Consumer & Behaviour group on track?

Food choice research at the LEI Consumer & Behaviour group

benchmarked against international literature

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Consumer & Behaviour group on track?

Food choice research at the LEI Consumer & Behaviour group benchmarked against international literature

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LEI is active in the following research areas:

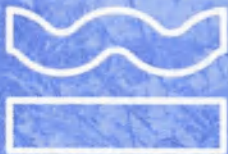**Agriculture & Entrepreneurship**

Regional Economy & Land Use

Markets & Chains

International Policy

Natural Resources

Consumer & Behaviour

Consumer & Behaviour group on track?; Food choice research at the
LEI Consumer & Behaviour group benchmarked against international literature

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Contents

Abstract

Since January 2010, the newly established Consumer and Behaviour (CB) group of LEI, part of Wageningen UR, has focused research attention on consumers' consumption behaviour of agri-food products and its determinants. To determine to what extent the work of CB group matches international literature in terms of study topic within the food domain, theoretical underpinning, and research methodology, this report reviews both internationally published research and CB group research, thereby serving as a benchmark for CB group research.

Food choice behaviour has been studied frequently and from multiple angles, involving different disciplines, different paradigms and therefore different research methods. Combining these methods, the so-called *multi-method-approach* (MMA), could offer opportunities to validate findings and to facilitate interpretation. However, MMA is hardly applied in reality. To stimulate the use of MMA in the field of consumers, nutrition, and health, an overview of the research methods applied to this field is needed. This report presents a systematic review of the research methods applied to this field as reported in recent scientific literature. Subsequently, we map recent work of the newly established Consumer and Behaviour Group (CB) of LEI onto this international overview.

The results show that the research area of consumers' food choice behaviour is extensive; after the application of strict inclusion criteria, the data set contained 129 publications in just one year (2009). Appetite appeared to be the leading journal in this area. Comparing the CB publications to international papers, it is clear that the focus of CB publications is less on health-related foods (fruit, vegetables, fat, calories) and more on organic food consumption and new technology (nutrigenomics). In both datasets, few studies were built upon well-defined theoretical models (e.g. the Theory of Planned Behaviour). A striking difference between the two datasets is the use of quantitative vs. qualitative research designs. The proportion of qualitative studies is much higher in CB publications (57.1%) than in international publications (5.7%), and the few quantitative CB publications hardly used the more sophisticated data analysis techniques. We did not find any explicit report of MMA in the datasets. In only three of the international papers (2.3%), and four of the CB publications (23.5%), the classic combination of qualitative research followed by quantitative testing was reported.

In conclusion, this report shows that the CB group is working on a new and/or niche area within the field of consumers' food choice behaviour. In terms of research methodology, the CB group could maintain their lead position on the use of multiple methods by increasing the combination of qualitative and quantitative research.

Keywords
Food choice behaviour, research methods, systematic review, multi-method approach

1   Introduction

Food and eating are inextricably bound up with many other activities, behaviours, events, and situations in people's lives, and therefore hold a unique position in traditions and culture. This diversity in aspects of food and eating is also reflected in research on the topic. Food choice has been studied frequently and from multiple angles, involving different disciplines, different paradigms and therefore different research methods. A rough distinction in disciplines can be made between research at the (macro-)level of society, for example, by sociologists and economists, and research at the (micro-)level of the individual, for example, by psychologists. Both between and within macro- and micro-level, large differences exist as to the focus of research and methodologies used. This diversity of methods might offer opportunities to validate findings and to facilitate interpretation. By combining different methods, the so-called *multi-method-approach* (MMA) (see for example Bava, Jaeger and Park, 2008), weaknesses of individual methods can be overcome (Brewer and Hunter, 2005). Advantages of MMA include triangulation (seeking to validate data and results by combining a range of data sources, methods, or observers), creativity (discovering fresh or paradoxical factors that stimulate further work), and expansion (widening the scope of the study to take in contextual aspects of the situation) (Tashakkori and Teddlie, 1998).

In reality, however, MMA is only scantily applied. At least four explanations for this have been put forward (Mingers, 2003): 1) Philosophically, methods are a part of scientific paradigms and paradigms may build on incompatible assumptions, 2) Culturally, science is practised in different sub-cultures, originating from different countries and different universities, 3) Psychologically, researchers have their own skills and preferences that may be more applicable to certain research methods, 4) Practically, MMA is expensive and time-consuming. Alternatively, it is possible that MMA is used but does not appear in published literature, for example when it is applied to a series of interrelated projects within a broad topic that are published individually. To stimulate the use of MMA in the field of consumers, nutrition, and health, it would be useful to generate an overview of the research methods applied to this field. Such an overview could provide clues where MMA would add value in this extensive research area.

