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Challenges and Chances for Research and Society

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Preface

Within the tradition of the Karlsruhe Nutrition Congress the focus of the meeting in 2004 was for the first time related to consumer research in the field of nutrition. There is ample evidence that food habits influence health and environment. Global directions for appropriate food policies are generally accepted, however the appropriateness and implementation of nutrition programmes can be improved. This includes both, challenges and chances for consumer-oriented nutrition research.

Nutrition policy relies on thorough analysis of local situations and conditions. Everyday habits are deeply enrooted in a society's cultural, economic and political structures. Changes on the individual level are recursively linked to societal issues.

In consecutive sections such topics were addressed by invited speakers. In addition we asked to submit abstracts which were arranged thematically in three sections:

- methods and approaches to consumer research,
- sustainable nutrition and consumers,
- nutrition communication - changes and limits to reach dietary goals.

Within two days 92 participants from 12 countries could listen to 16 lectures and read 33 posters. In this proceeding of the Karlsruhe Nutrition Congress we document the information for a broader scientific community. There will be a limited number of printed documentations, but the download of the whole document is free accessibly .

We as organisers and scientists here in Karlsruhe can enrich our work with the results of this congress. We would like to thank all participants for their contributions, we hope that our efforts can be of some use for many others.

We would also like thank our Ministry of Consumer Protection, Nutrition and Food for their support in word and deed. Furthermore we would like to thank our sponsors and all the co-workers of our institute for their help.

We hope you will remember the “Consumer & Nutrition“ congress, the town Karlsruhe, our institute and us for a while.

Karlsruhe - August 2005

Local organizing and editing Committee

Erika Claupein, Ulrich Oltersdorf, Cornelia Pfau, Jennifer Stiebel

9th Karlsruhe Nutrition Congress

October 10 – 12, 2004

CONSUMER AND NUTRITION Challenges and Chances for Research and Society

Programme

Sunday, October 10, 2004

Nutrition Policy and Consumer Research

- 16:00 Opening and Welcome
Fritz Johannes, Acting Head, Federal Research Centre for Nutrition and Food, Karlsruhe
- 16:10 Introduction:
Unni Kjaernes, Chairperson, National Institute for Consumer Research, Oslo
- 16:20 Nutrition policy international: Global strategies on health and quality of life – Challenges for European food policy
Philip James, International Obesity Task Force (IOTF), London
- 17:00 Nutrition policy in Germany
Regina Wollersheim, Federal Ministry of Consumer Protection, Food and Agriculture, Bonn
- 17:40 Consumer research in the field of nutrition, - „hard“ and/or „soft“ sciences
Ulrich Oltersdorf, Federal Research Centre for Nutrition and Food, Karlsruhe
- 19:00 Get-together

Monday, October 11, 2004

Session: Methods and Approaches to Consumer Research

- 09:00 Introduction:
Cornelie Pfau, Chairperson, Federal Research Centre for Nutrition and Food, Karlsruhe
- 09:10 Methods for assessing the role of moral influences on consumer decision making on organic foods (CONDOR)
Richard Shepherd, University of Surrey, Guildford
- 09:50 Methods used in research on nutritional behaviour of elderly people (SENIOR FOOD)
Monique Raats, University of Surrey, Guildford
- 10:30 **Coffee Break**
- 11:00 Quantitative and qualitative research – the case of the German National Consumption Survey (NVS)
Christine Brombach, Federal Research Centre for Nutrition and Food, Karlsruhe
- 11:40 Key Note Adress of **Mathias Berninger**, Parliamentary State Secretary of Federal Ministry of Consumer protection, Food and agriculture
- 12:15 TRUST IN FOOD – how to assess the different roles of consumers
Unni Kjaernes, National Institute for consumer Research Oslo, Corinna Willhöft, Thorsten Lenz, Federal Research Centre for Nutrition and Food, Karlsruhe
- 12:45 **Lunch break**

Poster Session (Guided Tour)

- 13:30 **Methods and Approaches to Consumer Research**
(Chairperson: Cornelie Pfau, Christine Brombach – Federal Research Centre for Nutrition and Food, Karlsruhe)
- Sustainable Nutrition and Consumers** (Chairperson: Ulrich Oltersdorf – Federal Research Centre for Nutrition and Food, Karlsruhe)
- Nutrition Communication – Changes and Limits to Reach Dietary Goals** (Chairperson: Marianne Eisinger-Watzl – Federal Research Centre for Nutrition and Food, Karlsruhe)

Monday, October 11, 2004

Session: Sustainable Nutrition and Consumers

15:00 Introduction:
Bernhard Watzl, Chairperson, Federal Research Centre for Nutrition and Food, Karlsruhe

15:10 Sustainable nutrition: feasibility and consequences
Ingrid Hoffmann, University of Giessen, Giessen

15:50 **Coffee break**

16:30 Sustainability in everyday life: Food choice, mode of transportation, and waste disposal
John Thøgersen, MAPP, Aarhus

17:10 Social quality of products – Assessment and Signaling
Ingo Schoenheit, Imug, Hannover

Evening Event: Karlsruhe Palace

18:30 Exhibition topic „Hannibal ad portas – Wealth and Power of Carthage“

20:00 Dinner at Karlsruhe palace: Welcome by **Heinz Fenrich**, Lord Mayor of Karlsruhe

Tuesday, October 12, 2004

Nutrition Communication – Chances and Limits to Reach Dietary Goals

- 09:00 Introduction:
Monique Raats, Chairperson, University of Surrey, Guildford
- 09:10 The complexity of nutrition communication
Anne Murcott, City University, London
- 09:50 Nutritional education via television – an effective chance to reach consumers?
Patrick Rössler, Stephanie Lücke, University of Erfurt, Erfurt
- 10:30 **Coffee break**
- 11:00 Preventing obesity: Old constraints and new strategies?
Anna Ferro-Luzzi, National Research Institute of Food Nutrition, Rome
- 11:40 Nutrition communication in the context of consumers' everyday life
Johanna Mäkelä, National Consumer Research Centre, Helsinki
- 12:20 **Final remarks** Ulrich Oltersdorf – Federal Research Centre for Nutrition and Food, Karlsruhe

Key Note Address by Mathias Berninger

Whereas food policy was not a main topic compared to agricultural subjects in former politics, it is a very important issue nowadays. This shift of importance is last but not least reflected in the transformation of the Federal Ministry for Food, Agriculture and Forestries into the Federal Ministry of Consumer Protection, Food and Agriculture. Responsibility for consumer protection was allocated to the new ministry from the remit of the Federal Ministry of Health, and it was allocated the responsibility for consumer policy from the Federal Ministry of Economics and Technology. In the course of changes in terms of the political direction also the focusing of scientific research changed – the Federal Research Centre of Nutrition and Food stays abreast of these changes, a fact that, amongst other things, is evident in the organisation and realisation of the conference “Consumer and Nutrition – Challenges and Chances for Research and Society”.

And it is time for changes. The proportion of diet-related diseases increases steadily. Germany is on its way to become a “XXL-nation”, warns the head of the German Federal Armed Forces’ medical service. A study found out, that a large number of recruits suffer from obesity and a lack of physical fitness; the therewith linked number of cases of joint- and spine-damages increases, both evolve into central reasons for rejection. While people, asked for their weight or nutrition habits, often make false statements, do not want to or can not remember correctly what they have eaten, this study provides real objective and alarming data. Lame excuses and references to the worse situation in other countries, for example Great Britain or the United States, do not count anymore, the dimension of the serious problem of obesity in Germany resembles more and more the dimension it has arrived at in the United States.

The key issue here is prevention: without doubt it is imperative to act right now instead of waiting until the situation in Germany aggravates and becomes as bad as in the United States. In this context current debates about effective strategies focus on two different approaches. The first is to confront the food industry with sanctions comparable to the tobacco industry. In this case, companies such as Mc Donald’s would be obliged to inform consumers of their products about possible health damages which might result or deteriorate when ingesting these foods. In France, for example, with the beginning of the year 2005 vending machines for sweets as well as for soft drinks will be banned from schools and certain foods will come along with a warning, similar to those on cigarette packets. The arising question is: How much sense makes such a prohibition? How much confidence should we invest in this strategy? Are we not taught by life experience, that children and teenagers feel especially attracted by things that are forbidden and therefore cool? Further more I do not like to compare the branch of food industry with the one of tobacco industry. What we are in need of, is a more differentiated approach. It would be much more effective and anticipatory not to



Mathias Berninger

Parliamentary State Secretary of Federal Ministry of Consumer Protection, Food and Agriculture, Berlin

1990 – 1994:
Study of chemistry and political sciences at the comprehensive university of Kassel

since 1994:
Member of the German Bundestag

1994 – 1998:
Member in the committees Education, Research, Technology, Youth and Sports

1998 – 2001:
Member of the Bundestag committee Education, Research, Technological Impact Assessment as well as member of the budget committee of the Bundestag

since 2001:
Parliamentary State Secretary of the Federal Ministry of Consumer Protection, Food and agriculture

warn of unhealthy foods, but to produce healthy, nutritious foods, to make constitutional changes with regard to food design. We can find a lot of energy dense food; some snacks cover up to two thirds of a child's daily demand of calories, likewise do chocolate bars, chips and soft drinks with their appetising flavours and sugar, which do not sustainably satiate but provoke even more hunger – we must not ignore that. And – despite what marketing campaigns communicate – many breakfast cereals and fruit bars are not healthy and nutritious foods but sweets.

It would be much more effective and anticipatory not to warn of unhealthy foods, but to produce healthy, nutritious foods, to make constitutional changes with regard to food design. We can find a lot of energy dense food; some snacks cover up to two thirds of a child's daily demand of calories, likewise do chocolate bars, chips and soft drinks with their appetising flavours and sugar, which do not sustainably satiate but provoke even more hunger – we must not ignore that. And – despite what marketing campaigns communicate – many breakfast cereals and fruit bars are not healthy and nutritious foods but sweets. As sugar is a cheap ingredient, its usage pays off twice for the producers, whereas the harmful impact of energy dense food on the consumer's health correlates in a negative sense with less physical activity.

Consequently it is necessary to remind the food-economy on its duty. Food-economy should make its contribution to the society by creating and providing healthy as well as safe foods. Food scandals, like the BSE-crisis, generated a public scare of poison in food. Parallel the development of malnutrition respectively a sustained unhealthy diet led to highly visible effects. As I mentioned in the beginning of my lecture: these problems have been underestimated by public and politics for quite a long time; it required a shift in politics to recognise the importance and the future impacts of these trends and to respond to them by concentrating on the topic of food safety. Only now, obesity becomes a major subject, which has also been emphasised by the WHO, indicating that soon there will be as much people dying from obesity and a lack of physical exercise as from hunger.

The costs which are generated by malnutrition and obesity and which do effect our health care system are immense and increasing. And what is particularly striking: More and more children, teenagers and young adults suffer from obesity and as an aftereffect from heart disease, bowel cancer, gallstones, fat in the liver or joint-damages – typical diseases of adults. In other words, they are becoming young olds. As more and more young tax-payers age earlier, they do not only become expensive patients earlier but also disabled unemployed, which will lead to further costs. Therefore obesity is already one of the key issues discussed in the debates in terms of health care system and health care reform. What is still missing is the recognition of the importance of prevention as well as feasible long-term strategies how parents, kindergartens, schools and the state can work hand in hand.

Results of applied consumer research, like those presented in this conference, support nutrition policy activities. To make political decisions data is needed about the nutritional situation in our country. Therefore the new national nutrition survey (NVS) was initiated, its research group is established at this research centre in Karlsruhe. The Federal Ministry of Consumer Protection, Food and Agriculture supports also relevant research at universities, an example for this is a project with the TH Darmstadt on the topic of effects of advertisements on consumer behaviour. The strategy of nutrition policy is based on the communication between the stakeholders. These activities led to an initiative which established the platform „Nutrition and Activity“. Founding members of this initiative are boards of the food industry, food trade, labour unions of this areas, consumer initiatives, and sport associations. The initialising congress took place at end of September 2004.

Consumer related policy and prevention programs should be based on facts and results of consumer research. A congress like this one here in Karlsruhe is one step further in the right direction.

Oral Presentations

International nutrition policy: Global strategies on health and quality of life - challenges for European food policy

W.P.T. James

London School of Hygiene and tropical Medicine, London, UK

Nutrition policy has rarely been a prominent political issue except in times of war but UNICEF managed to highlight the huge problem of childhood malnutrition in the early 1990s and a special Prime Ministers/ Presidential Summit followed by major WHO /FAO International conferences lead to a decision to develop nutrition policies on a national basis with action plans. These were often signed by Heads of State with >100 plans now agreed; nobody, however, knows of them because the academic and community groups were not part of the Ministerial/UN consultations.

The EU is officially in the middle of a 5 year series of national action plans on diet, food safety and sustainable agricultural development organised by the WHO European office. Again this has had modest impact because of its intergovernmental nature but the controversy surrounding the WHO 916 report and the development of the WHO global strategy has publicised the increasingly political nature of nutrition policy making. The European BSE crisis revealed the power and influence of the agri/food business world which attempted unsuccessfully to sabotage coherent policy making. So it should be no surprise that the Eurodiet project which preceded the WHO 916 report with similar conclusions was unable to make as clear its sugar recommendations. The independence and integrity of nutritionists is becoming a big issue as it becomes clear that major environmental changes are needed to cope with the sudden childhood obesity epidemic and all its consequences. The EU is not currently structured to allow proper public health initiatives for chronic disease prevention but nutritionists should be playing a major role in formulating societal and industrial challenges for the EU and its strategies.



