from it. Much food-related behaviour has low saliency, which means that respondents will have difficulty remembering events after a short period of time has passed. As Sudman and Bradburn (1982) put it: 'the purchase of a food item is a low-cost, habitual act with no continuing consequences'. The low saliency of food-related behaviour explains why recall questions usually ask respondents for their consumption of food items over a very recent and short period of time (Smiciklas-Wright, Mitchell et al. 2002).

The general advice to limit the period over which individuals are required to report certain behaviours is to some extent complicated by the problem of 'telescoping'. 'Telescoping' refers to the tendency of respondents to recall certain behaviours without being able to remember precisely when the event or behaviour took place (Sudman and Bradburn 1982). In such cases there is a tendency for respondents to claim the behaviour occurred within the time/reference period associated with the question item; such a tendency leading to over-reporting. For example, a survey question may ask a respondent to report the number of pieces of fruit consumed over a recent 24-hour period. The respondent may recall that they consumed several pieces of fruit in the last week but not remember precisely when and therefore have a tendency to report the fruit to have been consumed in the 24-hour period the question is concerned with. The problem of 'telescoping' becomes more of an issue the shorter the time period over which respondents are asked to report their behaviour but also with higher saliency events (working in the opposite direction).

In food-related research there is therefore a trade-off between defining a reference period for the sake of specificity and making that time period short due to issues around recall and saliency, and the need to be mindful of the potential for telescoping.

One possible method for improving the accuracy with which behaviour is recorded is to attempt to find documentary records which capture the events or behaviours of interest. This may be particularly pertinent where there is an interest in recording food purchases. In such circumstances researchers can ask respondents to keep till receipts for later inspection. Clearly, however, minor purchases made using cash will not always generate the kinds of records required and therefore there is a risk of under-recording.

In the case of low salience behaviours the literature appears to recommend the use of diaries. This is clearly why food diaries have been a consistent feature of nutrition and dietary research in the UK. Diaries offer the prospect of respondents recording relevant behaviours over very short time intervals; for example, as they prepare food. However, diaries have drawbacks. First, they are demanding of respondents who may be tempted to cut corners in recording information: very often respondents are required to weigh food as part of their record keeping¹⁰. Second, because they are potentially intrusive respondents may refuse to cooperate not just with the completion of the diary but with the survey effort in its entirety. Thirdly, diaries are expensive to administer to the point where limited survey budgets place diary research instruments often beyond reach. Fourthly, because diaries effectively place eating habits under close scrutiny, there is a risk that some respondents might alter their behaviour. They may do so for reasons of social desirability, or because recording their dietary behaviours throws into sharper relief the quality of their diet. Thus some respondents, for example, may be tempted to switch to healthier foods during the period of observation¹¹ and possibly beyond. In this sense a food diary may 'condition' the response. Finally, in most diary exercises a minimum level of literacy and numeracy are required, which can effectively exclude some respondents (Smiciklas-Wright, Mitchell et al. 2002).

Question length may have an impact on the recall of behaviours. Research appears to suggest that the reliability of responses to attitudinal items declines as the length of the question increases (Sudman and Bradburn 1982). In contrast, longer questions can improve the recall of behaviour. Some of the reasons for this are linked with the previous discussion - longer questions can include memory cues to aid accurate recall. But moreover, longer questions give respondents more time to think. Furthermore, the amount of information given by respondents appears to be linked to the length of the question and may lead to respondents remembering events they might otherwise have forgotten.

¹⁰ In other circumstances various aids can be made available to help respondents estimate the size of the portions they are consuming. In other examples, diaries have been kept by observers.

¹¹ Instructions are usually issued to respondents requesting that they keep to their usual diet and food practices.

Unfortunately again, there are trade-offs to be made with regard to question length. Longer questions may aid recall of behaviours which might be considered socially undesirable, such as the consumption of salt for example; but lead to over-reporting of socially desirable behaviours such as intake of fruit and vegetables, partly through the tendency to telescope.

Finally, as discussed in Section II, probing of respondents can encourage recall of low saliency events. Research into the efficacy of self-reports of food-related behaviours has suggested the use of multiple-pass, or multiple lines of questioning as strategies to tackle widespread under-reporting.

To summarise; the best advice is to borrow existing questions from other surveys where possible, particularly where steps have been taken to tackle many of the design trade-offs discussed here. Important question items should be carefully pre-tested even where they are borrowed from existing surveys. Using specific time periods is generally advisable and in the case of food-related behaviours these time periods should be recent and short in duration. Where field work is conducted over an extended period of time and on all seven days of the week, 24-hour recall is probably the best approach. Systematic probing by interviewers appears to be useful in aiding recall and improving accuracy, particularly on items where under-reporting is likely.

Social desirability

‘Social desirability refers to the tendency to respond to self-report items in a manner that makes the respondent look good rather than to respond in an accurate and truthful manner’ (Holtgraves 2004). Social desirability bias was raised as an issue in attitude and opinion research as far back as the 1950s (Horton-Smith 1967). The impact of social desirability in self-reports elicited through market and consumer research has also received attention (King and Bruner 2000). More pertinent to the current discussion, social desirability effects have been analysed in the context of diet and nutrition research in a number of studies.

King and Bruner (2000), in their review of the literature, suggest circumstances in which social desirability effects are more likely to be present. These are where research is based:

- Primarily on self-reports
- Covers highly sensitive topics
- Where there is less anonymity in responding
- Where respondents’ anticipate their response is likely to provoke ‘normatively influenced or evaluative consequences’ (King and Bruner 2000). In other words where a response is expected to bring about some kind of normative judgement

Moreover, social desirability effects may be more prevalent among certain groups. King and Bruner, for example, report that the effects of social desirability decline with age.

A cursory glance at these circumstances suggests that social desirability biases will be present in food-related behavioural self-reports and attitudinal research. It is possible to imagine a number of scenarios where respondents might be tempted to respond in a manner which they perceive presents them in a more positive light. For example, the 2007 HSE reveals that 78 per cent of adult female respondents and 62 per cent of male respondents identified correctly that five portions of fruit or vegetables should be eaten per day (Craig, Shelton et al. 2008). Given that such knowledge is widespread, it can be anticipated that some respondents, asked about fruit and vegetable intake, might be tempted to over-report their consumption. Moreover, it also seems plausible that mothers may be tempted to under or over-report when it comes to certain aspects of their children's diet. Moreover, most studies based on large-scale UK data sources, such as those contained within the data catalogue discussed above, mention the possibility of social desirability effects as a potential source of bias (Craig, Shelton et al. 2008).

There are a number of approaches that can be taken to minimise the effects of social desirability bias¹². First and most obviously, steps can be taken to ensure question wording is balanced with respect to likely social desirability effects, or is neutral (Horton-Smith 1967). Sudman and Bradburn (1982) outline a number of question wording and questionnaire mode strategies that aim to limit social desirability bias. These strategies include:

- Open questions – usually respondents might be asked to select a certain pattern of behaviour from a show card; the frequency of consuming a specific food item for example. With closed responses the respondent who, for example, eats no fruit would be required to select a response at the extreme. If respondents tend to avoid extremes this can lead, in the case of fruit consumption for example, to over-reporting. Asking simply how many pieces of fruit a respondent has eaten over a given period may ameliorate this problem
- Use of long questions – in some instances these have been found to reduce under-reporting of social undesirable behaviour – a sensitively worded preamble can be particularly useful in emphasising that there is no wrong or right answer. Question length should, however, be minimised in the case of attitudinal items
- Using language familiar to the respondent can also reduce under-reporting of social undesirable behaviour
- Deliberately loading questions. For example, where there is a tendency to under-report, commencing a question with a phrase implying certain behaviours are commonplace, or well established.
- Embedding questions – placing a question that a respondent may find threatening amongst questions which make the item appear less threatening. The classic example given by Sudman and Bradburn being a question about

¹² For a fuller treatment of the subject social desirability bias see Paulhus, D. (1991). *Measurement and control of response bias in The measurement of personality and social psychological attitudes*. J. P. Robinson, P. Shaver and L. Wrightsman. New York, Academic Press. 1: 17-59.

shop-lifting asked after a series of questions concerning more serious criminal offences

- Using self-completion may reduce social desirability bias in some circumstances. This is because self-completion may provide the respondent with a greater sense of anonymity.

Steps can be taken to ensure the means by which the survey questionnaire is administered does not encourage social desirability bias. The characteristics of interviewers themselves can be significant and any reassurances they give can be important (King and Bruner 2000).

Psychologists working with self-report data derived from social surveys have devised a number of scales which purport to measure the social desirability 'response set'. These scales can be incorporated into research in a number of ways in order to adjust for potential biases. Two of the most widely discussed scales are the Marlowe-Crown Social Desirability Scale (MCSDS) (See Annex F to this paper for details of the items included), developed in the 1960s, and the Balanced Inventory of Desired Reporting (BIDR) developed by Paulhus in the 1980s. Various short forms of MCSDS have been tested and validated for use in a variety of settings (Thompson and Phua 2005).

During the development of a questionnaire, data can be collected from smaller pilot samples and individual test items evaluated for their relationship with a social desirability response scale such as MCSDS. Problematic items can then be eliminated prior to fieldwork. Social desirability question items can also be collected alongside substantive items in the main survey instrument. There are then a number of steps which can be taken in analysing substantive items and scales that adjust either mechanically or statistically for bias. It should be noted, however, that recent research has suggested exercising caution in using scales to adjust for social desirability bias (Leite and Beretvas 2005)¹³.

In searching the literature as part of this scoping project, a number of food research studies were identified where social desirability bias has been addressed. In maintaining the distinction between diet and nutritional research on the one hand and behavioural studies on the other, almost all the studies identified addressing the issue of social desirability, were diet and nutrition studies.

One identified study explored healthy eating choices on the basis of a number of psychological theories of behaviour (Armitage and Conner 1999). The authors find no significant effect of social desirability bias on their models. By contrast, James Hebert and colleagues from the Arnold School of Public Health, University of South Carolina, have undertaken a series of studies examining the impact of social desirability and social approval biases on dietary intake self-reports. They find that:

- Social desirability is negatively correlated with reports of dietary intake. In other words, the higher an individual scores on a social desirability response

¹³ This research criticises statistical techniques used in previous analyses to confirm the underlying structure of the MCSDS and the BIDR. The research urges caution in the use of social desirability scales until their properties are better understood.

scale (in this case MCSDS) the more likely they are to report lower food intake (Hebert, Clemow et al. 1995)

- The bias is greater among women than men and among those whose nutritional intake was highest (Hebert, Clemow et al. 1995; Hebert, Ma et al. 1997; Hebert, Hurley et al. 2008)¹⁴
- No effects by race (Hebert et al. 2001)
- Some evidence that women with higher levels of education were likely to under-report energy, fat and protein intake in Food Frequency Questionnaires (FFQs) compared to women with less education (Hebert et al. 2001). However, later studies using a short form of the MCSDS find no such effects and furthermore, that individuals with less education tended to respond with bias to questions regarding fruit and vegetable intake (Hebert, Hurley et al. 2008).

Other studies find that fruit and vegetable consumption tends to be overstated by both men and women as a result of social desirability bias (Barros, Moreira et al. 2005). A word of caution is warranted, however; some of the studies discussed here are based on small samples and on analyses of specific subgroups of the population. Nonetheless, they do seem to reinforce an often unsupported assertion that self-reports of behaviours around food (particularly intake) are subject to social desirability biases.

How might the FSA respond to this debate in terms of commissioning a new survey of attitudes and behaviours? At the very least, when developing new survey items, the issue of social desirability bias should influence the design and wording of survey questions. As mentioned above, general or broad questions are more likely to be influenced by biases than specific questions; however, that is not to say that specific questions don't pose problems. Any new questionnaire will require piloting. It might therefore seem sensible to include in any pilot a short-form of the MCSDS in order to test items statistically for bias prior to the main stage fieldwork. As a result, pre-pilot work will be required to identify an appropriate short-form of the MCSDS. Alternatively, a suitable omnibus survey might be considered as a means of testing social desirability scales. Finally, the potential for making greater use of self-completion should be examined.