Since January 2010, the newly established Consumer and Behaviour (CB) group of LEI, part of Wageningen UR, has focused research attention on consumers' consumption behaviour of agri-food products and its determinants. To determine to what extent the work of CB group matches international literature in terms of study topic within the food domain, theoretical underpinning, and research methodology, this report will review both internationally published research and CB group research. Thereby, it aims to be a benchmark for CB group research. The approach of this report is twofold. First, it reviews research methods that are currently applied to food choice behaviour as reported in scientific literature. We use the method of systematic literature review to this end, as it enables the synthesis of literature sources of various sorts into a robust, reproducible overview. Second, this report compares the methods reported in international publications to those used in studies by the Consumer and Behaviour (CB) group of LEI, part of Wageningen UR. By mapping the CB group studies onto their internationally published counterparts, strengths of CB group research will become apparent, as well as methods that deserve more attention from CB group researchers.

2   Study 1 - International publications

2.1   Method

The publication search was conducted in the bibliographic database Web of Science, a non-free online database listing the journals in the ISI database, listing for natural sciences (1945-present), social sciences (1956-present) and arts & humanities (1975-present). To select all relevant publications reporting scientific research on food choice behaviour, a search was created from four building blocks. Block one (the topic) covered the publications dealing with food choice behaviour in a broad sense. The second block (the actor) limited the population of study to the consumer. Block three (the dependent) ensured publications discussing some measure of behaviour, and block four (the independent) delineated the set of papers to those investigating some type of relation between any type of determinants and food choice behaviour. The construction of this syntax was an iterative process, starting from the research question of this study and extended by synonyms, abbreviations, and varieties. To focus on peer-reviewed original insights, papers had to be original articles, review papers or discussion papers. For practical purposes, the papers had to be written in English. This procedure resulted in the Boolean expression which was entered into the topic search of Web of Science (table 2.1).

Table 2.1	Final search term methods in research on food choice
Block	Search term[a]
Topic	'food choice' OR 'dietary behav*' OR eat*
Actor	consumer* OR customer* OR participant* OR people
	AND
Dependent	prefer* OR choose OR behav*
	AND
Independent	determinant OR caus* OR predict* OR influence OR associat* OR correlat*
	AND
Other	Language=(English) AND Document Type=(Article OR Discussion OR Review)

a) Boolean operators OR make a combined set containing at least one of the keywords (or subset) and AND making a set consisting of elements that contain both keywords (or subsets of keywords). An asterisk (*) is a wild card, a sign that can be replaced for any string in a single go. Quotation marks make sure of an exact use of the enclosed term, including spaces.

The abstracts of the located papers were quick-scanned for relevance, and papers were only included if they used food choice behaviour or food choice-behaviour related neurocognitive, cognitive, affective, attitudinal, motivational or behavioural processes as the dependent variable. Studies on alcohol abuse/addiction and studies on eating disorder were excluded because the medical and clinical nature of these literatures makes the scope of their conclusions inapplicable to the general population.

Based on the research aims the structure of the coding scheme was developed. Then papers from the set were read in detail to further develop the coding scheme with emerging themes (bottom up), until a point of saturation was reached. The topics in the coding scheme were:
- the target sample (e.g., general population, rural population);
- the age category of the target sample (e.g., children, adolescents, adults);
- the type of food under investigation (e.g., vegetable consumption, fruit consumption, snack consumption, consumption of novel foods or functional foods, organic consumption);
- whether the study employed a comprehensive conceptual model and, if so, which model (Theory of Planned Behaviour, Health Belief Model, a model especially construed by the authors for the study);
- the independent variables;
- the level of operationalisation for the dependent behaviour (neurocognitive processes, knowledge, attitude, intentions, behaviour);