Philip James

CBE, DSc, MD, FRCP, FRSE, MFPHM. Director, Public Health Policy Group; Chairman, International Obesity Task Force; Hon. Professor of Nutrition, London School of Hygiene and Tropical Medicine, London, UK

Professor James graduated with degrees in physiology and medicine from University College, London, followed by 3 years in Jamaica where he obtained his MD, and a year as a Harvard Research Fellow at the Massachusetts General Hospital in Boston, USA. On returning to the UK he was a senior lecturer at the London School of Hygiene and Tropical Medicine and then, in 1974, he became assistant director of the MRC Dunn Nutrition Unit, Cambridge, UK. From 1982 to 1999 he was director of the Rowett Research Institute, Aberdeen, UK, a large nutrition research institute. As Chairman of the International Obesity Taskforce, he is currently responsible for the funding and organisation of global initiatives relating to food and health with particular emphasis on the pandemic of obesity.

International nutrition policy.

Global strategies on health and quality of life: challenges for European food policy

W.P.T. James, CBE, MD, DSc

Introduction

Nutrition policies were originally developed after the Second World War to ensure that there was an adequate supply of high quality food, this being provided sufficiently cheaply so that even the poor could afford to purchase the previously luxury items of meat, milk and butter. These items were identified as important because meat promoted the growth of stunted children and butter (as well as sugar) provided a rich source of energy which seemed important for the poorer sections of society and the severely undernourished. Semi-starvation was rampant in Europe post-war and this, together with the poverty of the rural communities, led to the newly formed European Community establishing a Common Agricultural Policy. This policy, geared to cheap food and the provision of a more financially secure farming community, dominated European financial strategies until very recently.

This nutrition policy relating to deficiency diseases gave way in Norway in the early 1960s to a new strategy involving the formation of an independent National Nutrition Council, reporting annually to Parliament, which aimed to cope with the then escalating rates of cardiovascular disease. The Council's analysis led to major policy changes in Norway with, for example, alterations in agricultural policy and food distribution so that vegetables and fruit were available in the most northern towns of the country at the same price as those in Oslo. This new policy was slow to develop elsewhere and seemed to depend primarily on the actions of cardiologists who were concerned about the increasing burden of heart disease rather than governmental action (James et al., 1997).

The importance of considering the so-called adult chronic diseases as important was recognised by the European of WHO in 1986 when they published their first new nutrition policy analysis (James et al., 1988) but the development of nutrition policy as a means of counteracting these diseases, this was not implemented by many European countries in a coherent fashion. Part of the problem was that governments were still conceptually concerned with improving agricultural efficiency. So nutrition policies were still dominated by the agricultural community and the nutritionists' and policy makers' naïve views that there were no good or bad foods and that it was simply important to educate people to choose "a balanced diet".

The new 2004 WHO Europe nutrition policy report highlights the extraordinary burden of chronic disease, particularly in Central and Eastern Europe. Cardiovascular disease is still the biggest cause of death, followed by a range of cancers. Figure 1 shows the extraordinary differences between Eastern and Western Europe in death rates from heart disease in adults. The usual explanation for these large differences in coronary heart disease is that there are three principal causes:

- a) A high blood cholesterol level.
- b) Smoking
- c) High blood pressure

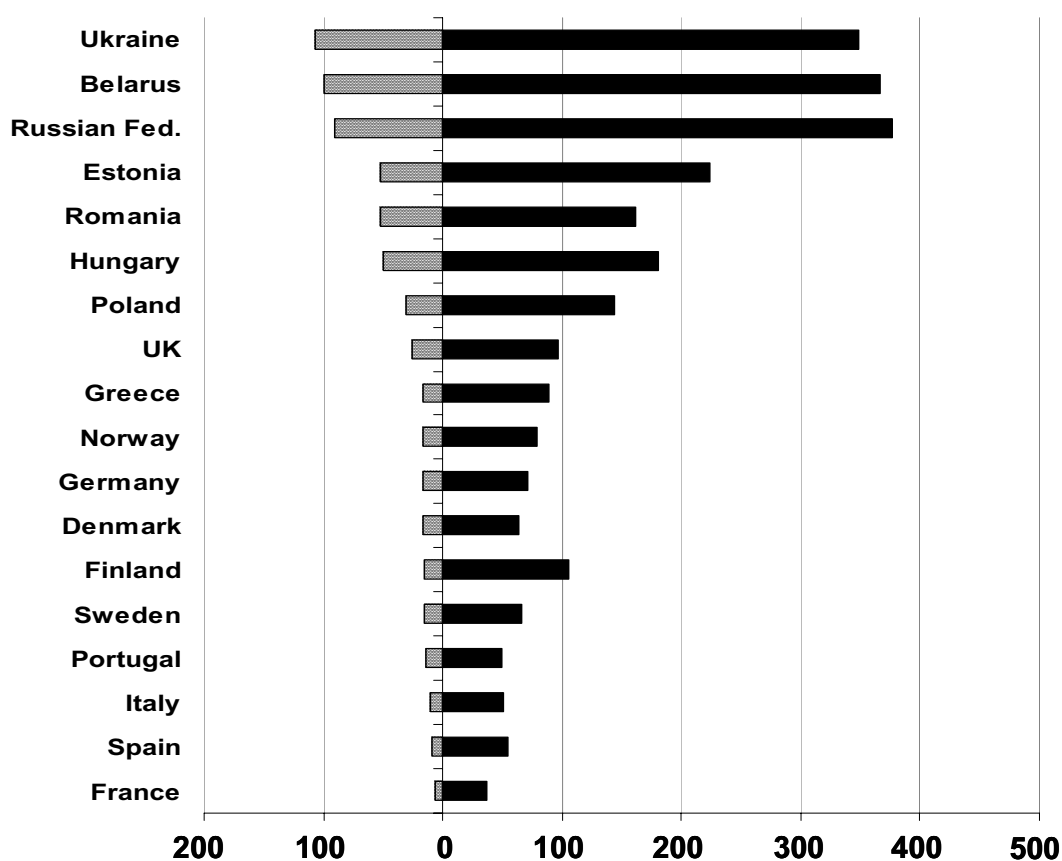


Figure 1: Age-standardized mortality from CHD in men and women aged 25–64 years, European Region, 1998-2000. (Adapted from Figure 1.12 in Robertson et al., 2004).

The original Seven Country studies (Keys, 1980) which included very detailed analyses of cardiovascular risk in the 1950s showed that at that stage men in Finland had the highest coronary heart disease (CHD) rates in the world, with the Netherlands having an intermediate rate and Crete, Croatia and Italy having rates nearly as low as those in Japan where hypertension and smoking were common, but cholesterol levels were extremely low. These contrasts were a vivid demonstration of what we now understand biologically about the development of heart disease - that the processes linked to the development of a high blood cholesterol level are the underlying pathogenic mechanisms. Smoking and high blood pressure then amplify the atherogenic and thrombotic features which are far less likely to occur if the population's diet is very low in total fat, saturated and trans fatty acids and has an appreciable proportion of the longer chain n-3 polyunsaturated fatty acids. Very recently Yusuf et al. (2004) in the Interheart Study have undertaken a quantitative analysis of the particular risk factors for CHD. Table 1 presents, in descending order the proportion of the risk of myocardial infarction which can be ascribed to a particular background risk. It is noteworthy that although the total for statistical reasons adds up to more than 100%, when all nine factors are included, then practically all, i.e. 90-94% of the risk of a myocardial infarction is explained. The apo B to apo A₁ ratio signifies the overall responses of individuals to an inappropriate dietary fatty acid intake, apo B being associated with high total and low density lipoprotein cholesterol levels, and apo A being linked to higher HDL cholesterol concentrations. The HDL level is now recognised to be a very important protective factor for heart disease. The new feature of this work is that psychosocial factors are important but psychosocial stress and smoking are the only two contributors other than dietary factors and physical inactivity to the rates of CHD. This means that we now have a much clearer understanding of the basis for the disability and premature death affecting the European population.

Table 1: Risk factors affecting global cardiovascular disease (Yusuf et al., 2004)

Modifiable risk factors for myocardial infarction:	PAR%
ApoB/ApoA1 ratio (top versus lowest quintile):	49.2
Smoking (current & former versus never):	35.7
Psychosocial factors:	32.5
Abdominal obesity (top versus bottom tertile):	20.1
Hypertensive history:	17.9
Daily fruit and vegetable intake*:	-13.7
Regular physical activity*:	-12.2
Diabetes:	9.9
Regular alcohol intake*:	-6.7

Total impact of all 9 factors:

Men: 90%

Women: 94%

* Protective factors

The importance of abdominal obesity

The Interheart Study highlighted the particular importance of abdominal obesity measured in these analyses as the waist/hip ratio. Often the waist alone is measured as a reasonably accurate index of the amount of internal abdominal, i.e. visceral, fat which is now recognised as a highly active endocrine organ which produces about 50 inflammatory and hormonal secretions which modify the function of the liver, the cardiovascular endothelium and indeed the insulin resistance of most tissues. Swedish studies conducted in the 1970s showed that abdominal obesity was a much bigger risk factor than an increase in total body fat, estimated from the body mass index i.e. weight in kg/height in m². Many other studies including the Morgan study from the Netherlands have confirmed the importance of abdominal obesity (Lean et al., 1998). The waist circumference, together with the measurement of a low HDL cholesterol, an elevated blood pressure, an impaired capacity to handle glucose and fatty acids (measured as an elevated fasting glucose and triglycerides) are now used in new analyses of what has been termed the "metabolic syndrome" (National Institutes of Health, 2001). Now it is recognised that those Europeans who were born of low birthweight and then grew relatively rapidly in childhood, are particularly prone to abdominal obesity and the metabolic syndrome (Barker et al., 2002; Eriksson et al., 2003). This relationship almost certainly is similar to what is happening to Asian immigrants in Europe are particularly prone to abdominal obesity and far more susceptible to diabetes and cardiovascular disease (McKeigue et al., 1991). In Europe we are therefore witnessing the consequences of the remarkable change in the

nutritional state of children and adults superimposed in many millions on a background of fetal and childhood deprivation.

This is illustrated in a new lifecycle concept (Fig. 2) where for generations the poor in Europe and certainly those in the developing countries were born small, grew slowly and entered adult life as shorter i.e. stunted, individuals. Young women then often put on only modest amounts of weight in pregnancy and were fed badly so that they in turn produced infants who were adapted or imprinted with the metabolic profiles appropriate for a very deprived and nutritionally poor environment. What we have seen in the last 10-15 years highlights the importance of this concept because the rapid weight gain in children and adults now seems to be precipitating the development of abdominal obesity. This selective accumulation of fat was thought, originally, to be an exclusively genetically determined phenomenon but now it also seems to reflect the impact of unknown early disadvantageous conditions which probably mediate their effects through nutritional factors.

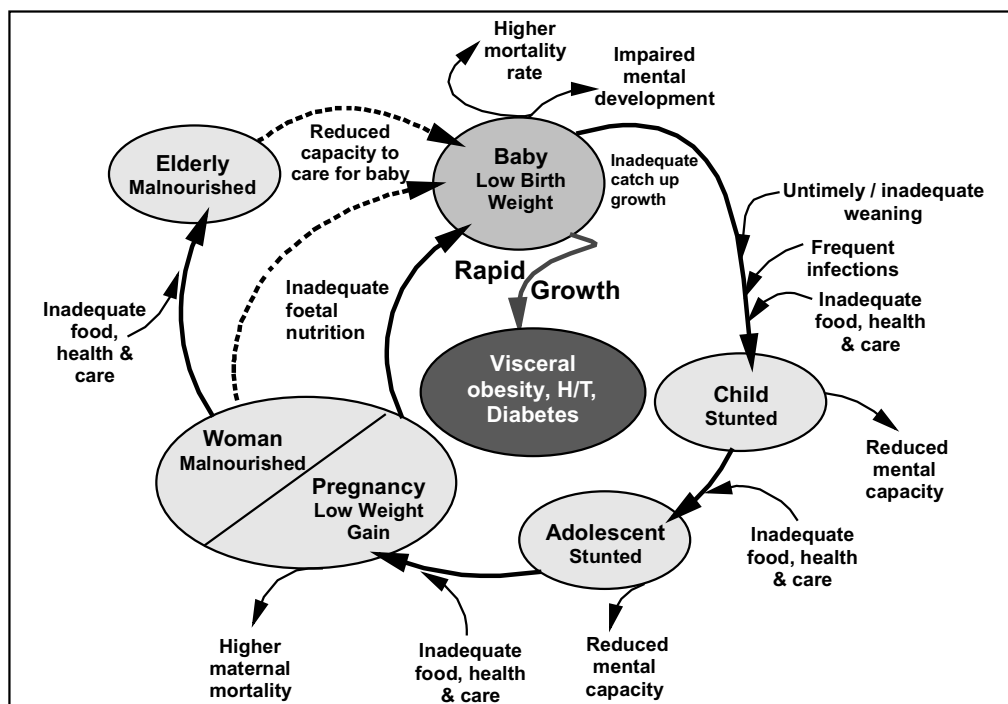


Figure 2: Lifecycle: the proposed causal links

The escalating rates of obesity

The prevalences of obesity in European children and adults are shown in figures 3 and 4. Figure 3 sets out a collation of data where the analyses were done on a comparable basis using IOTF criteria which used the child's sex and age-specific BMI percentile which was related to the percentiles corresponding at the age of 18 years to the adult cut-off points of BMI 25 for overweight and 30 for obese. The data are not based on clinical information or other selected analyses - they are representative of many regions within a country, if not of the whole nation. It was surprising to find that the younger children are more obese, implying a remarkable secular trend is underway with increasing obesity rates. The rates in the North of Europe are also appreciably less than those in the Mediterranean countries where we would expect a lower prevalence if the traditional Mediterranean diet is still the norm. In practice, however, there is now evidence of drastically changed eating habits similar to those seen in the US.