Change over time and causation

For the FSA, the primary concern of policy is to change behaviour; specifically to encourage healthy eating and food safety practices. Attitudes and knowledge are second-order issues and of interest to the extent that they help explain behaviour. If government wishes to intervene to encourage healthy eating for example, evidence is required as to which factors are likely to *determine* (rather than simply be correlated with) a better diet. Policy leavers can then be targeted at these factors in order to influence behaviours in the desired direction. As a result, the nature of the evidence required for policy is 'causal'.

¹⁴ Some studies find a role for social approval in dietary self reports among men. See Hebert, J. R., Y. S. Ma, et al. (1997). "Gender differences in social desirability and social approval bias in dietary self-report." *American Journal of Epidemiology* **146**(12): 1046-1055. Whilst others find no effect.

The questions to which we turn now concern the types of causal evidence that can be gained from surveys? What kinds of analyses can be undertaken in order to identify causal relationships in survey data? And what are the implications for question design and wording?

In many ways panel data are preferred for studies which attempt to examine cause and effect. That is not to say that they are 'perfect' and that other survey designs have nothing to offer causal analysis. Panel studies involve repeat interviewing of a sample of respondents¹⁵, often over an extended period of time. Understanding Society and BHPS are both examples of panel surveys. There are also many examples of panels in commercial and market research. Panel survey data permit the analyst to determine the temporal order of events – whether cause precedes effect – and because data are available on the same individual over time, account for unobserved influences which are likely to influence behaviour.

Panel studies do, however, possess certain drawbacks. They are very expensive to conduct, partly because they involve a substantial effort in maintaining contact with panel members over a prolonged period. The resources required very often place them beyond the reach of available budgets. Panel data sets also suffer from sample attrition; that is over time respondents drop out of the sample, resulting in a risk that the study sample becomes less representative. Panel studies very often involve complex following rules that determine whether respondents remain in the sample when their situation changes, or refreshment strategies, that seek to ensure the sample remains representative of the wider population. Moreover, the data take time to accrue before studies of cause and effect can be reasonably conducted using the data. Finally, panel conditioning effects may be present in the data. This means that an individual's responses are affected by their presence in the panel sample rather than by any substantive influence. Sudman and Bradburn (1982) mention the possibility that responses collected over time from the same individuals may be less affected by social desirability bias as individuals become more familiar and comfortable with the study.

For these reasons, policymakers and analysts often implement cross-section studies, which are repeated over time, in order to analyse change. These designs involve the selection of an entirely new sample before each wave of fieldwork. These types of designs possess a number of benefits:

- They are relatively cheap and cost effective compared to panel studies
- By their nature, they do not suffer from problems of sample attrition, though non-response generally is still an issue
- Samples from a number of waves can be pooled relatively simply, providing potentially large samples of smaller groups for analysis
- They permit the analysis of trends over-time, and where conducted over a number of years, analysis of age, period and cohort effects

¹⁵ In contrast to panel surveys, birth cohort surveys although collecting repeat observations on the same individuals, do not seek to be broadly representative of the population as a whole but merely those born during a specified period.

- There are no panel conditioning effects
- Multivariate statistical analysis can be used to undertake causal analysis
- Such designs can be adapted, in certain circumstances, to evaluate policies or programmes.

Undertaking multivariate statistical analysis, on the basis of cross-section data, can provide convincing evidence of cause and effect. Although the reliance on cross-section data means that, generally, stronger assumptions are required to underpin the analysis (see bullet points immediately below). Such an analysis of cross-section data can be particularly effective where existing theory is available to guide the analysis and aid in the interpretation of findings; and where a convincing case can be made that:

- There are not likely to be confounding factors uncontrolled for in the analysis; and
- It can be reasonably assumed that the direction of causality does not run counter to that implied by the analysis.

To illustrate these points, consider analysis which seeks to determine the relationship between ethnicity and whether individuals eat five portions of fruit and vegetables per day. Multivariate statistical analysis will enable us to separate out the effects of ethnicity on whether individuals eat 5-a-day from other variables such as income and educational attainment (these variables are called confounds). What 'other' variables are to be included in the analysis can be determined through consulting previous empirical research and any theoretical studies, and will vary, depending on the nature of the outcome being analysed. Generally, however, the analyst would want to control for a range of socio-demographic factors which are typically available on large-scale social surveys (such as housing tenure, household structure, employment, age, sex, education, income and so on). Furthermore, in the case of ethnicity, the direction of causality almost certainly runs in one direction. In other words, ethnicity determines whether individuals eat five portions of fruit and vegetable per day. It would not be plausible to suggest, to the contrary, that the number of portions consumed in a day determined someone's ethnicity. Therefore cross-section data can provide the opportunity to analyse the causal effects.

As mentioned above, repeat cross-section surveys can be used, in certain circumstances, to evaluate the impacts of policies, by exploring change over time. Waves of cross-section data collected prior to the introduction of a new policy or intervention can be compared to waves of cross-section data collected after the policy has been introduced, where the data contain measures on key outcomes. In other words, repeat cross-section samples can be used to construct a classic pre- and post-test evaluation design. Such a design is strengthened if sample members can be found who, for one reason or another, were not exposed to the policy or intervention and therefore can act as a comparison group. All of this said, it is important to note that policies would need to have relatively large effects in order to be evaluated convincingly through such a design; though it is important to note that the position in this regard is not necessarily strengthened to any substantial extent if panel data are available.

What implications does this discussion have for questionnaire design and content? When deciding on questionnaire content it is important to have in mind the kinds of analysis that will be performed on the data. Such consideration will inform the types of data that will need to be collected. Where surveys, however, are multi-purpose and seek to address a range of questions, compromises in terms of questionnaire content will inevitably be required. In such circumstances it is important to have clear priorities as to which analyses are most important. Second, where change over time is the focus of the analysis it is important to maintain consistency in question wording and placement in successive waves of data collection. In practical terms this requires significant effort in questionnaire design prior to the launch of the study to ensure that the chosen questions are valid and reliable, and will not subsequently need to be revised. Borrowing questions from existing surveys is often advisable as is thorough testing and piloting prior to the commencement of data collection.

Finally, we come to the issue of whether there are any direct implications for question wording in analysing change over time and cause and effect. The only circumstances in which question wording is affected by the requirement to undertake causal analysis (or analysis of change over time) is in the case where respondents are asked for their opinion on how far a policy or intervention has affected their behaviour. Such approaches are generally not recommended and are not seen as providing particularly convincing evidence. Generally the issue is less to do with question wording and more a case of which questions should be included, the structure of the data and the types of statistical analysis conducted.

Food choice questions

Developing questions to capture the process through which individuals make choices about the foods they purchase and eat is a key methodological concern for the FSA. The Agency has placed questions attempting to assess such processes in three surveys over the last 12 months. These include the BSA Survey¹⁶ and the Agency's own surveys: the Public Attitudes to Food Issues and the Sustainable Development in Food Policy surveys. In this section, these questions are first described by way of identifying the crux of the problem from the Agency's perspective. Examples of alternative approaches found in the data catalogue are presented. A general assessment of the approach these questions represent is provided. Relevant literature contained within the bibliographic databases provided as part of this scoping exercise is briefly described. Finally some suggested ways forward are outlined in Section V.

Annex D to this paper sets out the questions on food choices used by the Agency over the last 12 months or so. The approaches taken can be grouped into two broad sets of questions: those relating to food purchase and those relating to food eaten. In the Sustainable Development in Food Policy Survey, respondents are asked to identify the issues considered in choosing the food they purchase. They are shown a list of factors which might influence their choices and asked to select those they consider when choosing the food they buy. The order in which the list of issues is presented to the respondent appears to be rotated, presumably on a random basis. Respondents are then asked to rate each factor/issue on a scale of one to ten, where

¹⁶ The LIDNS contains a question similar to that included in the 2008 BSA.

'10' represents an issue of high importance and '1' low or no importance. Where more than one item is assigned a '10' by the respondent, they are asked further to rank these items in order of importance.

Annex D also contains a similar type of question placed in the 2008 BSA. Here the respondent is asked to identify the 'influences' which guide choices over the food they eat, rather than purchase. The focus is on food eaten in the home. Respondents are shown a card from which they can select influences important to them. Again respondents are presented with a long list of potential influences and primacy effects are clearly a concern. Moreover, there does not appear to be rotation of response categories.

These types of questions can be seen as problematic for a number of reasons, discussed below. However, it might be tentatively suggested that decisions around food purchases might be easier to capture accurately through these types of questions than decisions around food eaten; though clearly there is a disconnect between food that is purchased and what is eaten and these questions will only be of interest to the extent that food purchased is usually a necessary pre-requisite for food consumed.

It is possible that those responsible for the main food shopping on behalf of a household or family can articulate reasonably accurately some of the issues which guide them in their decision making. This is more likely to be the case, however, where they are making decisions between well-defined alternatives than in general. In other words consumers may be better placed to give a rationale for a choice where they are being asked to state why they purchased specific items, for example butter rather than margarine. Even in the case of food buying, it is likely that many purchases are habitual and individuals may not be fully conscious of the reasons for particular choices or decisions.

Where the focus is on *food eaten*, a number of points are worthy of consideration with regard to the assumptions implicit in such questions. These assumptions include that decision-making proceeds on a conscious, rational basis and that individuals have well defined preferences for food. Second, that individuals have all the information available to them in order to assess how far a given food choice meets their preferences. Some studies suggest that consumers are often confused for example as to what constitutes a healthy diet (Parmenter 2000; Chambers, Lobb et al. 2008). Thirdly, that individuals can exercise their preferences fully – in other words, that they are not restricted in the range of choices they can make. Some of the response categories included in the BSA question do, however, refer to influences which are effectively restrictions in food choice. As a result this particular question may capture some aspects of factors constraining choice. It might therefore be interesting to analyse the balance between factors which act as a constraint and positive factors in the answers to these questions.

Broadly, each of these assumptions is open to question and may only be applicable in some limited sense to food intake behaviours. Many of the decisions made in regard to food intake and purchase might be characterised as rapid, visceral and reflexive – decision-making involving little conscious processing of information (Bell, Burdon et al. 2007). Some studies characterise food choices as being made routinely according to a 'rule of thumb' (Green, Draper et al. 2003). Still, others emphasise structural

factors in influencing decisions, such as low income, as well as what are termed 'emotional' or social factors (Attree 2006), the social status associated with certain foods and the importance of convenience (Carrigan, Szmigin et al. 2006).

Some research also reveals a disconnect between knowledge and food decisions, where feeding children who are characterised as being difficult (Noble, Stead et al. 2007). Levels of stress have also been associated with self-reported food decisions (Oliver 1999). These findings, however, have to be balanced against those from studies which show that decisions are driven to some extent by substantive concerns such as health, price and availability (Baker, Thompson et al. 2004; Lawrence, Devlin et al. 2007).

Studies often focus on particular types of choice, rather than on choice in some general sense, and are limited in the influences they consider. They also vary in the extent to which findings can be generalised to the population as a whole – many are for example qualitative. There appear to be few studies which seek to present a comprehensive picture of what drives food-related choices. At best what can be said after this limited discussion of only a small portion of the literature, is that decision making processes around what is eaten can be characterised as only partially rational and conscious.

This discussion suggests that respondents might encounter a fair degree of difficulty in answering questions such as those set out in Annex D; particularly those where the focus is on food consumed rather than purchased. Indeed this expectation is borne out by pre-test reports for the BSA questions¹⁷. Respondents are asked to assess what is quite a complex process, leaving open a variety of interpretations. Given the constellation of factors which might influence food-related choices it is also difficult to arrive at an exhaustive list of potential influences; and some factors known from the literature to be important might not translate easily into factors that might be included in such lists.