- in case behaviour was the dependent variable, whether behaviour was assessed by means of self-report or by means of observations;
- whether the paper presented empirical data or offered a theoretical contribution, like for instance a review);
- in case of empirical studies, whether the study employed quantitative or qualitative methodology and which design was employed (e.g., experiment, survey, focus group, interview);
- in case of a quantitative study, whether the study employed previously validated questionnaires;
- in case of quantitative studies, which data-analytical strategies were employed (e.g., correlation, t-tests, structural equation modelling);
- to calculate an index for quality, each paper was scored on presence or absence of five indicators, namely 1) clear research question, 2) adequate research design, 3) adequate sampling, 4) good analysis or robust reasoning, and 5) conclusions following clearly from the results;
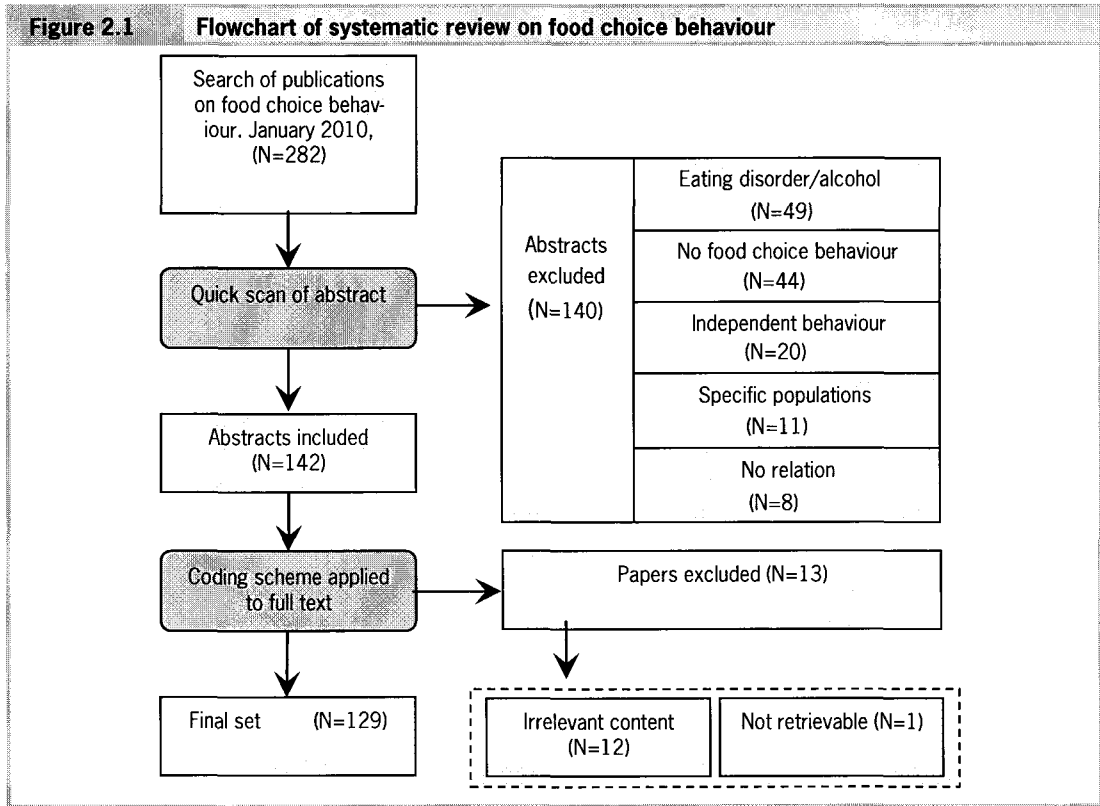- the final search was done on 7 January, 2010.

2.2 Results

The search, presented in table 1, yielded 282 articles that had the potential to be included in the review. The abstracts were quick-scanned, and of all 282 articles:
- 49 articles (17.4%) were excluded because they focused on eating disorders (N=46) or alcohol (N=3);
- 44 articles (15.6%) were excluded because food choice-behaviour related processes were not assessed;
- 20 articles (7.1%) were excluded because food choice behaviour functioned as the independent variable;
- 11 articles (3.9%) were excluded because they focused on food choice behaviour in specific patient populations which are not representative of the general population;
- 8 articles (2.8%) were excluded because they examined food choice behaviours in animals;
- 8 articles (2.8%) were excluded because no relations between relevant variables were assessed (e.g., the study presents percentage of respondents who have adequate knowledge, but does not investigate which factors affect knowledge).

In total, 142 articles (50.4%) met all inclusion criteria. The full text of these 142 papers selected on abstract was acquired from Wageningen UR Library. Those not available were requested either through the interlibrary service or by requesting a copy from the corresponding author of the paper by e-mail. Twelve of the 142 papers were excluded after reading the full text because they were published before 2009 (N=4), did not have food choice behaviour as the dependent variable (N=4), were different types of publications (e.g. letter to the editor) (N=3), or because the main topic was eating disorders (N=1). One paper was not retrievable. The paper selection process is displayed in figure 2.1.

The 129 different papers were published in 69 different sources. The number one outlet for publications in this field is the journal *Appetite* (N=19), followed by *Journal of the American Dietetic Association* (N=9), *Journal of Nutrition Education and Behavior* (N=9), *Public Health Nutrition* (N=5), *International Journal of Behavioral Nutrition and Physical Activity* (N=5), *Journal of Human Nutrition and Dietetics* (N=4), *International Journal of Obesity* (N=4), and *Food Quality and Preference* (N=3). The remaining 61 sources published two or fewer papers.

Figure 2.1   Flowchart of systematic review on food choice behaviour

Search of publications on food choice behaviour. January 2010, (N=282)

↓

Quick scan of abstract → Abstracts excluded (N=140)

Eating disorder/alcohol (N=49)
No food choice behaviour (N=44)
Independent behaviour (N=20)
Specific populations (N=11)
No relation (N=8)

↓

Abstracts included (N=142)

↓

Coding scheme applied to full text → Papers excluded (N=13)

↓

Final set   (N=129)

Irrelevant content (N=12)   Not retrievable (N=1)

Study characteristics
Most studies focused on vegetable and fruit consumption, and consumption of fat and calories (see table 2.2). Little attention was paid in the literature to functional foods, novel foods or organic foods.