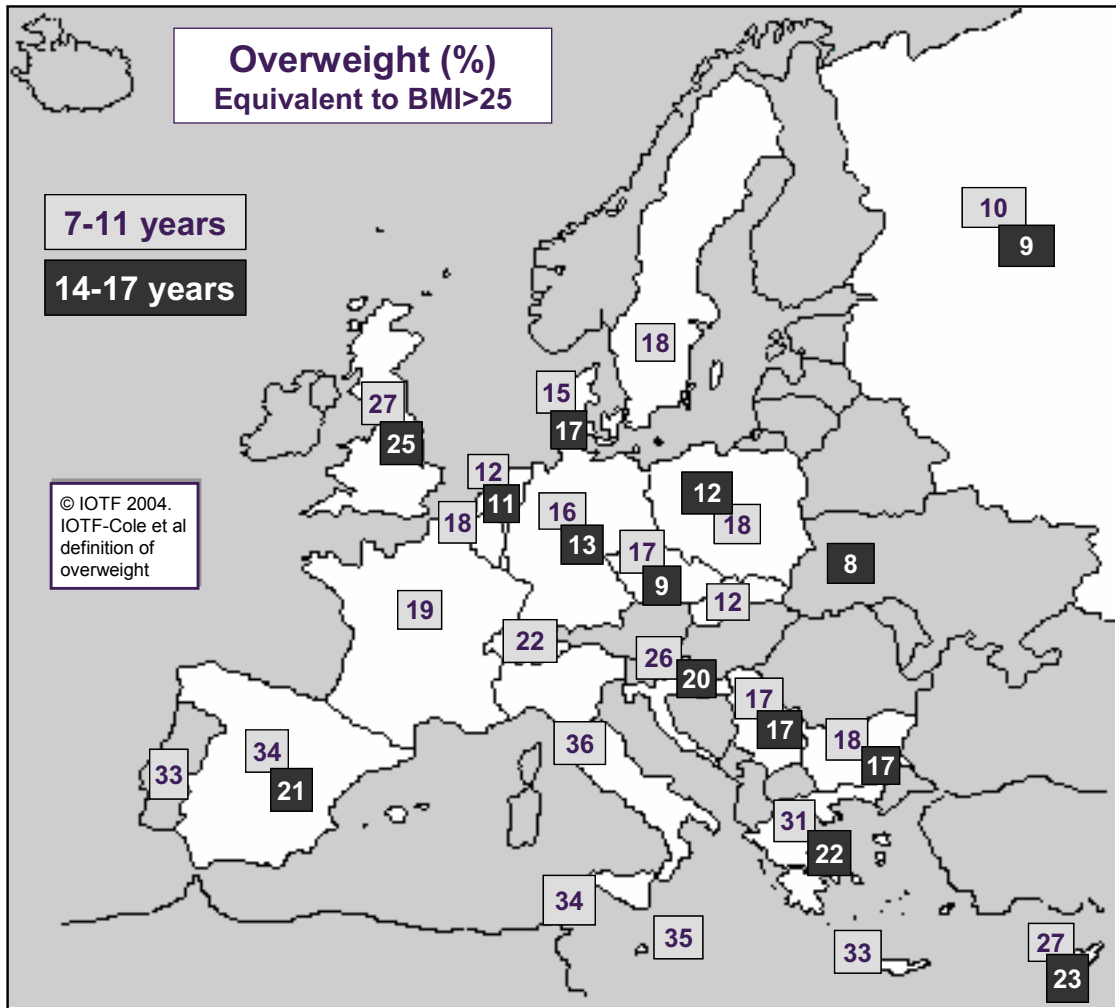


Figure 3: Childhood Overweight and obesity in Europe

Figure 4 also highlights the remarkable rates of obesity in such countries as Greece, Albania and Spain. Again, Western and Northern Europe, with the exception of the UK, have lower rates.

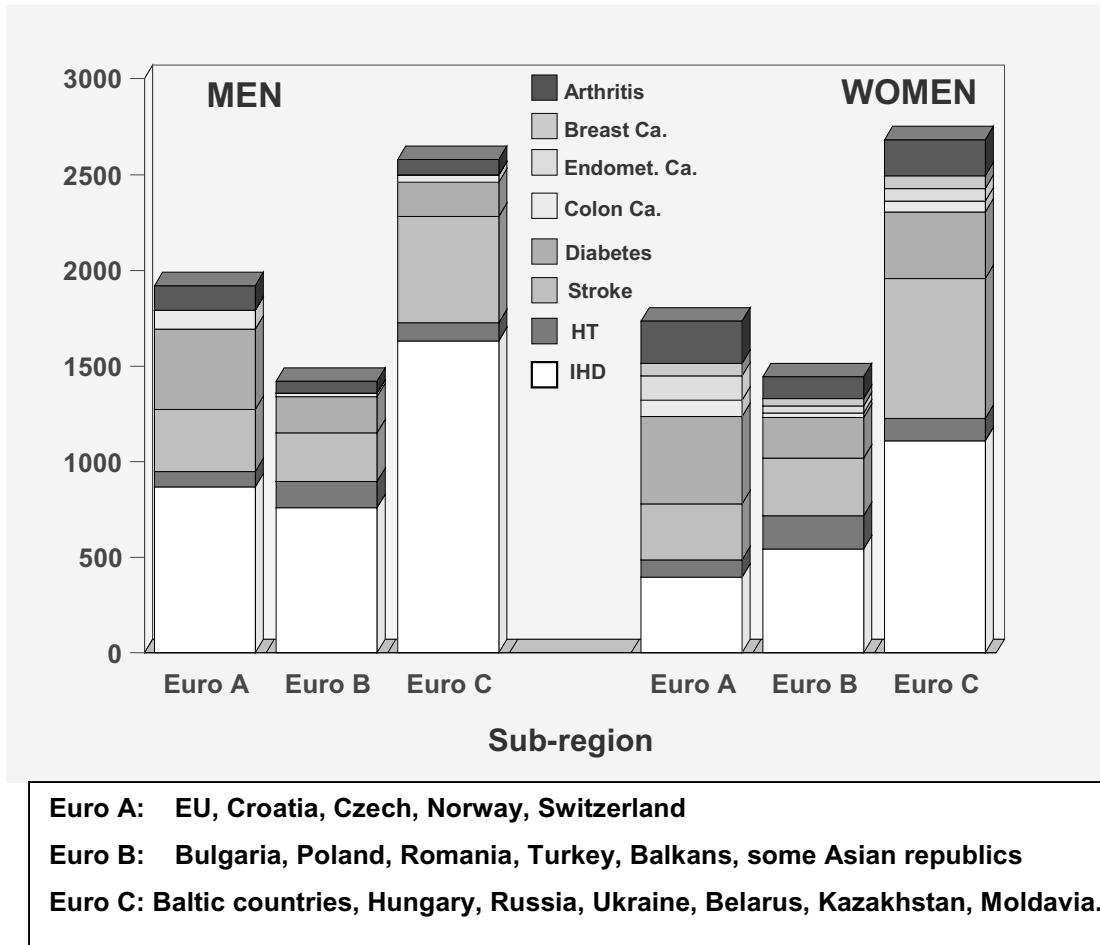
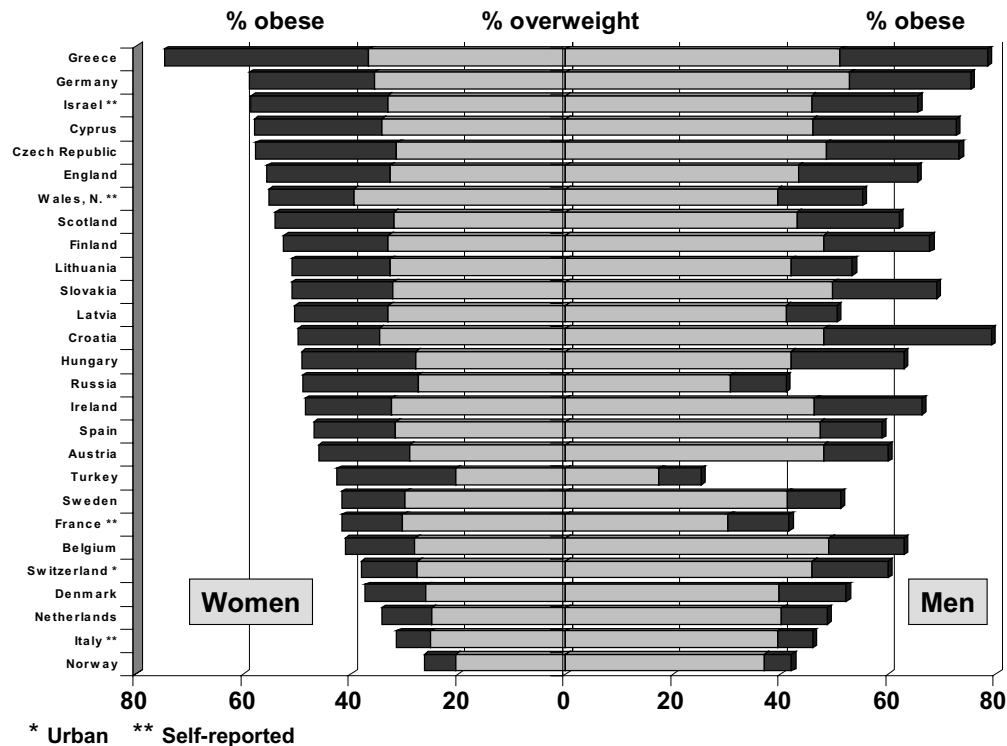


Figure 4: Disease Burdens in Europe linked to increasing body weights

The impact of excess weight gain on the co-morbidities of cardiovascular disease, diabetes, some cancers and arthritis, was used by our WHO-related group for the new global analyses of the burden of different diseases. This showed (Ezzati et al., 2002) that high blood pressure, tobacco, alcohol, cholesterol and then a high BMI (in that order) were the top contributors to the disease burden and premature death rates in Europe in the year 2000. Figure 5 shows the disease burden in the three sub-regions of Europe calculated statistically on the basis that we concluded that a BMI of 21 was the optimum mean population BMI. At this BMI the proportion of men and women who are either overweight or underweight is minimised. Figure 5 clearly shows that ischaemic heart disease dominates in all sub-regions of the WHO European region, but that hypertension and stroke, as well as diabetes, have important additional impacts.



Age-ranges vary but most over 20+ years.

Figure 5: European overweight and obesity adult prevalences (1992-2001).

New concepts of dietary needs

The recent WHO 916 report (WHO, 2003) proved controversial because for the first time two new major factors were identified as relating to obesity. First there was new evidence highlighting the importance of excess sugars in the diet and particularly in the form of soft drinks. Previously the total intake of sugar (which is highly dependent on the daily frequency of sugar consumption) had been linked to the development of dental caries, despite the protective value of fluoridated water and appropriate dental hygiene. Now WHO also identified excess weight gain as caused by excess sugar intakes and emphasised that foods, meals and soft drinks rich in fats and sugars could be described in terms of the energy density of the products, i.e. expressed as the number of kilojoules (kcal) per 100 g weight of product.

The second innovation in the WHO 916 report was to move away from the detailed analysis of double-blind trials and assess in public health policy terms the environmental conditions which promoted the inappropriate consumption of energy-rich foods and drinks and the sedentary state of children and adults. The heavy marketing of energy dense foods, the presence of fast food outlets and the adverse social and economic conditions were all seen to be fundamental drivers which enhance the risk of excess weight gain. This in turn means that we need to think in a different dimension in nutrition policy terms and not just assume that the basis for action involves simply an educative, informational approach to individual consumers and parents. Similarly the sedentary behaviour of children and adults is not a feature of laziness but simply a reflection of environmental conditions all geared to promoting as little physical activity as possible

The role of high fat diets in inducing weight gain, particularly when individuals were inactive, was well set out by (Prentice & Poppitt, 1986) where they summarised a series of

studies conducted by Stubbs in Prentice's group. Stubbs carefully designed diets which looked identical but which in practice had either 20, 40 or 60% of its energy as fat (Stubbs et al., 1998). Whether people were extremely inactive in a confined space, or fully active, e.g. cycling around Cambridge, the volume of food consumed by the individuals was the same whatever the fat content or the amount of physical activity taken. Thus there was a condition of "passive over-consumption", at least in the short-term, implying that the human brain is unable to rapidly adjust appetite and food intake when they are exposed to high fat diets. Stubbs then went further and showed that if fatty diets were diluted so that they had the same energy density as low fat diets, then again it was the weight of food consumed which was the same. It therefore seemed that energy density was the critical feature. There followed detailed studies (Poppitt et al., 2002) to show in longer-term studies that diets that were low in sugars and rich in complex carbohydrates, i.e. with a lower energy density, tended to induce a greater spontaneous weight loss. Furthermore highly controlled, double blind trials of adults revealed that sugar-rich soft drinks, when consumed in abundance, led to a consistent progressive weight gain over a full ten week period, whereas soft drinks with no calories did not induce any weight gain (Raben et al., 2002). Since then Prentice and Jebb (2003) have produced an elegant display of the energy density and fat content of different foods purchased in UK supermarkets and related these to the density of Gambian foods. It is clear that the fat content of foods usually makes the biggest contribution to the density of the product, although refining the starch and removing the fibre so that the water holding capacity is reduced, also increases the energy density. Thus they showed that if somebody eat energy dense fast foods and aimed to eat 2000 kcals (8.5 MJ) per day, they would only have to eat about 800 grams of fast foods, whereas if they eat low fat and bulkier foods in the form of some healthy supermarket meals then as with traditional Gambian foods would require perhaps 2.5 kg of food to be eaten. The threefold difference in volume is a major feature of the diet and the importance of this aspect of energy density has been underestimated. It is therefore unsurprising that the UK Parliamentary Select Committee on Health, when considering the multiple measures needed to combat obesity, proposed a simple traffic light labelling system which would be based on the energy density of food.