What have other surveys attempted to do in order to capture food-related decision processes? Annex E sets out some examples of questions from surveys contained in the data catalogue. Many of the objections mentioned previously apply in the case of these questions also. Interestingly, the questions contained on the ALSPAC survey, instead of asking the respondent to choose or indicate which factors influence their decision making, presents the respondent instead with a series of influences asking the individual to rate the importance of each one individually. This approach does somewhat simplify the task for the respondent and give a broad indication of importance. It also, however, requires considerably more questionnaire space, which in the case of multipurpose surveys is usually at a premium. The GUSS study asks parents a similar set of questions in terms of their decision making around how they feed their children. Other approaches involve asking respondents to identify barriers to healthy eating generally (HEPS), eating more fruit and vegetables (ONS Omnibus) and environmentally friendly food choices (SPABE). There are also quite a few questions on factors which influence whether respondents eat what they consider to be a healthy diet, their assessment of why they do not eat healthily and what factors

¹⁷ Pre-test reports for 2008 BSA questions sponsored by the FSA were made available by the FSA to the authors.

might prompt them to do so (HSE particularly). Given that the Agency wishes to intervene to encourage individuals to eat more healthily, it is quite obvious that knowledge of how individuals make decisions regarding food will be important. The limited consideration that has been given here to the literature and existing data, suggests that a very wide range of factors and influences inform food choices. Decision making is at the same time of low salience, habitual and reflexive on the one hand, and subject to a complex array of influences on the other. These influences encompass a wide range rational and substantive factors along with the more ephemeral and reflexive.

Section V, which follows, contains a discussion of potential further research which attempts to address some of the challenges and complexities mentioned here.

Borrowing questions from previous research and order effects

The purpose of the data catalogue is to provide the FSA with a record of relevant questions from existing surveys which can be consulted in developing new questionnaires. Broadly speaking it is considered good practice to borrow questions which have been used before. Initiatives such as the Economic and Social Research Council's (ESRC) survey question bank were set up in order to facilitate such borrowing¹⁸. However, it is certainly not a case of being able to throw caution to the wind in borrowing questions from other surveys. In this section, a very brief overview of some of the issues which need to be considered in borrowing questions from other surveys is presented. Attention then turns to discussion of questionnaire order effects.

First of all, it is important to approach existing survey sources with a clear idea of the construct that is to be measured and a good knowledge of the literature concerning how measurement might be best approached. This is to avoid being led by what is available rather than the substantive issue of concern.

Second, where a question of interest is identified, accompanying survey documentation should be consulted in detail. For example, the researcher will want to understand the processes undertaken in designing the questionnaire item. What was the construct the researchers were attempting to measure? Which items were initially considered for inclusion? Which items were excluded and for what reasons? What cognitive/pre-testing was undertaken? If cognitive testing was undertaken, is a report available for inspection? It may also be advisable to contact the researchers concerned and discuss with them any issues which may not be adequately addressed in the documentation.

An investigation should also extend to inspection of the sampling methods used and the nature of the population from which the sample was drawn. The question item of interest may have been implemented among a population quite different to that of the new study. Any such differences may have implications for question wording but also the nature of response.

¹⁸ See <http://survey.net.ac.uk/sqb/qb/>.

Third, it may also be advisable to obtain a copy of the data file and undertake an analysis of the question item. This will give the researcher a good feel for how responses to the item might vary across key groups. Comparisons with other similar items found on other surveys can also be made in an effort to explore how far results differ depending on how questions are asked. Account also needs to be taken of how different surveys may vary from one another in ways other than survey question wording and placement. If it is possible, it is always desirable to validate responses to a question of interest against non-survey sources.

Clearly the researcher will need to reassure themselves that good practice in terms of question wording has been adhered to. In other words that simple, meaningful language is used; avoidance of double-barrelled questioning; avoidance of double negatives, and so on. Converse and Presser (1986) also suggest pre-testing questions even where they are borrowed from other surveys. They give two reasons for this:

- The meaning of the language used in the question can change over time and the researcher should consider whether the question is still understood in an appropriate way
- Because understanding of and response to the question can be affected by neighbouring questions (question order effects), which will differ from survey to survey.

The issue of question order effects is particularly important when borrowing questions from other surveys. Respondents may understand and respond to questions in different ways depending on the context and order in which questions are asked. According to Schuman and Presser (1996) order effects 'occur with sufficient frequency and are sufficiently large in magnitude to compete with substantive explanations when an item produces different results', but that 'the majority of survey results are probably not so delicately dependent on surrounding items'.

Order effects are more likely to be found, and therefore the issue more pressing where (Schuman and Presser 1996):

- Two or more questions are attempting to capture the same underlying construct – borrowing one question will therefore comprise the attempt to measure the issue at hand. This is particularly important with attitudinal and other types of questionnaire items which together might represent measures on an underlying scale or series of factors
- 'General' rather than more 'specific' questionnaire items are more susceptible to order effects (as discussed previously). The argument is that questionnaire context can provide a frame of reference from which respondents can derive answers to multi-faceted 'general' questions which they find difficult to answer – thus as the context changes the frame of reference changes
- Schuman and Presser also point out that 'two questions considered in conjunction can create or at least emphasise a norm that is not obvious when the questions are considered in isolation'
- Context can have differing effects. Some contextual factors may improve consistency in response while others may sharpen differences

- Where both attitudinal and behavioural questions are asked in the same survey instrument, some researchers appear to believe that attitudinal questions should be asked first. The assumption is that behavioural questions cannot be shaped by attitudinal items but responses to attitudinal items may be affected by behavioural questions. However, there is evidence that attitude questions asked on crime surveys prior to questions on victimisation stimulated respondents' memories of crimes of which they had been victims thus altering the responses to the victimisation questions (Converse and Presser 1986)
- Finally, questionnaire length and the position of the question in terms of whether it appears earlier or later on in the questionnaire can affect response.

Some of the key points mentioned above are further illustrated drawing on examples of questions found in the data catalogue. First, consider the questions set out in Box 4 above. To recap, these are attitudinal questions taken from the HSE. Considered together they appear to attempt to measure an underlying orientation toward healthy eating. Thus they are closely related to one another in terms of content and therefore provide a 'context' in which questions are answered (Sudman and Bradburn 1982). Thus one would have to exercise caution in selecting a single attitude statement from this list and borrowing it for use in another survey. These questions are in all probability designed to be used together. Thus in borrowing attitude questions it is important to keep in mind the overall attitude object (here the example being orientation to healthy eating) that is the focus of measurement and attempt to borrow sets of statements which are designed to measure the 'object' of interest.

In terms of attitudinal items, research suggests that more general questions are more susceptible to order effects than specific questions (Schuman and Presser 1996). This is true also, as we have seen, of behavioural questions. Considering the final question in Box 4, which is a general question about the degree to which the respondent considers their diet a healthy one, it is entirely likely that were it asked before the six questions which immediately preceded it, a different response might be obtained from some individuals. Of course we cannot say this for sure without undertaking a question order experiment. However, it is possible that after a series of questions which the respondent may correctly discern concern healthy eating, they may be more tempted to answer that what they usually eat is more healthy than they might have otherwise have done.

Paying adequate attention to the questions which immediately precede an item which the researcher is considering borrowing is clearly of great importance. This is particularly so where an item is being considered from a set of questions which are closely related to one another. However, as mentioned above it is also important to consider where in a questionnaire the question is asked – that is toward the beginning, in the middle or toward the end of the interview. Where survey interviews are long and full of complex questions, which the respondent finds it difficult to answer, respondent fatigue can be a problem, particularly as the interview draws to a close. Respondents may be tempted to rush questions and not consider the question fully.

In terms of whether attitude questions should be asked before or after behavioural items, research reviewed for this scoping study presents an inconclusive picture. From the author's experience, general survey practice appears to be, in face-to-face interviews, for attitude items to be administered using a separate self-completion instrument. Interviewers are given discretion to implement the self-completion element of the survey when it is deemed most appropriate on the basis of their judgement. This would seem a sensible strategy given the inconclusive nature of much of the research.

Unfortunately, the issue of response order effects is complicated by the fact that research appears to conclude that response order effects are essentially difficult to predict (Schuman and Presser 1996). Some items where response order effects might be reasonably expected show no effects when subject to experimentation and placed in different locations within a questionnaire, whereas other questions where no response order effects are expected do show signs of being affected by their location and context. General advice should be that researchers should always be mindful of the effects of question order and to be particularly cautious if tempted to use questions which are located alongside other similar items and where questions are more general. However, response order effects should not put researchers off borrowing questions, cautiously, for use in developing new questionnaires.

V. Areas for new research

In this section, potential new areas of research the Agency might like to consider are presented. Four potential areas of work, or research issues, are discussed. First, some suggested areas for future literature reviews are outlined. Second, some broad areas of enquiry that may be considered in relation to secondary analysis of existing data sets are put forward. Thirdly, suggestions for literature, qualitative and quantitative work in the area of food choice are highlighted. Finally, two further issues that may aid the development of the evidence-base more widely are raised.

Literature searches and reviews

Systematic Reviews of the literature are very much in favour in both academic and government research circles. This is likely to be the case for the foreseeable future. A full systematic review aims to provide a comprehensive assessment of the evidence on a particular topic. Other key features of systematic reviews are that they are transparent in terms of the criteria used to sift research and grade the quality of studies that are uncovered. The disadvantage of a full systematic review is that they are very time consuming to conduct. The Government Social Research (GSR) website suggests that a full systematic review should take between eight to twelve months to complete¹⁹.

One alternative is to commission a rapid evidence assessment of the literature where research questions are constrained and well defined. These are similar to systematic reviews but make concessions in terms of breadth or depth of focus through invoking certain limitations or restrictions. For example, rapid evidence assessments very often place geographical limits on the searches conducted (Watt, Cameron et al. 2008). Rapid evidence assessments should take between two to six months, but one of the key criteria which determine the length of the study is again the breadth of the research question being addressed.

It would be advisable for the Agency to consider the scope for commissioning a series of rapid evidence assessments on priority topics. Research questions will, however, have to be tightly specified. The focus in a rapid evidence assessment tends to be examining the effects of policy or practice on the issue of concern. Where a review of findings from observational studies is required and where causal factors or influences of interest are not directly policy driven, traditional reviews, albeit ones where consideration is given to the quality of research uncovered, may also be considered.

Precisely which topics might be addressed in such a review will be driven by the Agency's priorities. Considering these priorities, some topics that might be considered include:

¹⁹http://www.gsr.gov.uk/professional_guidance/rea_toolkit/what_is_an_rea/methods_for_reviewing_evidence/index.asp.

- Intake of fresh fruit and vegetables – what does research tell us about how people understand the five-a-day message?
- Intake of salt – knowledge of guidance on salt intake and cooking practices
- Eating outside the home – is there a link with healthy eating?
- Economic outcomes of obesity
- Food safety practices among the general population or possibly among parents
- Perceptions of food poisoning – what do the general public believe to be the sources of food contamination?
- Attitudes and understanding of novel foods
- Attitudes to the intake of GM foods among specific subgroups of the population
- Parents' behaviour around fruit vegetable consumption and their children's healthy eating.

These are just broad indicators of the types of issues which might be considered. Further work would be required in order to refine these ideas and develop suitable research questions.

Secondary analysis of existing data

Looking at the data sets contained within the data catalogue, it is possible to conduct a very wide range of statistical analyses on these data which might address questions of interest to the FSA. However, before conducting such analyses the researcher would need to satisfy themselves that the proposed analysis has not already been carried out in the manner being considered. Or if it has, that any flaws such analysis might contain could be rectified or addressed in the proposed new study. As a result, a good familiarity with the existing evidence on a specific topic would be required before proceeding.

Given the cursory and broad nature of the searches conducted as part of this scoping exercise, it is difficult to be certain whether specific research questions which might be explored using the available data have not already been addressed. As a result, the discussion of potential areas for further secondary analysis is conducted at a very general level, suggesting forms of analysis that could be conducted on these data or areas of enquiry that warrant further consideration.