Table 2.2   Food product category investigated in the included studies

Food product category	N[a]	% of 129 papers
Vegetables/fruit	51	39.5
Fat/calories	33	25.6
Fast food/snacks/sugary foods	18	14.0
Beverages	6	4.7
Salt	5	3.9
Fibre	5	3.9
Dairy	4	3.1
Eating pattern	3	2.3
Novel foods/functional foods	1	.8
Organic	1	.8
Other	63	48.8

a) As some papers cover more than one product category, the numbers add up to more than 129.

With regards to the theoretical underpinning of the included studies, it is noteworthy that, of all 129 papers, only 17 (13.2%) used a conceptual model as the starting point of the research. Of these, eight papers used the Theory of Planned Behaviour (6.2% of the total number of papers), one paper used the Health Belief Model (.8%) and one paper used the Trans Theoretical Model. In nine papers, other conceptual models were used, such as Social Cognitive Theory and Identity Theory.

The dependent variable in the included studies was most often operationalised on the level of behaviour (N=85). A significant number of studies focused on attitudes (N=11) and intention (N=12), but little at-

tention was paid to knowledge (N=9) or neurocognitive processes (N=2). 48 papers reported other dependent variables, examples including weight (N=4), preference (N=3), liking (N=2), and satiety (N=1).

Methodology
Of all papers, zeven papers were reviews or theoretical pieces, whereas 122 papers reported empirical studies. Of these, acht (6.6%) employed one or more pilot studies and 83 (68.0%) employed previously validated questionnaires. Furthermore, two papers (1.6%) reported questionnaire validation studies. Most papers (89.3%) reported quantitative studies, of which the majority employed a survey design. Only 5.7% of papers reported qualitative studies (see table 2.3). A small proportion of studies applied multiple methods. Only three studies combined qualitative and quantitative research. More specifically, two studies combined a survey study with interviews, and one combined a survey with focus groups. Other combinations made in our sample were experimental research with either a clinical controlled trial or a survey.

Table 2.3   Study design

|	N a)	% of 122 empirical papers
Quantitative	*109*	*89.3*
Experiment	22	18.0
Randomised Clinical Trial	10	8.3
Survey	79	64.8
Qualitative	*7*	*5.7*
Interviews	4	3.3
Focus group interviews	3	2.5

a) Note that a single paper can report multiple research methodologies. Therefore, the sum of experimental, RCT and survey research is larger than the total number of quantitative studies.

In the 109 quantitative studies, regression and ANOVA were the most commonly used data-analytic strategies (see table 2.4).

Table 2.4   Analytic strategies

	N a)	% (of 109 quantitative papers)
Regression	47	42.3
ANOVA	42	37.8
t-test	31	27.9
Correlation	25	22.5
Chi-2	21	18.9
Multilevel regression	6	5.5
Structural Equation Modeling	6	5.4
Exploratory factor analysis	6	5.4
Cluster analysis	5	4.5
Confirmatory factor analysis	4	3.6

a) Note that a single paper can report multiple analytic strategies. Therefore, the numbers add up to more than 109.

A χ^2 test was conducted to investigate whether the level on which the dependent was operationalised differed significantly between investigated product categories (see figure 2.2). Only dependent variables and product categories with >5 observations were analysed for reasons of robustness. The results showed no significant differences, $\chi^2(9)=6.24$, p=.72.
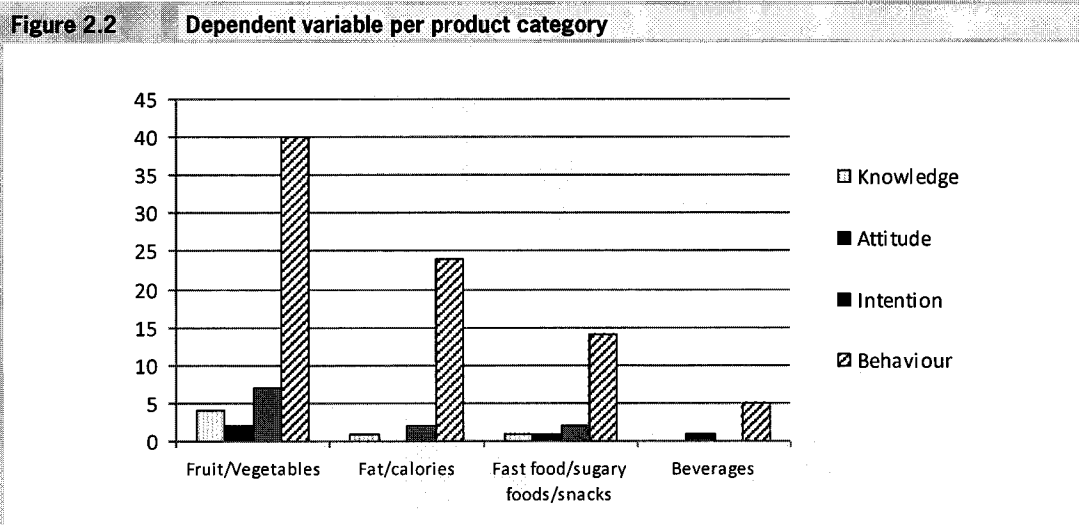
**Figure 2.2   Dependent variable per product category**