Stubb's analyses also showed that when people were very inactive then even modest increases in the fat/sugar content and energy density of the diet induced a positive energy balance. Given the fact that adults in a modern environment routinely show a progressive reduction in physical activity with age and, given the markedly reduced need for even moderate exertion, it is not surprising that there has been such a remarkable progressive increase in obesity rates in both children and adults throughout Europe. Children have also been targeted by the advertising, retail and food industries and a new systematic review of the marketing of fast foods, confectionery, soft drinks, snack foods and sugary breakfast cereals to children, shows that the marketing is highly effective (Hastings et al., 2003). Thus children become confused about the nutritional value of foods, desire more of the marketed products, pester their parents for additional purchases of these items and in practice increase their consumption of those categories of food and drinks, even if only one brand is being promoted. Furthermore there is now clear evidence that this leads to a distortion of their diets and a reduction in its nutritional quality.

Intervention studies demonstrating the value of nutritionally improved diets

There is now clear evidence of the remarkable effects of modest weight reduction in reducing the multiple risk factors that contribute to the development of cardiovascular disease. Circulating total cholesterol and LDL cholesterol levels fall and the HDL cholesterol concentration rises. Insulin resistance, and therefore the levels of circulating insulin and glucose fall, with multiple studies now demonstrating the substantial value of even modest weight losses in preventing diabetes (Tuomilehto, 2001; Diabetes Prevention Program, 2002). Even when body weights are maintained constant, however, there is also clear evidence that a higher fruit and vegetable intake, e.g. over 400 g daily, leads to a fall in blood pressure which is greater in patients with pre-existing hypertension

(Appel et al., 1997; Sacks et al., 2001). Furthermore there is an additional benefit from reducing fat intakes from about 40 to 25% and, even in normal people, the systolic blood pressure falls by 6 mm and diastolic blood pressure by 3 mm.

A more coherent practical demonstration of the validity of sodium restriction was shown in two Portuguese villages where in one village the baker reduced the salt content of the village bread by modest amounts over a two year period (Forte et al., 1989). This led to the average systolic and diastolic blood pressure of the population falling in a highly statistically significant way over a two-year period. There is also the remarkable finding from the Netherlands that if babies were fed on a milk formula with a reduced sodium content during their first six months of life then, when the children were reassessed at the age of 15, there was a clear statistically significantly lower blood pressure in those children who as babies had been fed the low salt formula (Geleijnse et al., 1996). This and other data on the importance of weight gain in early life highlight new concepts that the early nutritional experience of babies, not only in utero, but in the first few months of life, may imprint the responsiveness and the setting of blood pressure and probably also of insulin resistance and perhaps pancreatic capacity, thereby determining the propensity to diabetes (Eriksson et al., 2003).

The development of nutritional policies

In a recent 2004 updating of our nutrition policy document for WHO Europe, we proposed a new way of approaching nutrition policy (Robertson et al., 2004). This was set out in two different contexts. First, we recognised that there was a need to understand that many governmental ministries were involved in altering the physical, economic, regulatory and social/cultural environment with direct health consequences. It is well-recognised that the average alcohol intake of a population and the proportion of smokers depends on both the ready availability and the cost of alcohol and cigarettes. These averages in turn relate directly to the numbers of patients with liver cirrhosis and alcoholism and to those with lung disease. Similarly the availability and cost of high density foods and facilities for being spontaneously active are again directly related to the amount of junk foods eaten and exercise taken. It has been known for decades that the cost of foods can strongly influence the purchases of particular products. For example, Ministries of Agriculture used to adjust the price of butter in the Common Agricultural Policy depending upon whether or not they had large butter stocks in storage. By dropping the price of butter, they knew exactly what the customer response would be in terms of consumption. Currently in the EU, the vast majority of fruit and vegetables produced is actually destroyed in an attempt to maintain the price, despite the health authorities advocating throughout Europe a higher consumption of fruit and vegetables. It has been clearly shown that even children increase their fruit consumption if the cost of fruit at school is lowered (French et al., 2001). Supermarkets routinely put on special offers not only to boost immediately the uptake of particular products but because they recognise that there is a carry over effect from this marketing exercise.

What most nutrition policy groups do not understand is that there has been a consistent strategy for decades in Europe to promote the production and consumption of cheap foods by heavily subsidising the production of meat, milk, butter, fat and sugar. Despite all the health warnings, this massive subsidy persisted for about 30 years after the first governmental and expert warnings of its health consequences. Even to this day Ministers and officials fail to understand that the distortion of the food chain, which has now led to huge vested interests maintaining their preferential marketing position, means that consumers are now in what is termed a "toxic obesogenic environment".

Similarly the extraordinary promotion of motor car use, road systems, computers, mechanical aids at work and in the home means that few, if any, of us now have to be even moderately physically active. Children and older people are handicapped in going out of the house because the physical environment has been rebuilt for the use of the

motor car and to confine pedestrians from spontaneously moving around. European studies clearly demonstrate the value in Denmark and the Netherlands of a systematic policy to maintain cycle tracks, pleasant pedestrian facilities and traffic free town centres. The current physical constraints to spontaneous and enjoyable physical activity as a result of planning, traffic, tax and subsidy policies for motor transport over decades are pervasive and a huge problem. Children no longer walk or cycle to school; at school sporting activities are limited and new evidence shows that children no longer have the skills to play games because their older brothers and sisters no longer know these skills so no longer pass them on to their younger siblings.

It therefore looks as though we have a generational gap where young adults and their children have lost an appreciation of the value of substantial amounts of daily exercise and the routine appreciation of a low fat and low sugar diet, and no longer consume the quantities of fruit and vegetables that they used to.

Table 2 shows the STEFANI model where it is proposed that we tackle a whole range of issues relating to food, i.e. the nutritional health of the products, food safety and the whole issue of the environmental impact of our current policies. Clearly health ministries have particular responsibilities, but so do other major ministries as already highlighted. Furthermore, in keeping with Swinburn's original proposals (Egger & Swinburn, 1997) we need to think about the physical and spatial issues of facilities and their accessibility, economic issues, the policies that a whole host of government departments develop and finally the prevailing social and cultural attitudes of the population.

STEFANI Model: examples of action by ministries in different settings.

Settings	Action by health ministry			Action by other ministries		
	Nutritional health	Food safety	Food security and sustainable development	Nutritional health	Food safety	Food security and sustainable development
Physical: what is available?	<p>Appropriately accessible health centres</p> <p>Promotion of access to appropriate self-monitoring systems, for example, for weight and blood pressure</p> <p>Providing information on disease prevention</p>	<p>Catering in hospitals</p> <p>Monitoring facilities</p> <p>Health information systems</p> <p>Food control</p>	<p>Systems for clean water</p> <p>Facilities for monitoring iodized salt</p> <p>Laboratories for testing air, water and soil quality</p>	<p>Playgrounds in schools, suitable cycling and road systems, urban planning, sports facilities</p> <p>Designated urban areas for local food production</p>	<p>Appropriate local abattoirs</p> <p>Proper public toilet and sanitary facilities</p> <p>Proper catering facilities with stringent hygiene requirements</p>	<p>Urban planning: green spaces, cycle paths, parks, playgrounds, lead-free soil</p> <p>Facilities for farmers' markets</p> <p>Facilities to support breastfeeding in shops, etc.</p>
Economic: what are the financial factors?	<p>Primary health care staff paid to give advice on disease prevention</p>	<p>Penalties for providing unsafe food</p>	<p>Investment in health promotion projects</p>	<p>Re-evaluating taxation and subsidy policies</p> <p>Support for low-income groups</p>	<p>Appropriate penalties for inappropriate hygiene</p>	<p>Reformed agricultural subsidies</p> <p>Financing of new public transport systems</p> <p>Promotion of urban agriculture</p>
Policy: what are the rules, legislation, and recommendations?	<p>Baby-friendly hospitals Dietary guidelines</p> <p>Fortification policies</p> <p>Policies on health claims, for example, for functional foods</p>	<p>Assessment of health impact of agricultural policies</p> <p>Consideration of consumers' concerns in food safety policy</p>	<p>Specific guidelines for toxicants and contaminants in soil, water and primary food products</p> <p>Assessment of health impact of agrochemical and pesticide use</p>	<p>Assessment of health impact of CAP</p> <p>Food labelling with appropriate, understandable health-related information</p>	<p>Criteria for ensuring a pathogen- and contaminant-free food chain</p> <p>HACCPs for the food chain, systematic surveillance and mechanisms for emergency response</p>	<p>Reformed agricultural subsidies</p> <p>Policies on: soil improvement, clean water, agricultural recycling, planting and use of fertilizer, pesticides and water</p> <p>Paid maternity leave</p>
Sociocultural: what are the attitudes, perceptions, values and beliefs?	<p>Health education</p> <p>Community activities Promoting cycling and walking and building appropriate paths</p>	<p>Promotion of concept of limited clinical antibiotic use</p> <p>Maximum residue limits and acceptable daily intakes</p> <p>Publicizing of results of food hygiene inspections</p>	<p>Promoting:</p> <ul style="list-style-type: none"> health impact assessment of food policies urban agriculture organic food as healthier than non-organic food 	<p>Promotion of physical activity in the workplace</p> <p>Creation of time and space for breastfeeding in the workplace, with the help of NGOs</p>	<p>New criteria excluding antibiotics as growth promoters and specifying veterinary use</p> <p>Start of educational initiatives for the safety of fast-food outlets, modifying nutrient composition and limiting and ensuring appropriate food waste disposal</p>	<p>Positive attitudes to cycle path use and pedestrian areas</p> <p>Educational initiatives for caterers, use of school recreational facilities by the community</p>

To engage all these ministries, it is now well-recognised that if one relies on processes within a government, practically nothing happens because Ministries of Health are not only far weaker than many other ministries, but the senior policy makers become distracted by acute health issues relating, for example, to hospital provision. They therefore fail to think strategically and coherently. Health Ministries should be dominated by public health issues but in practice they deal with the immediate and often media driven minor crises relating to medical services. The Scandinavian experience shows that only by having an independent public health institute or an independent nutrition and physical activity council, is it likely that coherent and consistent policies are developed and promoted. This structural issue also allows the public interest to dominate over immediate short term self-interested counter movements from the industrial sectors of the motor trade, advertising, catering, food manufacturing and retailing.

Normally these huge industrial interests, which have developed enormously in Europe since the Second World War, are so powerful that their chairmen and chief executives can gain access not only to the Health Minister's office at short notice, but often to the Prime Minister or President themselves. It is only in the last ten years, with the BSE crisis in Europe, that the media and public have come to recognise that the intimate relationship between government policy-making and the agricultural-food industrial complex was operating to the disadvantage of the public interest. With the development of new food standard agencies nationally and on a European basis, we can begin to hope for a new approach to nutrition policy making even though the European Commission and Parliament are only now beginning to focus on the problem of obesity and those associated chronic diseases which produce the greatest burden on the countries. The challenge for us all is therefore how to engage the public interest in Europe so that the European Commission itself recognises the importance of promoting the public interest and allowing the industrial interests to become part of an effective solution instead of being part of the underlying problem.

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Nutrition Policy in Germany

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Food and nutrition policies comprise many fields, ranging from production via the guaranteeing of safe foods to the conveying of knowledge and behaviour patterns to the population. The latter is intended to lower the risk of diseases that are partly caused by eating habits. Nutrition policy therefore has an impact on many fields of life of consumers and must respond to changes underway in society. In our modern service and industrial society, nutrition policy is not so much charged with supplying the population than with exercising a preventive function.

In nutrition policy, the following questions especially give rise to conflicting demands: how and with which aims problems are being solved, whether state interventions are required or whether other solution concepts are possible.

The Federal Government favours a three-pillar concept:

1. creation of a suitable regulatory framework to protect health and safety,
2. promotion of research,
3. dietary education, including prevention.

My speech points out problematic issues and political solutions to them.



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Nutrition policy in Germany

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Introduction

The topic of this Karlsruhe Nutrition Congress "Consumer and Nutrition – Challenges and Chances for Research and Society" you have opted for a highly actual issue, not only here in Germany, but on a global scale now. Allow me to give you an overview of nutrition policy in Germany.

The general public is still hardly aware of nutrition as a policy field in its own right. We are about to change this. Let me give you some brief guidance first of all: what does nutrition policy mean, where does it start and where does it end?

Food must always be seen in connection with the production and processing of foods, with the farming sector, food industry and the trade in food. Food policy is therefore frequently also mentioned in association with agricultural, economic and commercial policies. The completion of the European internal market gives it a European dimension and the advancing globalization an international dimension. But this is only one side of the coin.