Types of data and questions that might be addressed

The food/diet surveys included in the data catalogue will clearly permit extensive analysis of food and nutritional intake. As future waves of surveys such as NDNS become available for example, an analysis of trends in food intake will also be possible. Taking the example of the 2008 NDNS, the following issues may be worthy of consideration or further development:

- Relationship between shopping habits and intake of specific foods (for example fruit and vegetables or salt intake) controlling for household characteristics
- Relationship between cooking skills and intake of specific, 'healthy' foods; that is, to what extent do individuals with better cooking skills eat more healthily? What are the implications for food safety?

- Children's cooking skills and how these evolve by age and possibly sex, and how they may differ by household structure and income
- Children's dietary habits and household income.

As already stressed, it would be important to conduct a well-specified and thorough assessment of the existing literature before proceeding with any analysis.

The general health surveys also permit a wide range of cross-section analysis. The focus here is on the types of research questions that might be addressed using the HSE as an example.

The HSE contains a range of household level variables and other classifications such as ethnicity, health and physical activity. Good measures of fruit and vegetable intake are available from 2001 onward which would permit analysis of five-a-day adherence by a variety of household and individual variables. A quick search of the literature reveals, however, that these types of analysis have already been conducted (Boukouvalas, Shankar et al. 2009) and would have to be examined to determine their adequacy before proceeding. However, one potentially interesting area that might be explored is the extent to which children's food-related attitudes and behaviours vary by their parents' behaviours; for example, whether their parents eat five portions of fruit and vegetables per day.

Additional areas for exploration, using HSE data, might include analyses of knowledge and attitudes toward healthy eating by household and individual characteristics using the 2007 data set. The HSE, in common with many other data sets collects a lot of information on attitudes and behaviours around alcohol, specifically among children and young adults. If analysis of alcohol consumption was considered important, then the health surveys would generally be good sources of data and provide important opportunities for secondary analysis.

Multi-purpose surveys of the general population tend to contain mainly questions on alcohol consumption; there are not many questions on these surveys that would enable analysis of attitudes and behaviours around food. One survey which is potentially of interest is the ONS Omnibus Survey, the main focus being the September 2002 wave. The omnibus survey not only collects information of interest on issues around food and alcohol but also a range of classificatory variables which may offer some potentially interesting analysis opportunities. These variables include household structure, geographic information, tenure, marital status, education, broad household income, social class and employment. The types of analysis which can be undertaken given the items available on the ONS Omnibus Survey include:

- Frequency of fruit and vegetable consumption by household and individual characteristics
- Knowledge of what constitutes fruit and vegetable consumption
- Understanding of portion size
- Knowledge of what constitutes the weekly recommended intake of alcohol

Turning attention now to multi-purpose longitudinal studies, a distinction can be drawn between the birth cohort studies, and panel studies such as BHPS and Understanding Society. These surveys offer some potential for analysis of behaviour and attitudes among young adults. Examples of relevant questions can be found on

the BHPS youth panel, where respondents are asked how often they eat with their family and the frequency with which they consume fruit and vegetables.

The birth cohort studies, because of their focus on health and child development, have tended historically to contain a significant number of survey questions on food and food intake. These surveys permit a number of interesting potential research questions to be addressed; though the extent to which these issues have already been explored would need to be determined. In broad terms the feasibility of exploring some of the following issues might be explored further:

- Birth cohort surveys should permit in theory an analysis of the longer term consequences for adult health of diet during childhood? Whether this is possible will depend on the nature of the dietary questions asked in earlier waves of the NCDS and BCS
- What are the relationships between parents' diet and children's behaviours around healthy eating? And how do these change as a child grows?
- What are the consequences of poverty/work entry and exit on food consumption?
- What are the consequences of changes in health status on food behaviours?
- Relationship between diet in childhood and as an adult.

Although topics of this nature might in theory be addressed, in order to assess whether undertaking such analysis is possible would require in most cases going back to waves of data collection which took place prior to 2000, which is beyond the remit of this study.

One data source which contains a very large amount of information on behaviours and attitudes around food is ALSPAC. This appears to be a potentially interesting data source which can be used to examine the impact of changing household characteristics on the behaviour of both parents and children, and potentially how these responses might differ as children age. It should be pointed out, however, that extensive research on dietary behaviour has already been conducted using these data²⁰. It may be worth exploring, however, whether these data can be used to look at how changes at the individual level might affect parents' behaviour; for example, whether changes in health status are associated with changes in diet and other food behaviours.

Finally, further analysis of data collected through the BSA may also be considered. There were a series of questions asked concerning GM foods in the 2003 survey. It appears that these items were not fully analysed in the final BSA annual report and it may be worth taking a closer look at the types of analyses which might be conducted with these items. The 2003 survey also contains a test of respondents' knowledge on GM foods. These items could be analysed by household structure variables, education, ethnicity, social class, employment status, benefit receipt and so on.

As has been discussed, more recently, a large number of question items have been included in the 2008 BSA. The inclusion of these items presents an opportunity to

²⁰ See <http://www.bristol.ac.uk/alspac/sci-com/pubs/>. These studies generally appear to be more dietary and nutritional rather than focusing on broader behavioural concerns.

undertake new analysis. For example, it may be possible to analyse attitudes to processed foods by various socio-demographic factors, such as household structure and individual socio-demographic measures. A similar set of analyses might be considered for exploring attitudes to novel foods, knowledge of new food technologies and attitudes toward GM foods.

Development of research in the area of food choice

In Section IV, several survey questions which attempted to capture the processes involved in decision-making around foods purchased and consumed were discussed. While these types of questions might 'work' better when it comes to food purchased than food eaten, it was suggested that such questions possess certain drawbacks. In this section, alternative approaches to building the evidence base in this area are put forward for consideration.

First, it might be advisable to return to first principles in understanding purchasing and eating behaviour. A point which has been made elsewhere in this paper, is that a lot of research looking at food-related behaviour across the social sciences has been undertaken. One first step toward a clearer understanding of the issues might be to commission a review of how behavioural theories from across the social sciences have been used in understanding eating behaviours.

The GSR service recently published a review of 'behaviour change models' (Darnton 2008). This drew very much on models and theories from psychology and behavioural economics. One of the risks of commissioning a review which spans all the social sciences might be that at the end of the review the policy analyst is left non the wiser as to which theory might be of most use from the perspective of policy. At the very least, some assessment of how theories such as those set out in the GSR paper have been used to understand food consumption and/or purchase, might be considered. Moreover, considerable work was undertaken in the 1990s developing Food Choice Questionnaires, based on psychological scales that purport to capture multi-dimensional aspects of choice, and this research should be considered and reviewed (Steptoe, Pollard et al. 1995). Once a range of theories have been identified the extent to which they have been verified or falsified empirically among various populations can be considered and thereby their use in understanding behaviour from a policy perspective. Moreover, in considering new fieldwork, such theories can be used to motivate lines of questioning, guide analysis and interpretation. Other new perspectives emerging from the social marketing literature might also be considered alongside standard psychological theories.

An alternative starting point in exploring food-related behaviours might be to conduct a series of qualitative studies of behaviour. Qualitative studies enable the researcher to probe and explore behaviour more fully with respondents, generating detailed information and a richness in understanding which cannot be obtained from quantitative studies alone. It is, however, quite likely that research of this nature has been done, and if such an approach has some appeal, work should commence with an assessment of existing research and its adequacy in terms of the Agency's agenda. It is particularly important to consider whether qualitative research may offer fruitful avenues for further work in the light of the forthcoming FSA attitudes and behaviour survey. Respondents to this study should be asked their permission to be re-

contacted for further qualitative research. This will enable the study sample to act as a sampling frame for the qualitative research where the appropriate permissions from respondents are obtained.

Other issues to consider

In this final subsection two further ideas for developing the evidence-base are outlined.

- As discussed above, longitudinal studies offer much potential for gaining greater understanding of causal relationships. Setting to one side the birth cohort studies, which are representative of single cohorts only, there is a paucity of longitudinal data on food-related behaviours. The Understanding Society study, which builds-on and replaces the BHPS, appears to be focusing in future on lifestyle issues including diet²¹. If the FSA is not already involved in attempting to shape the kinds of questions to be used in this study, it would be good idea to do so. Placing food-related behavioural question items on such a study would enable a detailed and rich analysis, relating household and individual change to such behaviours.
- Given concerns with social desirability bias, a study to explore the potential for using social desirability response scales in food research might be considered. After some initial development work identifying potential short-forms of these scales, the relevant items could be placed in an omnibus survey along with key behavioural and attitudinal items. A variety of statistical analysis might then be performed to determine the extent of any correlations.

²¹ <http://research.understandingsociety.org.uk/>.

VI. Upcoming and relevant research in progress

This section looks at work in-progress and upcoming research and publications around food in which the FSA may have an interest. Three types of investigations were undertaken:

- The ongoing studies identified in the data catalogue which provided significant coverage of food-related topics were examined for planned future activities
- The websites of major funders of food-related research were examined
- The websites of some of the research-active academics and research institutes uncovered through the literature searches were investigated for information on current and planned activities.

It was felt that contacting funders and academics directly, through personal correspondence, would not yield results in the time available.

Many of the studies uncovered through these search activities were clinical, concerned with the relationship between diet and disease rather than primarily social. While findings may be of interest they will probably not make a major contribution to helping understand how individuals make informed choices about food safety and a healthy eating. There is, however, considerable cross-over between clinical and what we are terming behavioural studies. For example, the Wellcome Trust funded study, *Public health consequences of modifiable maternal exposures: offspring obesity and cognitive health in two cohorts in the UK and Brazil* is based on research conducted at the University of Bristol. It may include a survey of lifestyle behaviours, including food and diet, but is principally focussed on determining causal pathways of relevance to the progression and treatment of disease. It has been excluded for this reason from our discussion.

Ongoing research studies/surveys

Five of the major ongoing studies contained within the data catalogue were examined to determine current fieldwork activity and forthcoming publications of results. Table 1 contains details of surveys which were in the field during 2008/9. It provides an indication of when results from the most recent fieldwork activity will be available. Reports of findings from these surveys will be of interest to FSA because they will for example report on healthy eating behaviours. Of particular interest will be the publications of trend data and first findings from the 2008 HSE, both of which are due to be published in December this year.

Table 1: Ongoing studies current fieldwork and publication plans

Study	Forthcoming milestones	Link
National Diet and Nutrition Survey 2008-09	Headline results due at end of 2009 and annually thereafter. Full report covering four years of data due March 2013	http://www.food.gov.uk/science/dietarysurveys/ndnsdocuments/
The Health Survey for England 2008	Publication of trends and full report – December 2009	http://www.statistics.gov.uk/hub/release-calendar/index.html?newquery=*&lday=0&lmonth=0&lyear=0&title=Health+Survey+for+England&pagetype=calendar-entry
The Scottish Health Survey 2008	The continuous Scottish Health Survey began in January 2008 and is running continuously from 2008 – 2011. Dataset to be deposited January 2010	http://www.scotland.gov.uk/Topics/Statistics/Browse/Health/scottish-health-survey/DataAndDocumentation
The Welsh Health Survey 2008	Publication – September 2009	http://wales.gov.uk/topics/statistics/duel/duel-theme/health/?lang=en
The Avon Longitudinal Survey of Parents and Children	A rolling schedule of data collection can be found at the study website – see over	http://www.bristol.ac.uk/alspac/sci-com/resource/future-collections/alspac/documents/new-data-collection2.pdf

Funding organisations

Attention now turns to the activities of funding organisations that are likely to finance research of potential interest to FSA. The Wellcome Trust and the Medical Research Council (MRC) both have significant on-going programmes covering food-related studies. The ESRC has upcoming work associated with the Understanding Society longitudinal study, and the website for this study indicates a future interest in lifestyle factors including diet (see Section V for how FSA might contribute and gain from this work).