To investigate whether the employed design differed significantly between investigated product categories (see figure 2.3), another χ^2 test was conducted on designs and categories with >five observations. The results of this test also showed no significant differences, $\chi^2(9)=10.76$, p=.29.
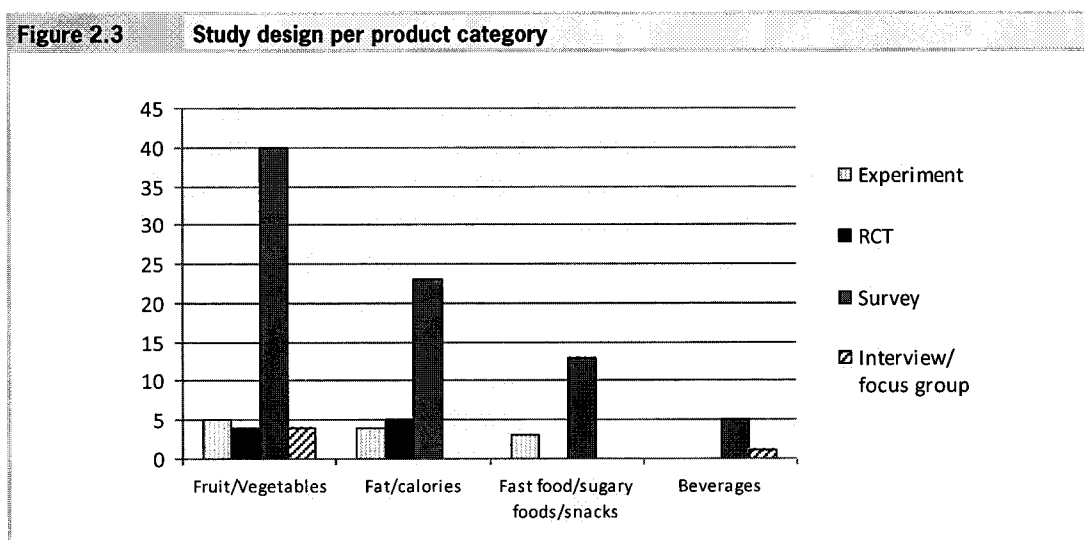
Figure 2.3   Study design per product category

To investigate whether the employed design differed significantly between the levels of operationalisations of the dependent variable (see figure 2.4), another χ^2 test was conducted on designs and dependent variables with > five observations. The results showed no significant differences, $\chi^2(9)=4.66$, p=0.86.

Figure 2.4   Study design per dependent variable
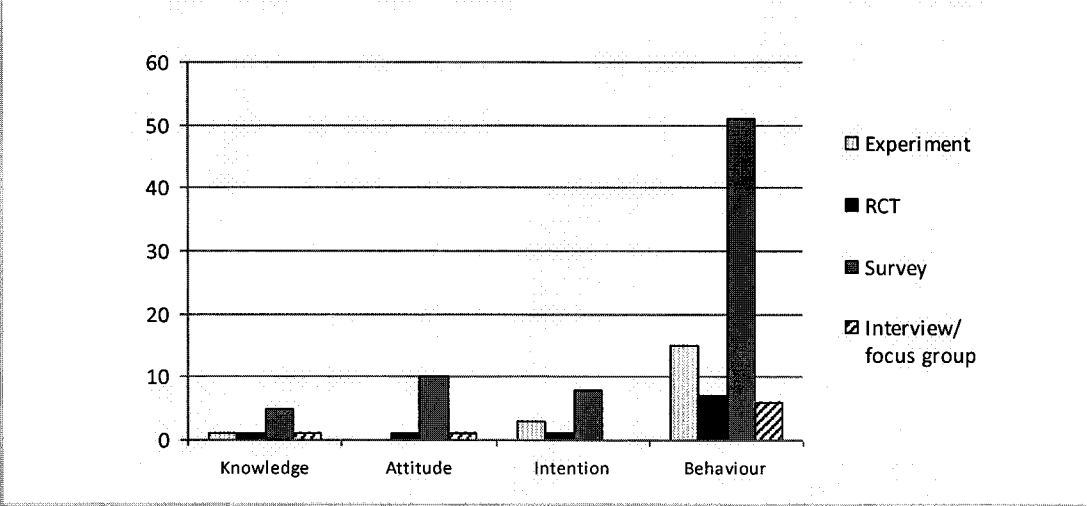
3 Study 2 - Consumer and Behaviour publications

3.1 Method

To identify relevant publications from the LEI research area Consumer and Behaviour (CB) in the time period from January to December 2009, references were retrieved from Wageningen UR Library. First, a list was made of all publications authored or co-authored by members of the CB department (these also included 2009 publications which were (co)authored by people who joined the department later, e.g. Snoek et al in 2010 (Snoek, Van Strien, Janssens and Engels, 2009)). Out of the publications on the list, only peer-reviewed scientific papers, written and peer-reviewed conferences papers and LEI reports were considered for the analyses. Presentations, workshops, published interviews and other non-written or non-scientific publications were excluded from the review. The reason for this was the fact that there was great overlap between different types of publications, for instance when the results from one study were reported in both peer-reviewed papers and in presentations and workshops. By focusing only on written reports and papers, this overlap could be minimised.