In the public perception, nutrition is a matter that is often exclusively assigned to health policy even. We all know, after all, that nutrition is instrumental for our well-being and health up to a ripe old age. You will realize this at the latest when you suffer from one of the chronic diseases that are so widespread today.

Expressed in figures, this means: 30- 40% of cancer diseases could be avoided, for example, if most people would eat a properly balanced diet, pursue physical activities and thus prevent overweight. A similar link exists in the case of other chronic diseases such as Type 2 diabetes, disorders of the lipid metabolism and cardiovascular diseases.

Nutrition policy must try to reconcile all of these fields.

Hence, nutrition policy has an impact on many fields of life of consumers and must respond to changes underway in society. Allow me therefore to take a brief look at the recent past.

Nutrition policy through the ages

Fifty years ago, the initial focus was on the supply of necessary nutrients. The considerable supply deficits caused by the Second World War and the post-war period were still vividly remembered and what mattered above all was to eat as much as one wants again. This situation posed other challenges to policy-makers than the current one: the industrialization of agricultural production aimed at rises in output took centre stage. Hence, the essence of nutrition policy was to safeguard an adequate food supply above all.

An awareness of consumer interests towards suppliers, modern consumer protection, in fact, was not at all on the agenda.

Today we live in an age

- where we must deal with the problem of overnutrition and resultant diseases partly caused by nutrition in the industrialized countries at least and to some extent already in the more advanced developing countries as well. The WHO already talks about a global epidemic in view of the developments in the past two decades,
- where production surpluses are still generated and destroyed in the EU, while food shortages prevail elsewhere,
- where concepts such as sustainability, protection of natural resources on the one hand and the use of the options of genetic engineering, on the other hand, have gained more importance.

As a consequence, the contents and targets of our nutrition policy are also changing, of course. Add to this the international framework in which national nutrition policy is embedded.

The questions

- how and with which objectives problems are solved,
- whether state interventions are required or
- whether other solutions are possible

are causing stresses and strains.

We are always moving between the personal responsibility of consumers on the one hand and state control on the other hand. If the state refrains from regulation, the requirements for consumers are automatically increasing. If the state interferes too much, there is a danger of patronage by the state and over-regulation.

In the modern service and industrial society, nutrition policy has not so much a supply function than a preventive function above all.

The Federal Government favours a three-pillar concept here:

1. creation of a suitable regulatory framework to protect health and safety
2. promotion of research
3. dietary education, including prevention.

Let me make some remarks on these three pillars.

Protection of health and safety

Protection of health and safety is a task traditionally performed by the state. In terms of food and product safety, this means: the safety and hygienic unobjectionability of all foods on the market.

A health-sustaining diet hinges on this basic prerequisite.

In the process, the Federal Government acts according to the precautionary principle, i.e. if there is any uncertainty concerning the scientific assessment and the scope of the health hazards,

suitable measures are taken early on subject to proportionality. The early detection of potential hazards can help to prevent incalculable risks. The best proof of the need for this approach was the occurrence of BSE and the lack of or too hesitant reactions when the crisis erupted. It was only the subsequent introduction of rigid protective measures, including import bans, even without final scientific certainty, that finally contributed to containing a further spread.

Modern nutrition policy is more than that. As a priority target, it must ensure maximum transparency and safeguard broad access to consumer-related information. Only then can consumers assume their personal responsibility.

This also includes that consumers become aware of the consequences of their decisions. Every purchasing decision taken by consumers also influences the investment decisions of suppliers. We know from various studies conducted by consumer research that there is increasing readiness to incorporate ethical and ecological considerations in consumption decisions. Many consumers also wish to be informed where and under which conditions their foods are being produced. In those sectors where it is foreseeable that the market does not adequately meet these consumer wishes, policy-makers can and must help to reduce obstacles, barriers and social developments that take a wrong turn.

Hence, providing positive impetus for sustainable consumption decisions, whilst creating transparency, was the whole purpose of introducing a uniform German Eco-label, too. In spite of initial criticism, also from various producer groups in organic farming, the Eco-label has clearly given consumers more clarity and transparency. The use of the Eco-label has quickly gained ground nationwide because consumers appreciate the Eco-label as simple and trustworthy guidance. This, in turn, acts as a signal for farmers and trade to expand their range of goods. The labels of fair-trade produce or sustainable fisheries also enhance market transparency and promote self-reliant consumption decisions.

More and more decisions are taken at European Community level. Therefore, the Federal Ministry of Consumer Protection, Food and Agriculture (BMVEL) makes great efforts to ensure that a high level of protection is guaranteed at Community level as well and that clear rules are created for consumers, e.g. in the improvement of labelling. Food production is becoming ever more complex and also increasingly confusing from the consumer perspective. This enhances the consumer interest in additional information. Furthermore, many consumers have become increasingly nutrition- and health-conscious and pay greater attention than before to the composition of their foods. At Community level, we have therefore started to shape the valid labelling rules in such a way that they are, on the one hand, clear and understandable for consumers according to the principle "what is inside must appear on the outside" and that they meet the increased consumer information requirements, on the other hand. The full labelling of potentially allergy-triggering substances became mandatory as a first step, for example.

Yet, there is a wide gap between desirable information, on the one hand, and the demand for readability and clarity, on the other hand. The EU has therefore taken initial measures to thoroughly revise and simplify the labelling directives in force. BMVEL will also get intensively involved in this process.

The example of the labelling of genetically modified foods has shown that these plans are not always easy to negotiate in Brussels. It was only after tough negotiations that the labelling requirement for genetically modified foods and feed took effect in all EU Member States on 18 April 2004. This marked a milestone for consumer protection. All products containing or produced from genetically modified organisms must now be labelled, on the list of ingredients of foods as well as on the restaurant menus, to be precise. There are still many open questions in the field of green genetic engineering. Creating maximum transparency and clarity is therefore in the interest of all of us.

The labelling regulation for nutritional value, that is also being coordinated at Community level, is not so much subject to controversy, but still represents a key element for mature consumers. It enables every consumer to discern more easily how much energy and how many nutrients he or she consumes. I believe that this is a further basic prerequisite for conscious eating.

The advertising situation for functional foods, that is still on the agenda in Brussels, is more complex: major companies invest large sums into the development of these products and would like to promote them accordingly. Driven by the general trend of enhanced health awareness, wellness and youthful fitness, many consumers are only too willing to believe the promises made in adverts and the press of fitness up to an advanced age, vitality and well-being caused by the regular intake of these foods. The intake of functional foods such as prebiotics and probiotics or, even more up-to-date, of those with omega fatty acids or phytosterols, therefore, raises high, frequently too high expectations in some consumers.

To put it clearly: nobody wants to curb the creativity of the advertising industry. But: if health claims are made, they must be sufficiently scientifically substantiated and must not contain any misleading formulations.

The essence of these examples is that consumers must be protected against the superiority of suppliers. Under the current conditions, we can (still) not assume that suppliers and consumers are on an equal footing.

But this is only one side of the coin: better consumer information is ultimately also conducive to a better functioning of markets because consumer decisions are a decisive factor in the market economy to control the overall system.

And there is still another aspect that I wish to formulate as a question: have not some so-called food scandals ultimately turned into a scandal because of a lack of information? As I see it, consumer information must also be seen as an opportunity for improved crisis management.

Alongside statutory regulations and private sector-organized standardization, BMVEL also increasingly fosters dialogue and cooperation. Acrylamide provides an impressive example of this. By means of the minimization concept jointly elaborated with the food industry, the acrylamide content in processed foods could be substantially lowered. BMVEL has gained similarly positive experiences already during the BSE scandal with the "magic hexagon", i.e. the close cooperation between farming, the upstream sector, the food industry, food retailing, consumers and policy-makers.

However, the acrylamide example also shows how important personal responsibility of consumers actually is. They determine the degree of risk minimization themselves by the methods they use to prepare foods in households. This also presupposes good and notably timely information by the government, however. I believe that acrylamide therefore constituted a successful test case for the newly established structure within the BMVEL remit that guarantees an institutional separation of risk assessment, on the one hand, and risk management on the other hand.

We will also see to it in the future that the latest scientific findings are regularly incorporated into risk assessment and risk management.

Food research

The second pillar is food research. Here, BMVEL initiates and finances many activities and projects. According to the motto "Prevention instead of curing", health-sustaining ways of living combined with preventive dietary aspects take centre stage today. Terms such as secondary plant substances, antioxidants or omega-3 fatty acids have long since been on everyone's lips. We owe the fact that we know about these and many other substances to the intensive research and development in the field of nutritional sciences. BMVEL departmental research and hence also the Federal Research Centre for Nutrition and Food (BFEL) in Karlsruhe make a major contribution to this.

Let me point out another project here: we commissioned the Federal Research Centre for Nutrition and Food to conduct a national food consumption survey.

The survey is to form the epidemiological basis of our decisions regarding food and nutritional policies. As a result of this representative study, we do not merely want to know which population groups eat how much of which foods, but also which social and economic influencing factors determine the dietary habits see Brombach, 2005 – this proceeding p. 64 & p.154.

On the one hand, we can then estimate the level of nutrient supply for different target groups. On the other hand, the different food patterns represent the precondition for risk assessment. We also expect answers to the question concerning theoretical nutritional knowledge and the practical skills in the preparation of meals in the different population groups. This is intended to assist us in planning suitable interventions. Apart from more precise figures about the spread of overweight and obesity in the population, we would be interested in evidence whether overweight is connected with specific nutritional habits and/or lifestyle patterns.

This brings me to the third pillar of our nutritional policy: nutritional information and measures to prevent diseases partly caused by eating habits.

Nutritional information and prevention

Almost precisely a year ago, the German Nutrition Society celebrated its 50th anniversary. During the festivities, a speaker posed the provocative question whether, in view of the increasingly overweight population in Germany, one could not come to the conclusion that 50 years of dietary education were in vain. Apart from a murmur passing through the hall, this question also triggered thoughtfulness. We must surely embark on new ways of dietary education and develop new concepts to appeal to the population !

There is generally not a lack of knowledge. Our grandparents already knew that fruits and vegetables are healthy. We know today that this is, inter alia, due to many plant substances that can protect against cardiovascular diseases or help prevent cancer formation. Yet, our grandparents as well as us would frequently prefer to go to the butcher's rather than to the greengrocer's. After all: nutrition is theoretical science, eating, however, is part of the daily routine!

Add to this that fewer and fewer people are able to prepare their foods themselves. Modern lifestyle concepts, the broad range of finished and semi-finished products of the food industry and foodcrafts and an increasing individualization of lifestyles further diminish the still existing knowledge.

Today, foodstuffs are certainly not a scarce resource any more, they are available anywhere at any time in good quality, in fact. We live in an affluent society and our consumption behaviour

mirrors this. Add to this that the time for preparing meals from staple foods, except on weekends maybe, is no longer really planned. The frequent recourse to more or less ready-made foods or complete away-from-home consumption virtually constitutes the most natural thing in the world for most people.

I have no wish to conceal the benefits or opportunities of this development: e.g. greater mobility, career development especially of women who had been charged with supplying food in the past and a better nutrient supply, irrespective of seasonal and regional conditions. The other side of the coin, however, is the permanent availability of food, an obtrusive presentation of snacks and sweets and a diet too rich in calories, given a lack of exercise at the same time. All of this results in the quintessential dietary problem today already: overnutrition. The consequence: overweight and obesity in children already.

We eat too much, too many sweet and fatty foods, but few fruits and vegetables to make up for it!

A wise policy should always be based on realities and on feasibility. Conventional dietary education has reached its limits and no longer reaches many people in our society and many children and adolescents notably due to their living conditions.

This is precisely the starting point of our initiatives as the Consumer Protection Ministry: we want to make offers to change the conditions where it makes sense or is required and feasible. We can thus facilitate or enable changes in personal behaviour.

External conditions exert a great influence, of course. If you are hungry, you reach for what's on offer, and this is far more frequently pizza, sausages or sweets than fruits, wholemeal bread or vegetables. If there are no rules in countries that prescribe what janitors should offer in the school kiosk during breaks, they will take products that are easy to store, with a long shelf life and insofar available at a reasonable price. These are primarily soft drinks instead of milk and chocolate bars instead of yoghurt and fresh fruit.

We focus our measures on two groups in our population, on the one hand on children and adolescents because what matters is to set the course for a healthy lifestyle early on. On the other hand, we intend to increasingly address senior citizens, an ever larger social group.

As far as the children are concerned, the major responsibility rests with the parents, of course. But we are really making it easy for ourselves if we leave it at that. Nutritional education is not just a matter for the parents to take care of. There is also a public responsibility for this, as incidentally for all types of education and upbringing. It would occur to nobody, after all, to delegate the teaching of maths, writing and reading to the parents.

The study "Food in schools", that had been commissioned by BMVEL, has unfortunately revealed some shortcomings in dietary education. We therefore require, first and foremost, improved dietary education and healthier meals in day-care centres for children and schools.

The campaign "Slim kids - Better diet. More exercise" launched in summer 2003 makes a key contribution to preventing overweight in children and adolescents. Within the scope of this multi-annual priority programme, BMVEL supports dietary information and education in day-care centres for children and schools as well as the practical implementation of a health-promoting diet. This means quality assurance of lunches in the new all-day schools or recommendations for a suitable wide range of foods in school kiosks.

We live in a federal system. This makes it occasionally difficult to effectively network or pool many good individual activities, also at the different state levels, ranging from the Federal Government down to the municipalities.