Table 2, below, provides details of research activities that have been uncovered by examining the websites of the various relevant funding bodies. The MRC as noted above clearly undertakes a lot of funding of research in this area, though the majority of this work is concerned with the relationship between diet and disease. During the scoping study, programmes of relevant research funded by the European Commission and Big Lottery fund were also identified. Table 2 provides an indication of the timetable for the studies identified and links to the relevant websites.

Both the ESRC and the Wellcome Trust are in the process of evaluating proposals for major awards on the subject of food. The ESRC are more advanced in the evaluation process and proposals are online at <http://www.esrcsocietytoday.ac.uk/>. The

Wellcome Trust's Society Awards, which for 2009 focus on "eating", will not be awarded until the end of 2009.

Researchers and institutions

In this final section, findings from an examination of the websites of researchers and institutions known to be research-active are provided. Both researchers and institutions were identified through the literature searches described in Annex C. As a result, the limitations associated with these literature searches apply here also. Examples of researchers and a number of prominent research centres are given in Table 3.

Much of the work in progress on food, in medical, psychological and sociological contexts, involves finding effective interventions for obesity. It can be surmised that this focus is being driven by the funding policy as much as academic interest. University College London proves to be very research-active in the field. Jane Wardle and Lucy Cooke, based at the Health Behaviour Research Centre are two of the most research-active scholars in this area. The POPPETS study, which considers the factors influencing healthy food choices among pre-school children, is particularly noteworthy.

Two research centres appear to have a programme of research which may be of interest to the FSA. The Institute of Health and Society, based at the University of Newcastle, is conducting the Gateshead Millennium Study. This is a birth cohort study which has been extended and has now carried out fieldwork with sample members at ages 5 and 6. Further funding has been acquired from the Chief Scientist Office, Scotland. The study appears to involve regular questionnaires administered to both children and their parents regarding food intake.

Finally, the Institute for Social Marketing, based at the University of Stirling, is conducting a lot of research which is of potential interest, as can be seen from the details provided in Table 3. The central theme of the Institute's work is the application of insights and methods used in marketing, within the context of purchase and the market place, to other 'behaviour change' problems. "The same principles - of understanding the consumer, strategic thinking and building satisfying relationships based on emotional as well as rational benefits - can be brought to bear"²².

²² http://www.ism.stir.ac.uk/what_is_social_marketing.htm.

Table 2: Funding councils relevant research activity uncovered

Principal investigator	Title	Details (links)
The Medical Research Council		
Dr M Smith (University of Aberdeen)	"Economic Appraisal of the Choice and Targeting of Lifestyle Interventions to Prevent Disease in Deprived Populations"	http://www.mrc.ac.uk/ResearchPortfolio/Grant/Record.htm?GrantRef=G0701874&CaseId=11165
Professor G Atkinson (Liverpool John Moores University)	A survey of shiftworkers: "Shiftwork and Health: optimal timing of meals and physical activity".	June 2006 to August 2009-07-03 http://www.mrc.ac.uk/ResearchPortfolio/Grant/Record.htm?GrantRef=G0501286&CaseId=6286
Professor L A R Moore (University of Wales, Cardiff)	"Free School Breakfast Initiative Data Augmentation and Analysis"	To 31-Aug-10 http://www.mrc.ac.uk/ResearchPortfolio/Grant/Record.htm?GrantRef=G0701875&CaseId=11166
Professor L Vale (University of Aberdeen)	"An Economic Evaluation of Obesity Prevention for UK Adults". An in-depth investigation of the perceptions of lay people, NHS professionals and policy makers on obesity and its prevention.	From 01-Jun-6 to 31-Jan-10 http://www.mrc.ac.uk/ResearchPortfolio/Grant/Record.htm?GrantRef=G0501279&CaseId=6275
Professor P Wallace (UCL)	A randomised controlled trial of an interactive web-based intervention for reducing alcohol consumption. The study aims is to determine whether the fully interactive on-line intervention DYD: www.downyourdrink.org.uk leads to important reductions in alcohol consumption amongst members of the public at risk of harm from alcohol.	From 01-Jul-06 to 31-Dec-09 https://www.downyourdrink.org.uk/
Professor Sir M G Marmot (UCL)	"Social influences on health": a review of Whitehall II data.	From 01-Oct-99 to 30-Sep-09 http://www.mrc.ac.uk/ResearchPortfolio/Grant/Record.htm?GrantRef=G8802774&CaseId=17616

Principal investigator	Title	Details (links)
Big Lottery 'Wellbeing' Fund		
Prof Adrian Renton (University of East London)	A randomised cluster controlled trial of community level interventions to address social and structural determinants of physical activity, diet and mental well being.	From 01-Oct-07 to 01-Oct-11 http://www.biomedcentral.com/content/pdf/1471-2458-9-207.pdf
European Commission		
Petra Peeters, Universitair Medisch Centrum Utrecht, (The Netherlands)	PANACEA - The project makes use of a unique collection of comparable data from 520,000 Europeans, men and women from 24 geographically different areas in 11 different countries and ranging in age from 35 to 70 years. Data was collected as part of the European Prospective Investigation into Cancer and Nutrition, co-financed by the European Commission.	From 01-Dec-06 to 01-Dec-09 Medical Research Council, Imperial College, University of Oxford (UK) http://www.mrc-epid.cam.ac.uk/Research/Studies/PANACEA/index.html http://www.wellcome.ac.uk/stellent/groups/corporatesite/@msh_publishing_group/documents/web_document/wtx053269.xls

Table 3: Current and forthcoming work by researcher and/or institution

Institution/researcher	Details	Website
<p>Jane Wardle</p> <p>Health Behaviour Research Centre, University College London</p>	<p>Forthcoming publications of relevance:</p> <ul style="list-style-type: none"> • Grant,N., Wardle,J., Steptoe,A. (in press). The relationship between life satisfaction and health behavior: A cross-cultural analysis of young adults. International Journal of Behavioral Medicine . ISSN: 1070-5503 • Grimmett,C., Wardle,J., Steptoe,A. Health behaviours in older cancer survivors in the English Longitudinal Study of Ageing. European Journal of Cancer. • Hill,C., Wardle,J., Cooke,L. Adiposity is not associated with children's reported liking for selected foods. Appetite . ISSN: 0195-6663 • Von Wagner,C., Steptoe,A., Wardle,J. Health literacy and health actions: a review and framework from health psychology. Health Education and Behavior . ISSN: 1090-1981 	<p>http://www.ucl.ac.uk/hbrc/diet/wardlej.html</p>
<p>Lucy J Cooke</p> <p>Health Behaviour Research Centre, University College London</p>	<p>POPSETS Study: The first part of the study is a large-scale community survey to assess the family environment correlates of healthy dietary choices in preschool children (including parental nutrition knowledge, feeding practices, social norms, availability of foods, meal patterns and snacking rules). In the next stage we shall develop interventions to modify aspects of the home food environment and assess their impact on food choices. Ultimately these will be combined to create a disseminable intervention that health professionals can be trained to deliver.</p> <p>Planned work: A proposal for a series of studies investigating the impact of incentives on children's food choices is currently under review at the MRC</p>	<p>http://www.ucl.ac.uk/hbrc/diet/projects.html</p> <p>http://www.ncl.ac.uk/gms/index.htm</p>
<p>Institute of Health and Society (University of Newcastle)</p>	<p>The Gateshead Millennium Study</p>	<p>http://www.ncl.ac.uk/gms/index.htm</p>
<p>Institute for Social Marketing (University of Stirling and the Open</p>	<p><i>Current Work</i></p> <ul style="list-style-type: none"> • Evaluation of the Impact and Implementation of New School Food Policy • Exploration of Adult Food Portion Size Tools 	<p>http://www.ism.stir.ac.uk/projects_food.htm</p>

Institution/researcher	Details	Website
University)	<ul style="list-style-type: none"> • How Do Young People Engage with Food Branding? • Buywell: Evaluation of a Targeted Marketing Intervention to Influence Food Purchasing Behaviour by Low Income Consumers • The Extent, Nature and Effects of Food Promotion to Children: A Review of the Evidence • Systematic Review of Research on the Effects of Food Promotion to Children • Systematic Review of the Effectiveness of Social Marketing Nutrition and Food Safety Interventions • Systematic Review of the Effects of Food Marketing on Children in Developing Countries • Assisting Dietary Change in Low Income Communities: Assessing the Impact of a Community-based Practical Food Skills Intervention ('CookWell') • Development and Evaluation of a School-based Intervention to Increase Children's Fruit and Vegetable Consumption • The Development of Interventions to Improve the Diet of Girls and Young Women from Populations at Risk of Low Birth Weight • Exploration of Dental Patients' Views on Dietary Interventions in Dental Services • Exploration of General Public Attitudes Towards the Scottish Healthy Choices Award Scheme 	
Dr Alizon Draper (University of Westminster, School of Integrated Health)	Wellcome-funded evaluation of Well London projects. 2008-2012	http://www.wmin.ac.uk/sih/page-301

VII. Summary and conclusion

This paper covers a variety of issues and topics relating to healthy eating and food safety, and reports findings from a scoping study commissioned by the FSA. This paper represents one of four outputs from the scoping study. The other three outputs are:

- A data catalogue – which records food related attitudinal and behavioural questions asked in major publicly funded surveys
- An Endnote database containing social scientific studies which address factors relating to healthy eating and food safety, based on UK data, over the period 2000 to 2009, and
- An Endnote database containing literature on methodological research, specifically looking at issues of validity and reliability in food research and social desirability bias, drawn from English language sources over the period 1990 to 2009.

Details of the methodologies adopted in constructing the data catalogue and Endnote bibliographic databases are set out in Annexes B and C to this paper.

The first part of this paper presents an assessment of questions contained in the data catalogue. This discussion refers in the main to questions regarding healthy eating contained in the version of the data catalogue released to the FSA on 12th June 2009. This version of the catalogue contained far fewer questions on food safety than healthy eating questions. As a result, issues of healthy eating tend to be the focus of discussion.

Following on from this, the paper addresses five key survey design issues of concern to the Agency; namely:

- Issues to consider in designing survey questions to capture behaviour
- Social desirability response-bias in food-related surveys
- Identification of causal relationships and change over time in survey data
- Capturing influences on food choice in surveys
- Factors to consider in borrowing survey questions and question order effects.

On the basis of the material collated in this scoping exercise a number of key findings can be outlined in relation to the design of questions which seek to capture behaviour around food. These findings should help inform thinking around the new FSA survey of behaviour and attitudes:

- Food related behaviours are likely to be of low saliency for respondents
- Low saliency is problematic in the sense that asking questions in surveys regarding food-related behaviours requires respondents to recall their behaviour
- Questions capturing food-related behaviours are therefore likely to be subject to adverse recall effects; for this reason diary self-completion is a preferred mode of data collection; though food diaries have their own drawbacks and are expensive to implement

- In order to mitigate adverse recall effects, questions regarding food-related behaviours should be as specific as possible. For example, eliciting information regarding particular behaviours over a recent 24-hour period
- Respondents find specific questions easier to answer and they are less likely to respond untruthfully; moreover, specific questions are less likely to be influenced by questionnaire order effects.

Other approaches to improving the quality of response to food-related survey questions are also discussed (see Section IV).

One of the primary concerns of the FSA, which has been explored in this scoping study, particularly given the imminency of the Agency's new survey of behaviour and attitudes, is the extent to which responses to food-related questions are affected by social desirability biases. The following findings can be drawn out:

- It seems highly likely that responses to some food-related survey questions are affected by social desirability biases
- Social desirability appears to be negatively related to reports of dietary intake for example, and is more prevalent among women
- The focus of attempts to mitigate the effects of social desirability on responses should be on the design and wording of questions
- Psychological scales exist which purport to measure aspects of the tendency among respondents to respond in a socially desirable manner rather than a truthful manner. These scales can be deployed either at the pilot stage or at main-stage data collection in order to determine the extent of effects
- There are misgivings expressed in the literature regarding the usefulness of these scales
- However, consideration should be given to piloting a shorter version of one of the scales – the MCSDS – in order to determine its usefulness.