Identical to study 1, only studies were included that used food choice behaviour or food choice-behaviour related neurocognitive, cognitive, affective, attitudinal, motivational or behavioural processes as the dependent variable. Studies that focused on management of the food-chain or developments in agriculture were excluded.

3.2 Results

The initial search yielded 136 titles that were published by members of the CB unit in 2009. For each of these publications, the abstract and publication information that was available in Wageningen UR Library were studied to determine whether they met our inclusion criteria. Of all 130 articles:
- 84 articles (64.6%) were excluded because they did not consist of written scientific papers or LEI reports. These were predominantly presentations at scientific and non-scientific venues;
- 29 articles (22.3%) were excluded because food choice behaviour was not the focus of the research.

In total, 17 publications (13.1%) met all inclusion criteria.

For all 17 included studies, the same aspects were recorded as for the set of international peer-reviewed publications in study 1. Many CB publications focused not primarily on knowledge, attitudes or intentions, but on the related concepts of perceptions, evaluations and preferences. For this reason, we broadened the knowledge category to include perceptions, the attitudes category to include evaluations and the intentions category to include preferences. One other difference was that LEI reports were not evaluated according to the five quality dimensions on the basis of which the quality of the international papers was coded. The reason for this is that these five dimensions were specifically developed for peer-reviewed scientific publications and were not appropriate to judge LEI reports.

Study characteristics
As can be seen in table 3.1, 35.3% of CB publications focused on the consumption of organic products. Fruits, sustainable products and nutrigenomics were also covered in more than one publication, whereas vegetables, calories, fish/meat, healthy foods, and total diet were each covered in one publication. This is a marked difference from the international papers that were retrieved, which focused mainly on specific healthy or unhealthy eating behaviours, such as fruit, vegetable, calorie or snack consumption.

Table 3.1	Food product category investigated in the included studies	
Food product category	**N a)**	**% of 17 publications**
Organic	6	35.3
Fruit	3	17.6
Nutrigenomics	2	11.8
Sustainable products	2	11.8
Vegetables	1	5.9
Calories	1	5.9
'Healthy foods'	1	5.9
Total diet	1	5.9
Fish/meat	1	5.9

a) Note that a single paper can report multiple food product categories.

With regards to the theoretical underpinning of the included studies, of all 17 publications, three publications (17.6%) used a conceptual model as the starting point of the research. However, the Theory of Planned Behavior, the Health Belief Model, the Trans Theoretical Model or other well-known models were not used in the research. Instead, authors constructed their own model.

The results also show that the dependent variable in the included studies was most often operationalised on the level of behaviour (N=7). As opposed to the international papers from study 1, knowledge/perceptions were the object of interest in many CB publications (N=6). A number of studies focused on attitudes/evaluations (N=4), but only one publication covered intentions/preferences. No publications investigated neurocognitive processes.

Methodology
Of all papers, three publications were reviews or theoretical pieces, whereas 14 publications reported empirical studies. Of these, two (11.8%) used one or more pilot studies and three (17.6%) used previously validated questionnaires. No questionnaire validation studies were reported. Whereas only 5.7% of the empirical international papers from study one used qualitative studies, a significant part of empirical CB publications concerned qualitative studies (see table 3.2).

Table 3.2	Study design	
	N a)	**% (of 14 empirical papers)**
Quantitative	*9*	*64.3*
Experimental	3	21.4
Survey	6	42.8
Qualitative	*8*	*57.1*
Interviews	4	28.6
Focus group interviews	5	35.7

a) Note that a single paper can report multiple study designs.

Also in contrast to the international papers, that most often used regression and ANOVA, quantitative CB publications most often used correlation and t-tests as data-analytic procedures (see table 3.3).

Table 3.3 Analytic strategies	N a)	% (of 9 quantitative papers)
Correlation	3	33.3
t-test	3	33.3
Anova	2	22.2
Chi-2	2	22.2
Cluster analysis	2	22.2
Regression	1	11.1
Structural Equation Modeling	1	11.1
Exploratory factor analysis	1	11.1

a) Note that a single paper can report multiple analytic strategies.