With the kick-off event to establish the PLATFORM FOOD AND EXERCISE end of September 2005, an instrument had therefore been developed that operates beyond the above-mentioned BMVEL activities, that supports and networks the activities of existing initiatives and launches new joint activities. This is designed to place the issue "Food and Exercise" on a broad social basis.

In contrast to the initiative "SLIM KIDS - BETTER DIET. MORE EXERCISE", BMVEL has initiated the campaign, but is "only" of several founding members on an equal footing. The other founding members are the food industry, represented by the Bund für Lebensmittelrecht und Lebensmittelkunde (Federation of Food Law and Food Science), the Bundeselternrat (Federal Parents' Council), the central associations of the statutory health insurance schemes, represented by the Bundesverband der Innungskrankenkassen (Federation of Craft Guild Health Insurances), the Centrale Marketing-Gesellschaft der deutschen Agrarwirtschaft (German Agricultural Marketing Board, CMA), the Deutsche Gesellschaft für Kinderheilkunde und Jugendmedizin (German Society of Pediatrics and Adolescent Medicine), the Deutsche Sportbund/die Deutsche Sportjugend (German Sports Federation/German Youth Sports Federation) and the Gewerkschaft Nahrung-Genuss-Gaststätten (Union of Food And Restaurant Workers).

We also hope that this process will sensitize and mobilize the entire population more on this socio-political problem.

We also expect this from the campaign "FIT IN OLD AGE – EAT A HEALTHY DIET AND LIVE BETTER". Whereas the importance of nutrition for fitness in mind and body, especially in senior citizens, is sufficiently known among professionals, the conditions in homes for the elderly and old people's homes and the poor nutritional situation of many senior citizens tell a different story.

Hence, the multi-annual campaign is mainly directed at experts, caterers and suppliers of "meals on wheels" that provide advice to senior citizens' facilities or supply them with food as well as at employees of senior citizens' facilities and outpatient care services. Further training is to enable this group of people to adequately respond to the specific nutritional problems of senior citizens.

Add to this events for senior citizens who care for themselves. They are given theoretical and practical advice on how to remain healthy and fit as long as possible with a healthy diet and an exercise scheme that matches their physical fitness.

At the beginning I mentioned the different facets of a nutritional policy. The key message we should derive from this is that we ought to view food as an integral whole and not view the various sectors of production, processing, trade, food science, nutritional information etc. in isolation as has frequently been the case in the past unfortunately. I believe that we are then on the right track and have learnt from earlier mistakes. There is a lot to be done, let's tackle it!

Consumer research in the field of nutrition – “hard” and/or “soft” science

U. Oltersdorf

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This contribution has the aim to present an overview of the art of consumer research related to food and nutrition. Nutrition behaviour is an entity which cannot be investigated in total. The first part of the overview leads to research models describing the complex reality.

The initial research step, the theories of the different sciences can be arranged on a scale between two points. On one side there are “hard”, simple representations of the world depicted by basic “hard” sciences, and on the other side are models for broad understanding of the culture of humans (“soft” sciences). Human life is determined by biological and cultural realities. Bio-psycho-socio-ecological models appear appropriate for consumer research.

“Soft” and “hard” perspective is continued. Consumer research methods are displayed for two important settings

- the point of sale (POS),
- the point of eating – the meals (POEM).

The third step is to understand all the information; to explain it – to fill the model with empirical data; to test the evidence. Structured and adjusted applications of “soft” and “hard” research will reveal evidence based information of consumer behaviour. Finally the results have to be communicated to different consumers, which may have different models of the world.



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Consumer Research in the field of nutrition - “Hard” and/or “Soft” Sciences

Ulrich Oltersdorf, BFEL, Karlsruhe

Introduction

If humans would follow their own given rules; then there would be no need for research related to human behaviour. We are all well aware of behaviour related problems in all levels of human societies. Several are outlined in the first presentation of this congress (James, 2005). Consumer research in the field of nutrition is not only a matter of general human curiosity “how things are functioning”, but it is a necessity in order to gain tools to solve and to prevent the given problems. Unfortunately too many consumers show deviant behaviours, e.g. they eat and drink too much in general, and they eat too less fruits and vegetables, and they are physical inactive.

For an introduction into the methods of this research area it is necessary to give a description of the object, being simple “human behaviour” with emphasis on food and nutrition. The context is the whole life, and within life cycles their is influence of one generation to the other (Fig. 1). The life stream (Fig.2) has a wide frame, but with firm constraints, which are characterised as follows:

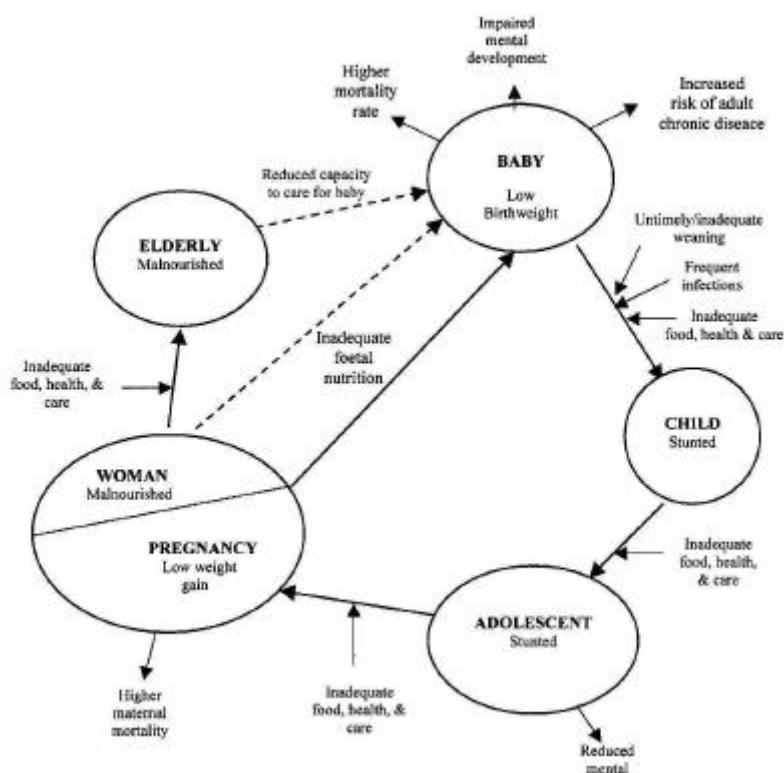


Figure 1: The Life Cycle

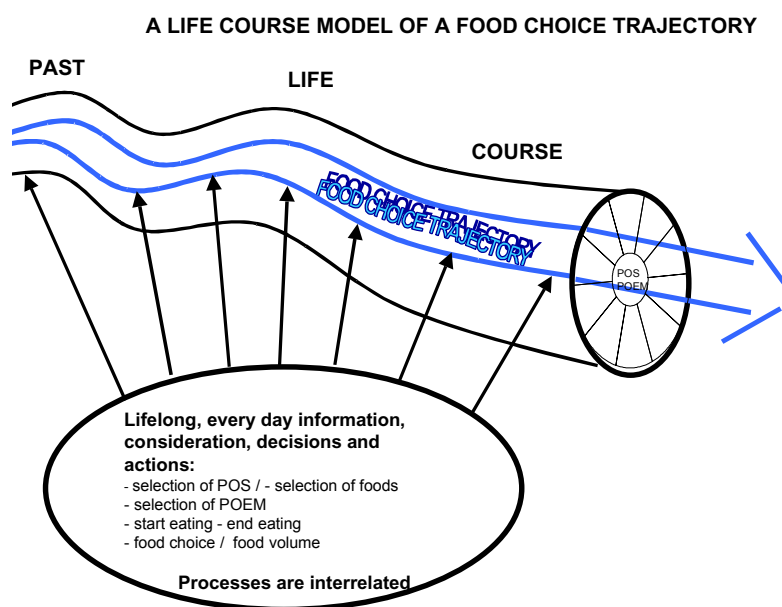


Figure 2: A life course model for food choices at POS (point of purchase) and POEM (point of eating – the meals)

- Everybody has to eat. There is no alternative to eat, drink and to breath; but there are many different options in which way this basic human need is met.
- Eating is a biological process. It is a “chemical communication with environment”, foreign substances are utilised and transformed for construction, maintenance and function.
- There are biological constraints: the genetic potential, the limits of adaptations, the time of life cycles and the lifespan.
- Eating, as ingestion of food, is an individual process. Since it is essential, it is well regulated in complex feed-back loops (physiological regulation systems for hunger and satiety). As omnivores men have countless options for their lifestyles; to eat and to be physical active. Eating has individual constraints; one’s literacy and one’s economic resources; and socio-cultural constraints (“insurance”).
- Food and nutrition security, that there are enough foods affordable for all, is a social process. Nobody can survive by it’s own.
- Eating is a basic competence of humans. Early and persistent training starts in infancy and should aim to eat right things in a proper, cultural accepted way. A similar basic competence to be learned in processes of socialisation is communication. Both functions use the same central organ – the mouth. (“Speaking is like talking patterned activity.”; Douglas, 1975).
- Eating is not the only basic need (Maslow, 1970), there are several and all have to be fulfilled. Consumers cannot be specialists, like scientists, they have to have basic competence for all everyday requirements.
- The basic everyday life activities are trained over long periods; the actions follow routine mechanisms (habits). They are ordered and structured in acting sequences in a given frame. The frame is composed out of available time, resources and capacity.

- All basic competences of humans are complex tasks; the biological behaviour is multileveled; as tropisms; taxonomys; reflexes; instincts; learning abilities and finally intellectual power. The complexity of such everyday tasks becomes overt in developments of human robotics to perform work in a kitchen (Asfour et al ., 2004).
- Human behaviour is guided by “hand” (practice; vocational training); by “heart” (as a methapher for limbic neurological structures) and finally by “head” (metapher for cognition and rational behaviour)

Humans are not trivial machines; we are not reacting purely as simple organism. Humans have body and souls. The human body and its function is as a whole too complex for meaningful research. It has to be reduced to make model of reality. Consumer research has to use models which consider the real life of human, not only the special segments of it (Fig. 3).

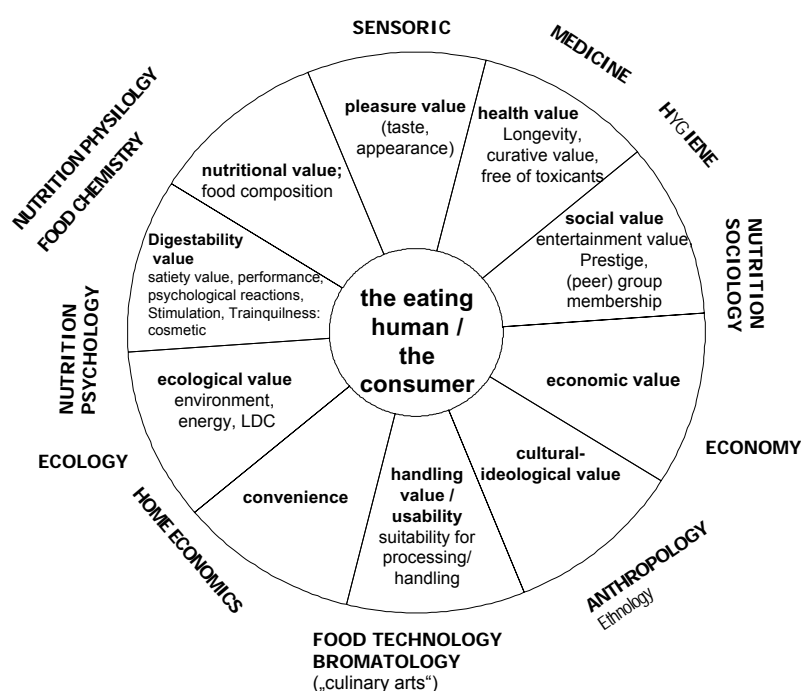


Figure 3: Different views on food choices by consumers and scientists

The frame for building models would need a grounded theory of the consumer sciences, which is available only as fragments. Here it is given a broad definition of human nutrition behaviour .

Human nutrition behaviour is the universe of planned, spontaneous, customary and habitual actions by whose food is acquired, prepared and consumed. Human nutrition behaviour embraces thus very many elements, which can be allocated to two distinct groups:

- their are the observable human activities (e.g. at point of sale and point of eating; “consumer outside”)
- their are the internal hidden reasons for them (“blackbox”; “consumer insight”).

In conclusion the limits have to be recognised. The research subject “consumer behaviour” cannot be investigated as an entity, but only in reduced and simplified models.

The Research Models

The frame for research models is within four axes (Fig. 4), being humans, food, environment and time. There are two basic approaches for making research models; one is to reduce to the max. The research starts with simple models and then advance into higher complexities. This is the main way of natural sciences; which are also called the exact sciences (started in 17th century by Descartes). They may deliver for small scale models, which excluded all disturbing factors; deterministic answers. Such hard sciences give us answers of dead reality. Live cannot be constructed by such models. The symbol for this is a microscope.