The FSA also expressed a concern regarding how best change over time might be captured in surveys, as well as with the issue of causation in survey research. These issues are pertinent not just in relation to the forthcoming Agency survey of attitudes and behaviours, but also in regard to the types of secondary data analysis the Agency might wish to consider commissioning in the future. The discussion in this paper concludes that repeat cross-section approaches offer a cost-effective means by which change over time might be explored. Repeat cross-section surveys permit the analysis of trends; age, period and cohort effects; and the application of multivariate statistical analyses to uncover and analyse important relationships. Examples of the types of analysis possible are provided along with an assessment of the variables required.

A number of issues have also been raised by the Agency concerning how best to capture food choice in surveys. This paper concludes that these questions might work best when attempting to enquire about how individuals make choices while shopping. In terms of how individuals make choices about what they eat, this paper recommends that the Agency commission's research which explores social scientific theories about the factors which determine what food individuals actually consume. Further qualitative work, building on a review of theory, might also be conducted in order to explore fully the range of influences on individuals' eating behaviours.

The discussion paper also explores some of the factors which need to be considered in borrowing questions from existing surveys. This discussion is clearly of importance in terms of the development of the FSA's new behaviour and attitudes survey. Prominent among these factors is the issue of question order effects. In some cases, previous research reveals that it is difficult to anticipate whether responses to questions will be affected by the order in which they are asked and the questions which immediately surround them. Tentatively, however, it can be concluded that where a question is located amongst a series of items tackling similar or the same issue, responses are more likely to be affected where this question is borrowed to be used in a different survey. Responses may also be affected if a question has previously been asked at the end of a long, complex questionnaire (due to respondent fatigue), but is borrowed for use and placed at the beginning of another questionnaire for example. General or broad questions may also be more prone to questionnaire contextual effects.

This paper also highlights a number of areas where the FSA might consider commissioning further research. It suggests the Agency might wish to consider a series of rapid evidence assessments in areas identified as a priority. Two areas suggested that are particularly noteworthy are that of food safety practices and perceptions of food poisoning. A number of suggestions are put forward also for secondary analysis of existing data sources. The emphasis is on analysis of panel or repeated measures data (birth cohort surveys) and how these sources could be explored further. In relation to these types of data sources, it is recommended that the Agency seek to influence the content of the Understanding Society project going forward. This particular study offers much potential for detailed analysis and greater understanding of change over time.

Finally, the discussion paper presents a brief scan of current academic and survey work in progress, and that on the horizon, which appears relevant to the Agency's agenda and priorities. The ongoing HSE will (as will the health surveys for Scotland and Wales) continue to be of interest to the Agency because it tackles the issue of healthy eating and reports trends in consumption of five-a-day (among other relevant issues).

Both the Wellcome Trust and the MRC have ongoing programmes of research that will be of interest to the Agency. The Wellcome Trust's Society Awards, which focus in 2009 on 'eating', will be awarded at the end of this year. The Big Lottery Fund and the European Commission were also identified as funding agencies which commission relevant work.

The scan of current and future relevant work also encompassed an exploration of activities among individual researchers and research institutes known to be active in the area of food research. Institutions of particular interest include the Health and Behaviour Research Centre at University College London and The Institute of Social Marketing based at the University of Stirling (among others). Details can be found in Table 3 of this report.

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Annex B – Survey data catalogue

The data catalogue provides a record of healthy eating and food safety questions found in existing quantitative surveys. It should be emphasised at the outset that very few of the surveys contained in the first release of the data catalogue, contained questions which covered food safety directly. FSA surveys which do so, such as CAS, were not included in the catalogue.

Only surveys in the field between 2000 and 2009 were to be considered for the catalogue. The motivation for developing the catalogue is to provide the FSA with a record of existing survey questions that can be consulted in designing questions for future survey work. The intention was that the catalogue would cover the following types of surveys:

- Large-scale publicly funded sample surveys deposited at public data archives;
- Surveys funded commercially; and
- Smaller scale surveys, of specific population subgroups, often conducted by academic researchers

In order to search for large-scale publicly-funded sample surveys the following websites were consulted:

- The question bank
- Economic and Social Data Service (ESDS) and NESSTAR catalogues:
- UK Data Archive
- ONS and other government department websites

It quickly became obvious that there were a large number surveys that contained relevant questions. It was decided, after consultation with the FSA, to focus efforts on the publicly funded surveys only. However, the data catalogue is constructed so that details of new surveys and surveys currently not included can be added at a later date.

Surveys covered in the data catalogue

Table B1 lists the surveys contained within the data catalogue released to FSA on 12th June 2009. Twenty-two surveys which included questions on food related behaviours and attitudes were included in the catalogue. These are surveys found in publicly available data archives and usually funded by government or other public bodies. Table B2, below, contains a list of surveys which were identified for potential inclusion in the catalogue but which had yet to be screened for relevance at the time of writing, and are therefore not referred to in this paper.

We can assign the surveys screened into the data catalogue to the following broad groups:

- Food/diet or nutrition studies
- General health surveys
- Multi-purpose cross section studies

- Multi-purpose longitudinal studies
- Attitudes surveys

Food/diet or nutrition studies

There are three studies in the data catalogue that focus exclusively on food related behaviours. These are:

- NDNS
- LIDNS
- Scottish Children's Diet Survey (SCDS)

The NDNS is a nationwide survey, which comprises a variety of research instruments including a household questionnaire, anthropometric measures, food diaries for food consumed within the home and outside it, and a second respondent questionnaire. Response rates for the NDNS are not very high and this has to be a concern. For example, in 2000/1 only 47 per cent of the eligible sample completed both the diary and interview²³.

LIDNS, as the title would suggest, is a survey of low-income individuals. The survey design is multi-stage, with deprived wards over-represented in the sampling. Within selected wards addresses are chosen proportional to deprivation. Households were then screened by level of deprivation for inclusion in the sample. Fieldwork instruments included face-to-face and self completion questionnaires (which are included in the catalogue), 24-hour random day dietary recall instrument (which is not recorded in the catalogue), blood samples and physical measurements. The main instrument for the SCDS is an FFQ. The study contains very few survey questions. Details of FFQs are not included in the catalogue because they are typically implemented as grid-like reporting devices rather than as a series of survey questions. The FFQ is essentially an alternative to a food diary and is seen as a more cost effective and less intrusive means of capturing dietary intake.

General health surveys

There are six general health surveys included in the data catalogue. Among these are:

- HSE
- Scottish Health Survey (SHS)
- Welsh Health Survey (WHS).

Each year the HSE focuses on a different demographic group and looks, alternately, at topics such as cardio-vascular disease, physical activity, eating habits, oral health, accidents, and asthma. Data is collected in the form of questionnaires, blood and saliva samples (taken after a nurse visit) and other objective measures such as ECG where issues of heart disease are being considered. In 2001, 67 per cent of

²³ See Section 1.4, page5: <http://www.food.gov.uk/multimedia/pdfs/ndnsprintedreport.pdf>

individuals in the set sample were interviewed but only 40 per cent gave a blood sample²⁴.

The SHS ran in 2003 and 2008. The core questionnaire includes items on eating habits. The survey also contains a large number of questions on alcohol consumption for both adults and adolescents. The response rate for the main interview in 2003 was 60 per cent for adult respondents²⁵. Field work for the WHS has run continually since 2003. The survey uses both individual and household questionnaires.

The other health surveys included in the catalogue are the Northern Ireland Health and Well-being Survey and the HEPS.

Multi-purpose cross-section studies

In this group are a set of diverse studies that include:

- General Household Survey (GHS)
- GUSS
- ONS omnibus surveys
- Poverty and Social Exclusion in Northern Ireland (PSENI)
- SPABE
- Scottish Schools Adolescent Lifestyle and Substance Use Survey (SSAL)
- Time Use Survey (TUS)

These surveys are questionnaire only surveys. There are no blood samples, food diaries or FFQs. Some, such as the GHS, are nationally representative studies of the adult population.

The GHS contains detailed questions on alcohol consumption; many of the questions having been asked each year the survey has been in the field. There is, however, no information on the GHS regarding food intake. Food-related questions were asked, however, on the 2006/7 GUSS. The ONS omnibus survey, which runs on a monthly cycle, has contained relevant questions in 10 separate fieldwork exercises since 2000, though questions have, in the main, focused on alcohol consumption. The PSENI contains a small number of questions on alcohol consumption at two successive waves. SPABE, which ran in 2007, contained questions on food purchasing behaviour, particularly as they relate to ethical and environmental concerns. Finally the TUS examines time spent growing food for personal consumption.

²⁴ See <http://www.archive2.official-documents.co.uk/document/deps/doh/survey01/md/md-06.htm>

²⁵ See http://www.scotpho.org.uk/home/resources/OverviewofKeyDataSources/Surveys/cross_sectional/surveys_shes.asp

Multi-purpose longitudinal studies

These are studies which follow individuals through time and which have contained questions on either food related behaviours or attitudes. They include:

- ALSPAC
- BCS
- BHPS
- Millennium Cohort Survey (MCS)
- National Child Development Study (NCDS)
- Understanding Society

The BCS, MCS and NCDS are birth cohort studies based on samples drawn in 1970, 2000 and 1958 respectively. ALSPAC is also a birth cohort survey that recruited pregnant mothers in the county of Avon during 1991 and 1992. The BHPS and Understanding Society are panel studies following a sample of individuals within households annually. The BHPS ran from 1991 until 2007, at which point it was effectively replaced by Understanding Society which incorporates BHPS respondents. Food-related questions placed in these longitudinal surveys prior to the year 2000 are not included in the catalogue.

The birth cohort surveys, given their emphasis on health, tend to contain quite a few questions on food intake, other behaviours around food and alcohol consumption. The BHPS and Understanding Society, given their more general nature contain fewer relevant questions than the birth cohorts at present, though there are indications that future waves of Understanding Society may cover diet. Considered together, these studies are of particular interest because their longitudinal design enables more wide-ranging analysis of cause and effect (see discussion in Section IV above).

Attitude surveys

The only nationally representative attitude survey contained within the catalogue is the BSA. BSA, an annual survey, contained relevant questions in 2000, 2001, 2003, 2006 and 2008. Other surveys in the catalogue contain attitude and opinion data alongside other types of questions. Examples include ALSPAC, HEPS, HSE, ONS Omnibus survey and LIDNS. The NDNS contains a set of self-completion attitudinal questions administered as part of a self-completion instrument called the Psychological Restraint Questionnaire (Eating Habits questionnaire)²⁶. These questions were included to identify under-reporting in food diaries (Reinne, Siervo et al. 2006).

²⁶ This appears to be a version of the Dutch Eating Behaviour Questionnaire. For further details see Johnson, C. A., C. Tyler, et al. (2007). Psychological assessment for adults and children. Handbook of Food and Nutrition. Berdanier, Dwyer and Feldman, CRC Press.

Table B1: Surveys contained on the 12th July release of the data catalogue

Avon Longitudinal Study of Parents and Children
British Cohort Study 1970
British Household Panel Survey
British Social Attitudes Survey
General Household Survey
Growing up in Scotland
Health Education Population Survey
Health Survey for England
Low Income Diet and Nutrition Survey
Millennium Cohort Survey
National Child Development Study
National Diet and Nutrition Survey
Northern Ireland Health and Social Wellbeing Survey
ONS Omnibus Surveys (Food related)
Poverty and Social Exclusion in Northern Ireland
Scottish Children's Diet Survey
Scottish Health Survey
Survey of Public Attitudes and Behaviours Toward the Environment
Scottish Schools Adolescent Lifestyle and Substance Use Survey
Time Use Survey
UK Household Longitudinal Survey (Understanding Society)
Welsh Health Survey

Table B2: Surveys to be considered for inclusion in the final release of the data catalogue (along with those in Table B1)

Public Perceptions of Food and Farming, Northern England, 2001-2002
Food Deserts in British Cities, 2000-2001
Eurobarometer (various waves)
English Longitudinal Survey of Ageing
UEA-MORI Genetically-modified (GM) Food Survey, 2002-3
Cultural Capital and Social Exclusion: a Critical Investigation, 2003-2005
Public Understanding of Genomics and the Dynamics of Opinion Change: a Panel Study, 2003-2004
Young People's Behaviour and Attitudes Survey, 2007 (previous years also)
Continuous Household Survey

Annex C – Literature searches

In this section a brief overview of the literature searches completed as part of the scoping study is provided. Broadly, two types of searches were undertaken. The first aimed to identify studies that examined factors relating to attitudes and behaviours around healthy eating and food safety. The objective of the second set of searches was to uncover studies that considered survey methods issues, particularly those relating to general food-related behavioural survey research.