To investigate whether the level on which the dependent variable was operationalised differed significantly between investigated product categories (figure 3.1), a χ^2 test was conducted. Only dependent variables and product categories with > one observations were analysed for reasons of robustness. The results showed no significant differences, $\chi^2(6)=5.95$, p=.43.
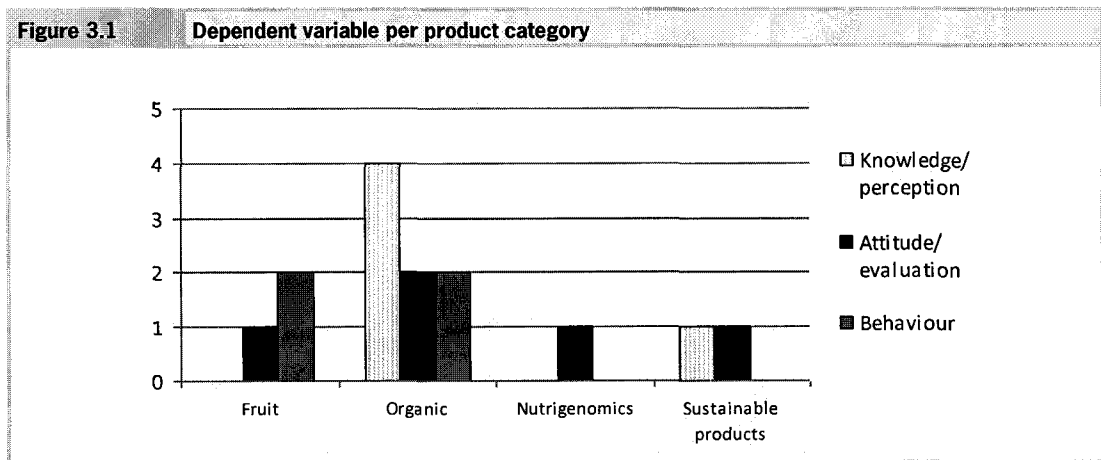
Figure 3.1 Dependent variable per product category

Figure 3.2 Study design per product category

To investigate whether the employed design differed significantly between investigated product categories (figure 3.2), another χ^2 test was conducted. The results showed no significant differences, $\chi^2(9)=8.90$, p=.45.
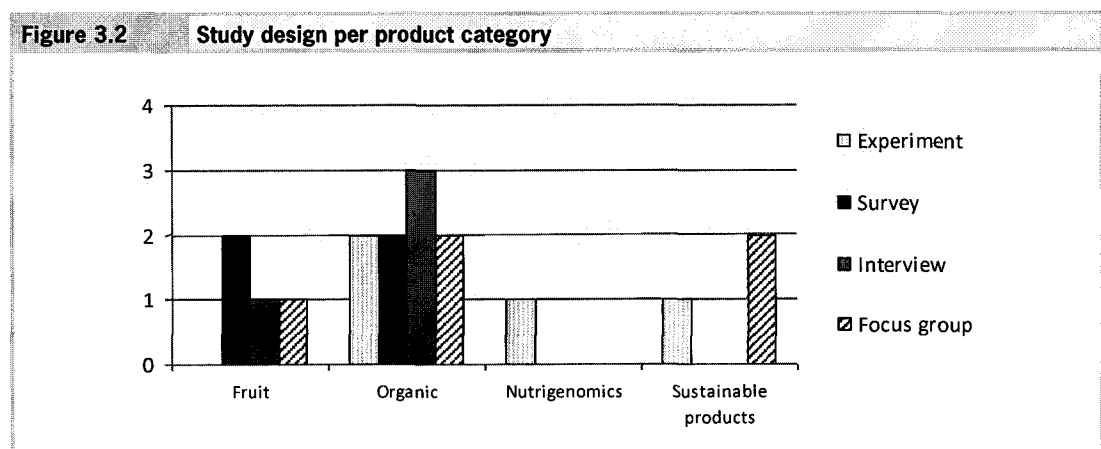
Another χ^2 test was conducted to investigate whether the employed design differed significantly between the levels of operationalisations of the dependent variable (see figure 3.3). The results showed no significant differences, $\chi^2(6)=5.01$, p=.54.

Figure 3.3   Study design per dependent variable
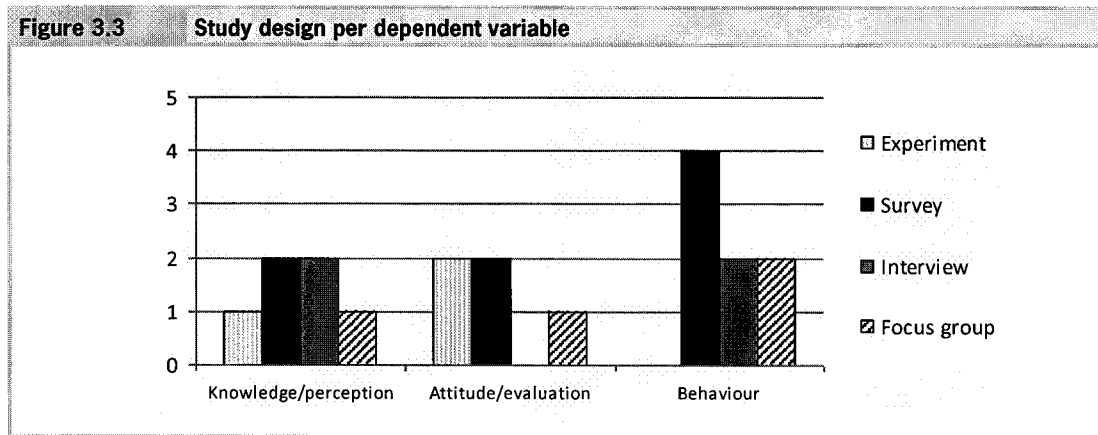
4 Discussion