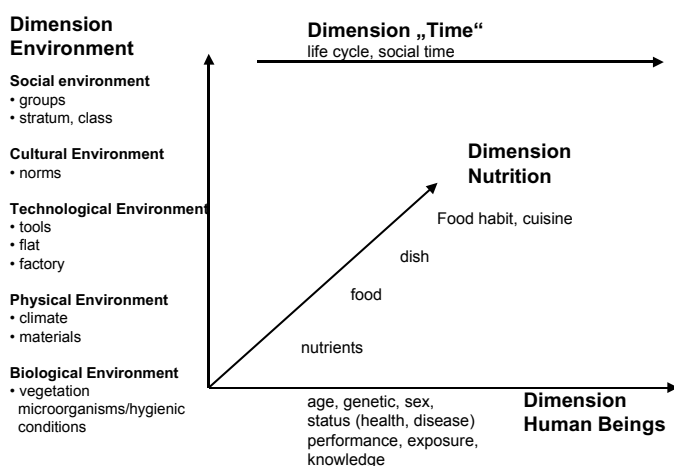


Figure 4: The dimensions of food choice-related consumer research

The other approach tries to understand the whole. The cultural sciences use diffuse models with “soft” limitations. The answer given by such soft sciences may be more drawn from life; but they are of probabilistic value; e.g. they have the truth of weather forecasts. The symbol for this is an “macroscope_” (Rosnay, 1979).

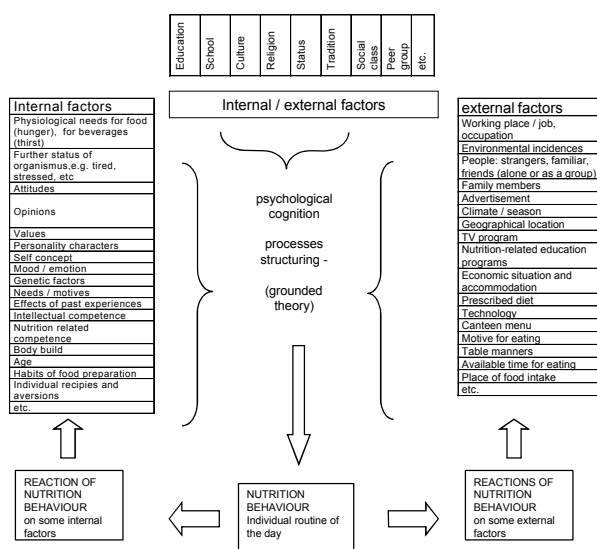


Figure 5: Factors determining human food choice

For understanding of the un-understandable application of different methods are necessary. For understanding consumer behaviour use of the different approaches which are indicated here by hard and soft sciences should be strived. Such “dualism” is a basic character of live. Our perception, our subjective reality is constructed by using all our senses; not just e.g. our vision. In nutrition as part of biology the yes-no principle is not the appropriate one: To eat or not to eat – this is no question. The questions are related to the right balance. Reality, truth and scientific evidence are not absolute. According to Popper (1972) their is no way for final verification of theory, but only falsification.

Today appropriate approaches in consumer behaviour research used biopsychosocioecological models. In principal the relevant constructs of such models are known (Fig. 5) and the observed behaviour can be related to the black box of inherent factors. In Fig. 6 an example for such a model is given. Consumer behaviour research has to use different models, different views on the total subject in order to approach “reality”.

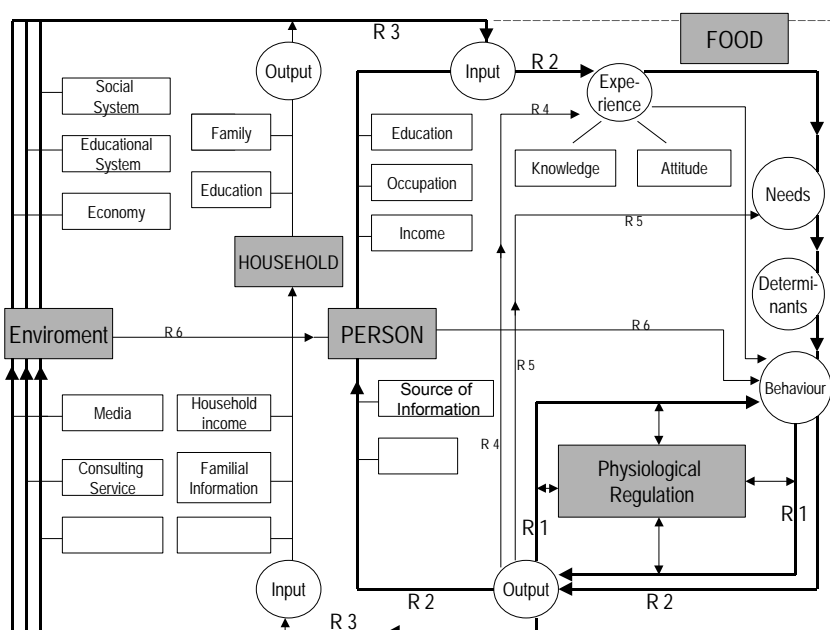


Figure 6: Biopsychosocioecological Model of Food Choice (EMSIG –Model – Ernährungsmodell-Studie in Giessen)

The Research Methods

All constructs of consumer behaviour research models can be measured in different ways. The theory of measurements and the methods of the different sciences (Fig. 3) are used. It is impossible to describe all methods of consumer behaviour research in this frame; and it is virtually not necessary for the understanding of the main message of this presentation. It will be described only the principal range of methods related to two main settings in the consumer’s food chain. Whereas in primary societies food chain started with agricultural activities, for our society it is the “Point of Sale (POS)” and the other is the “Point of eating – the Meal (POEM)”.

Both are everyday situation; the human memories for it are weak and biased by the subjective internal structure (consumer’s model; grounded theory). Details are remembered only for exceptional situations (“settings”, e.g. wedding meal). The consumer lives within the stream of life (Fig. 2), with everyday POS and POEM. The scientists look with different models and experiences from the outside on and into it.

In research at POS the selection of food outlets for shopping is investigated, the shopping lists are recorded, the activities of consumers within the shop are observed, and so on. The relations between the consumers and the foods are comparatively concentrated on the distant acting senses (“the eye”; viewing the item in the shelf).

In research at POEM it has to be recognised that eating a meal is a process, e.g. decision to start to eat (hunger, appetite), selection of foods and dishes (food choice), decision to terminate eating (satiety). The array of senses used is much broader, the narrow ones are used as well (olfactoric - taste, smell; feelings, ambience).

For both objects of research there is a wide array of methods, which can be categorised. Each category has a range of methods, which can be put on the soft-hard scale. Soft is the human and hard the equipment-related method. Humans can be sensible to see something outside the focus of the method; machines are stable, and thus unsensible. They „see“ only the part they are constructed for. Scientist with a specific, narrow “microscopic” view and cannot observe the „outlying“ things („You can only see what you observe“).

The used methods can be categorised as observation, communication (interview) and experiment.

The scientist can observe and document situations and actions. The information is related to the end results of a process, which is inside of the consumer; it is observed what the consumer does. The observation can be classified in following dimensions, which are characterised by the continuums as well:

- participating - non-participating;
- overt – hidden;
- by humans – by technique;
- by other humans – by the subjects themselves (protocols);
- unstructured - structured;
- short time – long time;
- “natural” setting (“field”) – experimental setting (“lab”).

The scientist can participate and observe overt the consumer. If consumer know that he is observed, then there are interferences with the “inner consumer processes” and the actions are likely to be biased. The hidden observation is limited by ethical constraints. The observation can be done by humans (the researcher; “interviewers”) or by technical equipment (video; web-cams; electronic “watches”) (Fig. 7). The observation can be done by the consumers themselves (protocol, diary). The scientist can try to participate in the life of the consumer (anthropological method), there are even hidden participating methods (e.g. mystery marketing at POS; using “V-persons”). Personal observations are rather time consuming and have high bias; only if once get accustomed to the researcher the behaviour is “normal”. Such methods are not applicable for population studies. Non-participating methods are observations using technical equipment (e.g. video camera, recent developments in RFID). These are unflexible and “mechanistic”. Nothing is recorded which is outside the scope of the “observation machine”.



Figure 7: Examples of innovations in information technology in consumer research – the Media Watch and the Future Shop

The observation can be rather unstructured and open; one can document it, e.g. by audio-visual recording. The observation can be rather structured and theory guided (e.g. observing people using stair or moving-stair in obesity research). The observation can be on a rather short time base, just a meal, just one shopping act; or it can be for a longer period (ethnographic research). The observation can be related to “natural” settings of POS- and POEM-situations (field research), but also experimental situations can be observed in laboratories (test-studio).

The kinds and different dimensions of observations can be combined; and thus there are many different methods in the different disciplines related to consumer behaviour research known. All methods have advantages and disadvantages; they are either rather reactive (compared with measurements of static monuments); or rather limited to isolated information (measuring only a small part of the whole).

The overt participating methods are based on communication between the scientist and the consumer. This lead to the next array of methods, the interview methods, which have also different dimensions. They can be

- personal (face-to-face);
- via media (phone; internet; email / snail-mail – written);
- open (unstructured; qualitative) and structured (closed questionnaire; quantitative);
- in natural setting and experimental situations;
- in special interview forms (e.g. groups, experts).

The personal face-to-face communication can at different places (direct at POS and POEM; at any other) and at different times (at the very moment; before and afterwards). The personal interview, using audio as communication channel, can be done also by phone, and audio-visual by mobile phone plus web-cam. The interview can be in written forms as questionnaire; handed out personally, send by snail-mail, by email, chat rooms, or internet. The interviews can be computer-assisted in different ways, for the interviewer, e.g. as CAPI and CATI – computer assisted personal/telephone interview; but also for the interviewee by using PALM.

One can ask open or structured; the memory can be unsupported, or supported by lists, pictures, etc.. Is the communication open, just the “themes” are given by an interview guideline, then these methods are called qualitative. Qualitative methods are appropriate to explore the structures of thinking/behaviour of consumers, to look into them. If the scientists know such structures, but wants to investigate about the occurrence within consumer groups, structured interviews with the closed questions (list of possible answers) are applied. These are called quantitative methods. The communication can be done, like the observations, in the natural settings, but also in experimental situations. Experiments are related to specific interventions during the communication with consumers, e.g. to stimulate by introducing new arguments, new foods and/or new situations (like in conflict and power interviews). The communication can also with different selected groups of consumers (including stakeholders, experts); there are special forms (participating, e.g. agent research, and experimental, e.g. brandcamps) and methods for it.

The third and last category of consumer research methods are the experiments, which are mostly related to hypothesis testing. The consumers as test persons are presented test food and/or meals in different experimental designs at POS and POEM. In such experiments plenty of different technological equipment can be used. Nowadays the old one side visible mirror in test studios might be complemented with process-computer-assisted-controlled environments (light, smell, noise-designed); the test persons can be controlled by biophysiological measurements (pulse, blood pressure, etc.). Very recent developments using very advanced and expensive technologies, like computer tomography measuring brain activities and named as neuromarketing.

The traditional consumer field research which is related to epidemiology can be combined with modern information technology. Applying such research design offers opportunities to use the experimental character of societal changes for consumer research. In monitoring efficiently consumer panels, the effects of events in a society could be measured; this is not only related in the evaluation of marketing on sales; but also the effects of “accidents” and/or “food scandal” on consumer behaviour. In good designed consumer monitoring the community is like a laboratory. A famous example in classical epidemiology is the monitor of the Framingham (town close to Boston, Mass.; Gordon & Kannel, 1970); and for experimental market research in the panel of the community of Hasloch/Germany (GfK Behaviorscan, 2005).

Current methods of consumer behaviour research are tabulated (Tab. 1) together with methods for measuring physical activity, as health-related lifestyle factor. All are different mixtures of the different dimensions. The questions related to behaviour might be comparatively easy to answer; but those about the “interior”, related to consumer insight; are much more difficult. There are retrospective recalls, which are based on memory, which is imperfect. There are prospective protocols, but observations are reactive. The one none reactive methods, the archeological method of analysing waste basket, has also limits that the traces of different behaviours differ.

Table 1: Overview for Consumer Behaviour Assessment Methods**Consumer Behaviour Assessments Methods**

	POEM	Physical Activity	POS
Retrospectiv			
Recall	24h-Recall	24h-Recall	
History	Dietary history	Activity history	
Questionnaire	Questionnaire	Questionnaire	Questionnaire
Frequency	Food frequency; Inventory	Activity Frequency Inventory	
„Archeological“	Waste Basket Analyses		
Prospective			
Recording	Precise weighing method; Photo, Video; Biomarkers	Accelerometer; Heart rate	Video
Protocol	Food protocol	Activity Procol; Time Budget	Purchase Recording – Panels; tracking shop records – check out
Budget	Household Budget Survey		Household Budget Survey

The internal reasons, the “consumer insights”, can be deduced from interpretation of S-O-R-models of the organism as a black box. From different reactions (R) of different humans (O = organism) according different stimuli (S) the mechanism can be revealed. The communication methods apply models based on theory of constructivism; like e.g. the grounded theory. The bases of complex tasks of everyday actions at POS and POEM, are bound to personal constructs which guide our behaviour in the multioptional, information-overload environment. Such consumer- and market-research methods are listed in the following chart (Tab.2).

The scientist can “simple” ask for psychological traits, like the reasons why, the feelings, and so on. In retrospect this is biased by one’s norm; but it can be tried to ask to speak out in the moment of acting, what he is thinking. The “thinking aloud” is one trial of it; but such habitual activities, are much faster, compared to explaining what happens insight. Most of the neurological information processes and signals reach not cognitive levels.

To explore the reason web inside the scientists have to use explorative communication methods; they are called qualitative methods. Comparing the different methods the scientist have to consider all the aspects of quality control, the validity and the reliability. It has to recognised that their are no “gold standards” for behaviours. There is no exact repetition possible; observation affects the behaviour; hidden observation has not only ethical restrictions. Living as researcher (ethnographer) in a community changes the “objectivity”.