Factors associated with healthy eating and food safety

This element of the scoping exercise aimed to find UK studies that examined factors associated with attitudes and behaviours toward healthy eating and food safety. The terms ‘healthy eating’ and ‘food safety’ are broad and potentially cover a very wide range of behaviours. As a result, it was anticipated from the outset that searching on such terms would uncover a large amount of literature.

It needs to be borne in mind that the motivation for this search was not to conduct a thorough review of the literature and draw conclusions on the basis of the research uncovered. In this sense, the searches were not typical of those undertaken as part of a systematic or narrative review, in response to a specific, tightly defined research question. Rather the objective of these particular searches was to identify the extent of the relevant literature and in so doing give some idea of the types reviews that might be considered in the future (see Section V above).

In response to the anticipated size of the literature in these areas, however, several restrictions were placed round the search in order to make it tractable and relevant to the needs of the Agency. First, as mentioned above, only studies based on UK data were included²⁷. Second, only studies conducted during the period 2000 to 2009 were sought. Thirdly, the focus was to be on social scientific research rather than on studies considering nutrition and health/disease from a public health or medical perspective. Nevertheless, because of the interest in ‘behaviour’ around ‘healthy eating’, it was not always possible to maintain a clear distinction between social scientific research on the one hand, and nutritional/medical/public health studies on the other.

One further *crucial* restriction was placed around the searches. As discussed below, the searches were conducted using the general terms ‘healthy eating’ and ‘food safety’. As has been mentioned, these represent very broad concepts and cover a wide variety of substantive research concerns. The consequences of this may mean that studies which explore specific elements of healthy eating, such as salt reduction or fruit and vegetable intake for example, but where the term ‘healthy eating’ does not appear in the study’s citation, will be missed. It was not possible to define a series of comprehensive, more specific search terms to use in conjunction with the broad terms, that would uncover material addressing elements of behaviour that might be related to healthy eating, even if not directly referred to as such.

²⁷ And written in English

In order to assess the extent of material that might be missed through focusing just on broad terms, searches were conducted using the specific terms 'salt', 'GM food' and 'pesticides'. The objective was to see if more specific search terms would uncover material that would otherwise be missed as a result of the reliance on broader terms. Due to time constraints the search was conducted on the ASSIA (Applied Social Sciences Index and Abstracts) database only. Eight relevant studies were found using these more specific terms. Three of the eight had been picked-up using the broad search terms. The remainder tended to be studies which considered the influence of diet, among other factors such as smoking and alcohol consumption, on health or disease.

Although this limited exploration of the comprehensiveness achieved through using broad terms did not reveal many omitted but relevant studies, it is likely that a number of pertinent studies would have been identified had it been possible to develop more specific search terms.

The indexing and abstracting databases searched were as follows²⁸:

- ASSIA
- SSCI (Social Science Citation Index)
- Econlit (The American Economic Association's electronic bibliography of economic literature)
- IBSS (International Bibliography of the Social Sciences)
- Psycinfo (covering Psychological research literature)

As can be seen, these databases cover primarily the social science literature.

Databases such as Medline (abstracts from health and medical journals) and SCI (Science Citation Index) were not consulted.

As an example of the search strategy adopted, Table C1 presents the concepts and key search terms used to interrogate PsycInfo, IBSS and Econlit databases. A similar approach was used to search the other databases listed above.

²⁸ Searches were also conducted on COPAC, British Library and Intute institutional repository

Table C1: Terms and concepts used in searching IBSS, PsycInfo and Econlit databases

Database	Search No.	Concept	Terms
IBSS	1	Healthy eating	(healthy and eat*) or (health and nutrition) or eat*
	2	Food safety	(food and (hygiene or contaminat* or scare)) or "food safety" or "food preparation" or "food consumption" or "food habits"
	3	Attitudes & behaviours	attitudes or behaviour
	4	Consumer	Consumers or "consumer preferences" or "consumer behaviour"
Econlit & IBSS	5	Food safety	(food and (safe* or hygiene or contaminat* or scare) or (food and (preparation or consumption or habit*) or "food additives" or "food allergies"
PsycInfo	6	Healthy eating	(healthy and eat*) or (food or nutrition or diet)
	7	Food safety	Food and (safe* or hygiene or contaminat* or scare or preparation or consumption or habit*) or "food additives" or "food allergies"
	8	Attitudes & behaviours combined with consumer	(attitude* or behavio* or consumer*) or ("food preferences" or "eating attitudes" or "eating behaviours") or ("consumer attitudes" or "consumer behaviour" or "consumer psychology" or "behaviour analysis")
Econlit	9	Health eating	Healthy and (eat* or food* or diet* or nutrition)
	10	Food safety	Food and (safe* or hygiene or contaminat* or scare* or preparation or consumption or habit* or additive* or allerg* or label*)
	11	Attitudes and consumer	Consumer* or attitude* or behavio* or choice* or opinion*

The terms set out in the fourth column of Table C1 are combinations of free text and thesaurus terms. Thesaurus terms differ across databases. The searches displayed in Table C1 were combined in different ways using Boolean logic and proximity searches in title, abstract or subject keyword fields to ensure each database was interrogated thoroughly.

After screening conducted by a librarian and research staff a final database of relevant research studies was created using Endnote software and made available to FSA. This database contains 258 studies. These studies can be broadly characterised by the groups set out in Table C2 below:

Table C2: Relevant studies identified after searching for literature on behaviour attitudes toward healthy eating and food safety

Category	Studies identified
Alcohol consumption	12
BSE (not all on attitudes and behaviour some more policy related)	6
Children and alcohol consumption	2
Children, adolescents and food consumed in schools (includes: obesity, food safety, healthy eating, food choices in school, parental role, etc.)	45
Convenience foods (snacks and fast foods – not covering children)	6
Eating and food consumption and shopping – without specific reference to healthy eating (trends in types of food consumed, general overview of population's food consumption, ethnic foods, food psychology, multi-topic reports)	13
Environmental and ethical concerns in food consumption (including fairly traded goods)	10
Food choice	9
Food policy (food regulation and safety, information, cheap food)	11
Food safety and food preparation (attitudes and understandings, sources of information)	25
General healthy eating - specific mention (perceptions and practice, attitudes)	33
Ill-health, diet and food (disease and relationship with food choice and consumption)	6
Labelling and consumer knowledge of healthy eating and nutrition	16
Low income/poverty and food behaviours/attitudes	10
Older people	5
Organic food, GM foods, farmers' markets (attitudes, behaviours, safety concerns, willingness to pay)	40
Women and pregnancy	2
Others	7
Total	258

It can be seen that over forty studies were identified which considered behaviour and attitudes around organic food, genetic modification and farmers' markets from a health or food safety perspective. A similar number of studies explored children's

behaviour and attitudes toward food, healthy eating and food safety. The group of studies next largest in number were those that were solely concerned with 'healthy eating' and which could not be assigned to any of the other groups listed in the Table. The strategy identified a number of studies on attitudes and behaviour around alcohol consumption. The literature searches did also turn-up a number of studies that focus on food safety and one helpful review of UK and United States (US) work in this area (Griffith and Redmond 2003). A number of the studies focusing on food safety tended to be qualitative or based on ad hoc quantitative studies (often with small sample sizes), or surveys of food producers or institutional practices around food safety.

It is important to note that the two important databases were not searched, namely Medline and SCI. These are also likely to contain studies which are essentially social scientific in nature. These databases were not included in this search in order to avoid an extensive screening exercise their inclusion would necessitate.

Methodological literature

The objective of the searches for methodological literature was to uncover studies which addressed issues of survey design and questionnaire content. The search for methodological literature, however, was a great deal more problematic than that for studies examining attitudes and behaviours.

It has proved difficult to find search terms which discriminate effectively between studies which are primarily methodological and those which are substantive in nature but which have some discussion of methodology. A set of search terms which effectively discriminated between such literatures was essential given that a lengthy screening exercise could not be conducted. Some initial searches undertaken identified very little methodological literature, or identified thousands of studies that would need to be screened carefully in order to find relevant work.

After discussion with the FSA, it was decided to narrow the remit of the methods searches. The following databases were to be included:

- ASSIA
- SSCI
- Econlit
- IBSS
- Psycinfo
- Medline
- SCI

The search terms identified as relevant and used in searches are set out in Table C3 below:

Table C3: Terms used for methodological searches

Search	Terms
1	Self-report or Questionnaire or Survey
2	Food or Diet or Nutrition
3	Reliability or validity
4	Social desirability

Searches 1, 2 and 3 were combined and then searches 1, 2 and 4. Records in English from 1990 onward were included in the search. Title, keyword and abstract fields were examined. These searches initially yielded 101 studies mentioning 'social desirability' and 1,523 mentioning 'reliability' and 'validity' in their citations. Search results yielding this number of studies could not be screened effectively. An alternative strategy was implemented, involving searching on title field only. After initial screening, the results of this search yielded 341 studies in total, including 15 which dealt specifically with issues of social desirability bias in food and general research. These studies were added to an Endnote database and made available to FSA researchers.

Annex D – Questions on food choice

I. Sustainable development in Food Policy Survey

Q6a. When you go food/grocery shopping, what issues do you consider when choosing one food product over another?

DO NOT PROMPT – MULTI CODE BELOW –

PROBE AFTER EACH ANSWER ‘ANY THING ELSE?’ UNTIL

RESPONDENT SAYS THERE ARE NO OTHER ISSUES CONSIDERED

Q6b. And when you go food/grocery shopping, which of the following issues do you consider when choosing one product over another? **SHOW SCREEN – ROTATE ORDER – MULTI CODE BELOW**

	Q6a	Q6b
<u>Economic</u>		
Price	1	1
Special offers	2	2
Quality of food	3	3
Brand name	4	4
Use-by date / best before date.....	5	5
Impact on the community where food comes from e.g. benefit to local community / creation of jobs	7	7
<u>Environmental</u>		
Organically produced	8	8
Free range	9	9
Seasonality of food	10	10
Food miles i.e. distance food has travelled	11	11
Sustainability of food source e.g. numbers of fish diminishing	12	12
Impact on the landscape/wildlife where the food was produced e.g. impact on endangered species.....	13	13
Amount of non-recyclable packaging used	14	14
<u>Social</u>		
Fair trade – i.e. ensures a fair deal for producers.....	16	16
Healthiness of the food	17	17
Salt levels	18	18
Fat content	19	19
Calorie content	20	20
Supporting the local farming community.....	21	21
Other (please specify).....	22	22

Q7a. I'd now like you to rate each issue on a scale of 1 to 10, where 10 means that issue is extremely important when choosing one food product over another and 1 means it's not at all important

SHOW SCREEN

ONLY SHOW FACTORS SELECTED AT Q6a OR Q6b

Economic

Price []
Special offers []
Quality of food []
Brand name []
Use-by date / best before date..... []
Impact on the community where food comes from
e.g. benefit to local community / creation of jobs []

Environmental

Organically produced []
Free range []
Seasonality of food []
Food miles i.e. air transportation []
Sustainability of food source e.g. numbers of fish diminishing []
Impact on the landscape/wildlife where the food
was produced e.g. impact on endangered species..... []
Amount of non-recyclable packaging used []

Social

Fair trade – i.e. ensures a fair deal for producers in developing countries []
Healthiness of the food []
Salt levels []
Fat content []
Calorie content []
Supporting the local farming community..... []

RANK EVERY FACTOR AT Q7a BY BREAKING EACH EXERCISE DOWN INTO DIFFERENT RATING GROUPS – IF ONLY ONE FACTOR GETS A SPECIFIC RATING THEN AUTOMATICALLY RANK THAT FACTOR NEXT IN RANK

Q7b. You rated the following issues as 10 out of 10 for importance. Which of these issues is the most important? And which is the next most important?...
continue until all issues ranked.