The research area of consumers' food choice behaviour is an extensive one. The literature search presented in study 1 initially yielded 282 publications on the topic in just one year. Narrowing this selection down to publications on 'normal' eating behaviour of the general population with food choice behaviour as the dependent variable still resulted in a study sample of 129 publications. *Appetite* appeared to be the leading journal in this area. The main focus was on the consumption of products and nutrients relevant for health (e.g. fruit, vegetables, fat, calories). Only a limited proportion of studies built their work on well-defined theoretical models (e.g. the Theory of Planned Behaviour (TPB), the Health Belief Model). It is noteworthy that some of the few theoretical models that are being used, the TPB in particular, have increasingly been under pressure because of their disputed assumption that the consumer is a rational actor. The majority of studies used an actual measure of behaviour, be it direct (e.g. amount consumed in grams) or indirect (e.g. self-administered estimation of amount consumed). The most frequently applied research method was the quantitative survey, making use of validated research instruments, and data were mostly analysed by means of regression and analysis of variance (ANOVA). It should be noted that the delineation of the literature search to publications investigating some type of relation between any type of determinants and food choice behaviour (Block 3 of the search term) may have caused a bias towards quantitative research. There was no distinct pattern in the research methods applied to certain topics or research questions.

Study 2 investigated that same selection within LEI Wageningen UR publications. The first notable result is the low proportion of written scientific papers or LEI reports in this selection; the majority of publications were presentations at scientific and non-scientific meetings. Comparing the findings of study 1 with those of study 2, it is clear that the focus of CB publications is less on health-related foods and more on organic food consumption and new technology (nutrigenomics). Based on this finding, we can conclude that the CB group operates on a niche and/or a new area of research, which may both be considered strengths.

There is room for improvement on other issues. None of the publications in the dataset was based on existing theoretical models; instead, authors construed their own conceptual frameworks. Building more on theoretical knowledge developed in a peer-reviewed international context would increase the robustness of CB research.

The dependent variable categories that were used in study 1 were not sufficient for study 2. For example, knowledge was extended to include perceptions, attitudes to include evaluations and intentions to include preferences. In study 2, there is a lower proportion of studies that used actual measures of behaviour (41.2%) than in study 1 (65.9%). Also, the proportion of qualitative studies is much higher in study 2 (57.1%) than in study 1 (5.7%), and the few quantitative publications hardly used the more sophisticated data analysis techniques. These last two observations may be of particular concern if the CB group is to participate at the international scientific stage. The high frequency of qualitative studies in study 2 indicates a strong emphasis on exploratory research questions, as these are typically best answered by means of qualitative methods such as the interview or the focus group. That is not a shortcoming in itself. However, qualitative research methods do not allow formal hypothesis testing, which would add significantly to our knowledge base. Therefore, we conclude that CB group research would benefit from complementing qualitative experience with quantitative methods.

As to the use of the multi-method approach in the research field of consumers, nutrition, and health, we did not find any explicit report of MMA in our datasets. In only three of the papers in study 1 (2.3%) , and four of the CB publications in study 2 (23.5%), the classic combination of qualitative research followed by quantitative testing was reported. This may be considered a head start for CB group research, even reinforced by the fact that at least 12 different disciplines are represented by the CB group researchers. This variety of disciplines may facilitate the combination or even integration of different paradigms and methods.

In conclusion, based on the present report we can put forward the following recommendations for the Consumer and Behaviour Group of LEI:
- Combine exploratory qualitative research with quantitative research to test hypotheses.
- Use the more sophisticated statistical analysis regimes when conducting quantitative research.
- Explore other combinations of methods that are currently part of CB group expertise

Implementation of these recommendations primarily lies in the early phases of research projects. First, a thorough literature study should be a fixed part of proposals to ensure connection to state of the art theoretical insights. Such literature study should involve both local and international literature. To stimulate efficient and high-quality literature studies, LEI researchers may need to follow specialised courses for that purpose. Second, consultation with an expert research methodologist during the protocol writing phase could greatly improve the research quality of projects. Later on in the project, e.g. at the research design and data analysis phases, the methodologist could be involved again to monitor the project's progress. To stimulate continuity in this methodological advice, it may be worthwhile to appoint a reliable methodologist at LEI, for example in a double appointment structure with the department of Social Sciences at Wageningen UR. Third, when writing a research proposal, good account should be taken of available expertise, within the CB group but also outside. An internal review board screening research proposals in an early phase could facilitate optimal distribution of expertise over projects.

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