SHOW SCREEN

You rated the following issues as 9 out of 10 for importance. Which of these issues is the most important? And which is the next most important?...
continue until all issues ranked. **SHOW SCREEN**

REPEAT FOR ALL RATINGS UNTIL HAVE FULLY RANKED LIST

Economic

Price []
 Special offers []
 Quality of food []
 Brand name []
 Use-by date / best before date..... []
 Impact on the community where food comes from
 e.g. benefit to local community / creation of jobs []

Environmental

Organically produced []
 Free range []
 Seasonality of food []
 Food miles i.e. air transportation []
 Sustainability of food source e.g. numbers of fish diminishing []
 Impact on the landscape/wildlife where the food
 was produced e.g. impact on endangered species..... []
 Amount of non-recyclable packaging used []

Social

Fair trade- i.e. ensures a fair deal for producers in developing countries []
 Salt levels []
 Fat content []
 Calorie content []
 Supporting the local farming community..... []

II. British Social Attitudes Survey

CARD

CODE ALL THAT APPLY

There are many reasons why we choose the foods that we eat at home.
What would you say are the most important influences on your choice of foods?

INTERVIEWER: CODE ALL THAT APPLY

PROBE: Which others?

- Quality or freshness of food
 - Taste of food
 - Eating food that is healthy or low fat
 - Presentation / packaging / advertising / brand
 - Vegetarian or other special eating habits
 - Number of additives or E numbers in food
 - Habit or routine
 - To try something new or different
 - What my family / spouse / children will eat
 - Convenience in preparation
 - Availability in the shops I can usually get to
 - Recommendations from friends, family or colleagues
 - Foods I know how to cook / prepare
 - Price of food / value for money / special offers
 - Whether food is organically produced
 - Animal welfare / free range
 - Impact on the community where food comes from / fair trade / supporting local farms and industries
 - Impact of the food on the landscape where it was produced
 - Amount / type of packaging used e.g. recycled
 - Other answer (PLEASE SAY WHAT)
-

(Someone else decides on most of the food I eat)
(No particular influence)

How much do you agree or disagree with each of these statements...

a. ...I buy food that is processed as it is easier to prepare and store?

- 1 Strongly agree
- 2 Agree
- 3 Neither agree nor disagree
- 4 Disagree
- 5 Strongly disagree
- 0 Don't know

b. ...I like food to be unprocessed, even if this means that it takes more effort to prepare and keep fresh?

- 1 Strongly agree
- 2 Agree
- 3 Neither agree nor disagree
- 4 Disagree

5 Strongly disagree

0 Don't know

c. ...I want food that I buy to look attractive, even if this means it has been processed in some way?

1 Strongly agree

2 Agree

3 Neither agree nor disagree

4 Disagree

5 Strongly disagree

0 Don't know

d. I want food that I buy to be unprocessed, even if this means that it has an irregular appearance?

1 Strongly agree

2 Agree

3 Neither agree nor disagree

4 Disagree

5 Strongly disagree

0 Don't know

III. Public Attitudes to Food Issues

The next few questions are about the choices you make when deciding what food to eat or buy.

SHOW CARD 2 What would you say is important to you when deciding what to buy to eat at home? **RECORD BELOW**

SHOW CARD 2 What would you say is important to you when deciding what to buy to eat outside the home? **RECORD BELOW**

	A3 Eat at home	A4 Eat outside the home
	01	01
Animal welfare/free range	02	02
Availability in the shops I can usually go to	03	03
Convenience/speed	04	04
Eating food that is healthy	05	05
Environmental considerations (e.g. from a sustainable source, impact on the landscape)	06	06
Risk of food poisoning	07	07
Indulgence/a treat	08	08
Locally grown food	09	09
Number of additives or E numbers in food	10	10
Organic food	11	11
Price/value for money/special offers	12	12
Special diets (e.g. vegetarian, allergies, religious)	13	13
What I like/what the family likes	14	14
Whether food is in season	15	15
Other (specify)	16	16
Someone else decides on most of the food I eat	17	17
No particular influence		

Annex E – Examples of Questions on food choice found in the Data Catalogue

I. Avon Longitudinal Study of Parents and Children (asked 2002)

When you are choosing food for meals for your family, how much do the following influence your choice?

a) Cost

1 A lot

2 Quite a bit

3 A little

4 Not at all

b) What your children prefer to eat

1 A lot

2 Quite a bit

3 A little

4 Not at all

c) What you prefer to eat

1 A lot

2 Quite a bit

3 A little

4 Not at all

d) What other people prefer to eat (e.g. partner, other adult)

1 A lot

2 Quite a bit

3 A little

4 Not at all

e) Convenience of preparation

1 A lot

2 Quite a bit

3 A little

4 Not at all

f) What is good (healthy) for us to eat

1 A lot

2 Quite a bit

3 A little

4 Not at all

g) The special offers available when shopping

1 A lot

2 Quite a bit

3 A little

4 Not at all

h) Adverts/programmes on the television/radio

- 1 A lot
- 2 Quite a bit
- 3 A little
- 4 Not at all

i) Articles about food and recipes in newspapers/ magazines

- 1 A lot
- 2 Quite a bit
- 3 A little
- 4 Not at all

j) Dietary requirements of a member of the family

- 1 A lot
- 2 Quite a bit
- 3 A little
- 4 Not at all

k) Other (please tick and describe)

- 1 A lot
- 2 Quite a bit
- 3 A little
- 4 Not at all

II. Growing up in Scotland

Can you tell me how much the following things affect what you give ^childname to eat?

First, the time it takes to prepare meals?

- 1 A lot
- 2 A fair amount
- 3 A little
- 4 Not at all

(And how much do) the things that ^he will and won't eat affect what you give ^childname?

- 1 A lot
- 2 A fair amount
- 3 A little
- 4 Not at all

How much do the things that other people in the household will and won't eat affect > what you give ^childname?

- 1 A lot
- 2 A fair amount
- 3 A little
- 4 Not at all

And how much does the cost of food affect what you give ^childname to eat?

- 1 A lot
- 2 A fair amount

- 3 A little
- 4 Not at all

Finally, how much does your knowledge about cooking affect what you give
>^childname to eat?

- 1 A lot
- 2 A fair amount
- 3 A little
- 4 Not at all

III. Health Education Population Survey

Here are some things which might discourage people from eating more healthy foods. Which do you think might PREVENT you from eating more healthy foods?
(2003-05)

- 1 - Family discouraging or unsupportive
- 2 - Friends discouraging or unsupportive
- 3 - People at work discouraging or unsupportive
- 4 - Not knowing what changes to make
- 5 - Not knowing how to cook more healthy foods
- 6 - Poor choice of healthy foods in canteens and restaurants
- 7 - Poor choice of healthy foods in places where you shop
- 8 - Healthy foods are too expensive
- 9 - Healthy foods take too long to prepare
- 0 - Healthy foods too boring
- 1 - Lack of will-power
- 2 - Don't like the taste/ don't enjoy healthy foods
- Y - Don't Know
- X - None of these
- 0 - Other

IV. Low-income Diet and Nutrition Survey

There are many reasons why we choose the foods that we eat. Looking at this list, which would you say are the most important influences on your choice of foods?

- 1 Quality or freshness of food
- 2 Habit or routine
- 3 Price of food
- 4 What my family / spouse / children will eat
- 5 Trying to eat a healthy diet
- 6 Taste of food
- 7 Value for money
- 8 Convenience in preparation
- 9 Presentation or packaging
- 10 Slimming
- 11 How much money I've got for food
- 12 Vegetarian or other special eating habits

- 13 Health/medical reasons
- 14 Content of additives or preservatives or colours
- 15 My cultural or religious or ethnic background
- 16 Availability in the shops I can usually get to
- 17 Recommendations from friends, family or colleagues
- 18 Advertising
- 19 Foods I know how to cook / prepare
- 20 Someone else decides on most of the food I eat
- 21 Other
- 22 No particular influence

Out of those you have chosen, which would you say is the most important influence on your choice of foods?

Out of those you have chosen, which would you say is the second most important on your choice of foods?

Out of those you have chosen, which would you say is the third most important influence on your choice of foods?

V. ONS Omnibus Survey

May I just check, why you do not eat more fruit and vegetables?

- 1 Too expensive
- 2 Difficult/can't be bothered to prepare or cook
- 3 Don't like the taste
- 4 Others in household/family don't like the taste
- 5 Doesn't keep for very long
- 6 No convenient place to buy
- 7 Too heavy/bulky to carry home
- 8 They're boring
- 9 Other

Please specify other reason why you don't eat more fruit and vegetables.

VI. Survey of Public Attitudes and Behaviours Toward the Environment

What, if anything, stops you from making more environmentally friendly choices in the food and groceries you buy?

- Nothing – I already buy all that I can
- Too expensive
- Not such good quality
- Not available where I shop
- Not enough labelling/information
- Too much effort
- Not enough time
- Does not help the environment

Don't see the point/not interested
More important things to think about
Just don't think about it/No particular reason
Other (specify)
Don't know

Annex F - Items on the full Marlowe-Crowne Social Desirability Scale²⁹

1. Before voting I thoroughly investigate the qualifications of all the candidates. (T)
2. I never hesitate to go out of my way to help someone in trouble. (T)
3. It is sometimes hard for me to go on with my work, if I am not encouraged. (F)
4. I have never intensely disliked anyone. (T)
5. On occasion I have had doubts about my ability to succeed in life. (F)
6. I sometimes feel resentful when I don't get my way. (F)
7. I am always careful about my manner of dress. (T)
8. My table manners at home are as good as when I eat out in a restaurant. (T)
9. If I could get into a movie without paying and be sure I was not seen, I would probably do it. (F)
10. On a few occasions, I have given up doing something because I thought too little of my ability. (F)
11. I like to gossip at times. (F)
12. There have been times when I felt like rebelling against people in authority even though I knew they were right. (F)
13. No matter who I'm talking to, I'm always a good listener. (T)
14. I can remember "playing sick" to get out of something. (F)
15. There have been occasions when I took advantage of someone. (F)
16. I'm always willing to admit it when I make a mistake. (T)
17. I always try to practice what I preach. (T)
18. I don't find it particularly difficult to get along with loud-mouthed, obnoxious people. (T)
19. I sometimes try to get even rather than forgive and forget. (F)
20. When I don't know something I don't at all mind admitting it. (T)
21. I am always courteous, even to people who are disagreeable. (T)
22. At times I have really insisted on having things my own way. (F)
23. There have been occasions when I felt like smashing things. (F)
24. I would never think of letting someone else be punished for my wrongdoings. (T)
25. I never resent being asked to return a favor. (T)
26. I have never been irked when people expressed ideas very different from my own. (T)
27. I never make a long trip without checking the safety of my car. (T)
28. There have been times when I was quite jealous of the good fortune of others. (F)

²⁹ see <http://home.iprimus.com.au/burgess1/mc.html>

- 29. I have almost never felt the urge to tell someone off. (T)
- 30. I am sometimes irritated by people who ask favors of me. (F)
- 31. I have never felt that I was punished without cause. (T)
- 32. I sometimes think when people have a misfortune they only got what they deserved. (F)
- 33. I have never deliberately said something that hurt someone's feelings. (T)