Table 2: Overview for Communication-related Methods in Consumer and Marketing Resarch

<u>Individual Personal Interview:</u>	<u>Interviews with Groups</u>
open, explorative; interviewer guidelines (<i>Leitfaden</i>)	tandem interview (e.g. simulation of situation at POS);
deep; intensive interview; narrative (biographic themes)	group interview: analysis of content, discourse; sociogram;
problem-centred (description of situation)	focus group interview; topic-centred interview;
thinking aloud method	action research (convergent interviewing);
focus (stimuli given)	role-playing; psychodrama
projective tests	
association (mind mapping);	
experimental	
structured – comparing; rating (Likert-Scale; semantic profile; conjoint measurements; reparatory grid; laddering)	<p data-bbox="938 896 1324 929"><u>Nutrition Information in Media</u></p> content analysis coverage context impact

A brief view on future developments. In interdisciplinary efforts the new developments in biotechnology (genom – proteonom), micro- and nanotechnology and information technology; it seems possible that almost all dimensions in complex models can be monitored. The individuals will be transparent. Biochips overt the individual biological condition. The psychological reactions are recorded by biosensors; the activities movements of people are recorded by GPO; the activities at POS and POEM is recorded by RFID and web-cams inserted in ones glasses. The glasses can be also used as information screen. A collection of all-information is evaluated by data mining programs automatically and the results are presented, as biofeedback - „you have done well, or not“. A control authority can observe all.

In conclusion their are many methods in consumer research available. Collection of information is not longer a limit. Limits can be seen in the ways how researcher is structuring and using the information. A simultaneous and co-ordinated interdisciplinary use; applying different views and models on consumer behaviour is needed.

The evaluation of the research results

The final step of research is evaluation of the collected information. The empirical results have to put into the used research model. The model is compared with the reality (homomorphy).

The whole repertoire of statistical method would have been to mention. There are theory-guided multivariate methods, and theory-generating explorative data analysis methods (data mining). One finds again the continuum from hard to soft. Deterministic models, which can be called hard, tend to use rational scales and linear relations. Those answers are applicable only to the rather narrow model reality. Real world is not deterministic and human behaviour is not mechanistic, appropriate relation in such soft analyses are none-linear, probabilistic and fuzzy. The diffuse pictures out of incomplete information can be supplemented by human experiences to a better one. Human competence is based on such structural information processing. Such trained customs help to recognise structures from parts. This capability improves orientation in complex environments, in much model recognition humans are still more efficient than computers, whereas in deterministic models the computers are much more efficient (Dörner, 1996). This human competency is related to basic brain structure of ancient gene pool. But even applying improved model the research evaluation will lead to limited results, they are not representing the reality.

Same information can be used in very different models, for different analyses and using for different decisions. POEM information can be used to evaluate substances, food and nutrients. Taste can be measured as concentration of certain chemicals, but also by the perceptions of the different humans. POS information, like information on food packing and leaflets, can be analysed by text analysis programs, but also according to A.I.D.A. constructs (attention – interest – desire – action). The values and norms are not physical values, but socio-cultural based.

Results of consumer research are related to communication processes within societies. There are many activities related to verbal media (text, icons, symbols), but beyond this increasingly important sector, their none-verbal ones. Human behaviour is multi-sensoric controlled, and the different communication channels have their own structure and grammar. An excellent example is eating, it is communication at biological levels and uses all sensoric information channels. Human information control is trained by the biopsychosociocultural processes, which are already mentioned in the introductory part. The results of consumer research are based on models, which are related to specific human groups, situations and time.

Finally even when correct evaluation is achieved, a further step is needed for application of the scientific conclusion. There is a need to communicate the results to the relevant groups within a society. Nutrition communication is a further broad consumer research area.

The current food problems need an improved efficient communication within a society. There is a need for socially robust knowledge in order to formulate goals for policy and for the implementation of programs. The communication between scientific experts and “experts of life” has to be improved, again an own research are in consumer research. (Dienel, 2002; Reinert, 1998).

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Selected links to Consumer Research related information:

Relevant links:

Abelson, H. - Survey Research Website – Survey Research for Social Issues, Policy Analysis, and Marketing - <http://members.bellatlantic.net/~abelson>

ESOMAR (European Society for Opinion and Marketing Research) - www.esomar.org / <http://www.esomar.org/esomar/show/id=111581>

FOCUS – Magazine – (Internet Encyclopaedia for Consumer, Communication and Media Research) -

<http://www.medialine.focus.de/PM1D/PM1DB/PM1DBD/pm1dbd.htm>

ILMES - Internet-Lexikon der Methoden der empirischen Sozialforschung - <http://www.lrz-muenchen.de/~wlm/ilmes.htm>

IMRI – International Market Research Information - <http://www.imriresearch.com>

Research Methods Division, Academy of Management - <http://www.aom.pace.edu/rmd/>

Social Science Data Collection - <http://ssdc.ucsd.edu> / Glossary on Social Science Data Terms -

<http://odwin.ucsd.edu/glossary/>

Zentrum für Umfragen, Methoden und Analysen (ZUMA); Mannheim –

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<http://www.gesis.org/Methodenberatung/ZIS/index.htm>

<http://www.gesis.org/Methodenberatung/ZIS/Linksammlung/Methoden.htm>

Methods for assessing the role of moral influences on CONsumer Decision-making on ORganic foods (CONDOR)

R. Shepherd

University of Surrey, Guildford, UK

Organic food sales have increased over the past few decades in most European countries but there are major differences between countries in the overall levels of sales. One of the major developments within some of these markets is the inclusion of more processed organic foods as well as fresh produce but there have been few studies examining consumer views on such foods. Most previous surveys of consumer attitudes to fresh foods have relied on self reports of the important influences on choice, which tends to produce rational and instrumental beliefs but there is less understanding of the role of values, emotional and ethical and moral concerns which are more difficult to articulate.

An EU-funded project, 'Consumer Decision-making on Organic Products (CONDOR)', brings together a multidisciplinary team across eight European countries to examine this topic. It combines the development of methods for the segmentation of consumers based upon values and the elicitation of affective (emotional) associations and moral concerns. It involves the development of a consumer decision-making model bringing together aspects from models such as the Theory of Planned Behaviour and Means-end Chain Theory/Food Related Lifestyles. This model will be tested in eight European countries and in identified consumer segments. It will provide information on the role played by values and by affective associations and moral concerns in consumer decision-making on both fresh and processed organic foods and provide novel insights into the marketing of organic foods in the future.

The first research within this project tested novel methods for eliciting beliefs about organic foods, examining the utility of word association and an open-ended measure (which separately elicited beliefs and feelings or emotions) in addition to the usual method for eliciting advantages and disadvantages normally used with the Theory of Planned Behaviour. This study was carried out in the UK, Finland and Italy.

Although there were small differences in the results between the countries, overall the methods all elicited similar types of beliefs. The fresh organic foods were considered to be more natural and the participants expressed more positive feelings towards them and also mentioned the shelf-life of these foods. Processed foods brought out more negative views and issues of trust. Quality, health issues, expense and chemicals in foods were mentioned for both fresh and processed foods. The word association task brought out more imagery and names of specific foods. The traditional task and the open-ended beliefs task elicited similar categories of responses. However, by explicitly asking about emotions and feelings the open-ended emotions sections generated additional categories that were purely emotional and not expressed in any of the other methods. Moral categories were elicited by both the traditional task and open-ended beliefs in equal measure.



Richard Shepherd

is a Professor of Psychology and Co-Director of the Food, Consumer Behaviour and Health Research Centre at the University of Surrey. His research has centred on factors influencing human food choice and has included the application of psychological models of attitude and attitude change to food choice, the perception of risks associated with foods and risk communication. He leads the EU FP5 project on 'Consumer decision making on organic products (CONDOR)' and UK projects on attitudes towards genomics and communicating uncertainty on food risks, in addition to involvement in a range of projects on aspects of consumer behaviour and risk perception.

Methods for assessing the role of moral influences on consumer decision making on organic foods (CONDOR)

Richard Shepherd

Introduction

During this presentation I will first of all make some observations about the organic food market followed by consideration of the findings from the literature on reasons for choosing organic food. I will then go on to describe the project 'Consumer decision-making on organic products (CONDOR)' and some preliminary findings from this project. I will finish by giving a few general conclusions.

There has been a steady increase in the amount of organic foods produced and sold in Europe over the past decade, rising from about 0.7% of usable agricultural area given over to organic production in 1993 to 3.4% in 2002 (Commission of the European Communities, 2002). While there has been this steady increase the overall percentage remains relatively small. There are also large differences between European countries in terms of both sales and organic production, with the largest percentage of useable agricultural land given over to organic production in Austria, at about 8.5%, while production in Greece and Ireland is well below 1% (Commission of the European Communities, 2002).

As well as the increase in agricultural production and sales of organic foods, there has been a shift in the way in which such foods are sold in many European countries and also in the types of likely consumers. Research from some years ago has tended to show organic consumers as being a special segment and much of the sales could be characterised as being from specialist shops such as health food shops. These special segments of consumers tended to be high in environmental concerns and altruistic values (Schifferstein & Oude Ophuis, 1998; Grunert & Juhl, 1995) and to be less concerned about other factors which might influence choice of foods such as price, convenience, food quality and availability. However, for some European countries, and certainly in the UK, organic sales have moved much more into the mainstream (Latacz-Lohmann & Foster, 1997), with many people who buy organic foods not really fitting this same kind of segment, but much more closely resembling general consumers and being more concerned about factors like price, convenience, food quality and availability. At the same time sales of organic foods have shifted from specialist shops to supermarkets which would now account for the majority of organic sales in the UK.

While early on in the development of organic markets the majority of sales tend to be fresh fruits and vegetables, this then tends to extend out into, for example, organic meat, organic milk and organic versions of staple foods such as bread. There has also been an increase in the development and sales of more processed organic foods which would include lightly processed foods such as frozen vegetables or fruit juice, but also include more highly processed and complex foods such as pizza or ready meals (Klont, 1999).

There have been many studies examining the stated reasons for consumers' choice of organic rather than conventionally produced foods, although, these have mainly been on fresh fruit and vegetables. There is a general consensus across these studies that the stated reasons tend to be health, nutrition, food safety, taste and the environment. Also organic foods are associated with being natural, with cleanliness and the absence of chemicals and pesticides (von Alvensleben & Altman, 1987). There are also of course negative perceptions of organic foods particularly among people who do not buy organic foods or who buy organic foods rarely. The main issue which is usually raised by consumers is the relative cost of organic foods but other issues are also given as reasons for not buying organic foods, such as poor quality, poor appearance, the presence of pests and diseases and the lack of proof that the food is actually organic. Another issue often raised is that of availability, which may have a number of strands

including effects of seasonality but also the fact that organic foods in some countries are available only in particular types of stores.

Other research has sought to characterise organic consumers, who are usually found to be of higher socio-economic class, higher income, higher education and to have children and in some, although not all, studies to be older. Organic food consumption is also found to be related to other values and attitudes, such as, vegetarianism, increased recycling behaviour and also adopting an alternative lifestyle.

CONDOR project

I now want to describe the EU-funded CONDOR project looking at consumer attitudes towards organic foods across eight European countries. This project is led by myself from the UK and has partners in Finland, Italy, Greece, Spain, Denmark, Germany and Sweden. The aims of the project are to assess consumer beliefs and attitudes concerning organic foods across these eight countries and also across different consumer segments. A major aim of the project is also to investigate in some detail aspects of organic foods which might influence consumer choice but be more difficult to articulate such as moral concerns and affective responses. Finally, the project also looks at both fresh and processed organic foods since it might be expected that consumers will view these types of organic foods in very different ways. In particular processed organic food run counter to the expectations of some of the consumers and also may go against the underlying values of people who are likely to buy organic foods.

The CONDOR project takes as its starting point two key approaches from the consumer behaviour literature, the Theory of Planned Behaviour (TPB) (Ajzen, 1991; Shepherd & Raats, 1995) and means-end chain analysis (MEC) (Grunert, 1995). The TPB is a rational model of human behaviour which argues that behaviours such as the choice of a type of food is predicted by intentions, which in turn are predicted by attitudes, perceived social pressure and how much control the person feels he or she has over the behaviour. This has been widely applied in consumer studies, including several successful applications on the choice of foods (Shepherd & Raats, 1995). This model offers an excellent starting point for the examination of organic food purchasing and consumption.

An alternative, although complementary, approach to uncovering the motivations behind consumer decisions is provided by means-end chain theory (MEC) (Grunert, 1995). Within this approach the links from attributes of products to perceived benefits are uncovered and then further linked to the underlying values held by consumers. It is argued that behaviour is influenced by how the attributes of products and their perceived benefits meet the needs of consumers in terms of their underlying values. Again this method has been successfully applied to understanding consumer choice of foods (Grunert, 1995). Using the MEC approach it is possible to develop segmentation of consumers based upon the values they hold. Such segments tend to be stable, but the relationships between these segments and particular food related behaviour tends to be limited (Steenkamp et al., 1999).

The concept of Food Related Lifestyle (FRL), developed and validated through studies in several countries and at different times (Askegaard & Brunso, 1999; Grunert et al., 1998; Brunso and Grunert, 1998), is a quantitative approach based on means-end chain theory and provides an understanding of the relations between consumers' choices in the market and their underlying values. By applying a segmentation approach to this problem, consumer differences are taken into consideration in an instrumental way, pointing to different ways of addressing these segments. The FRL segmentation has been validated across European countries, and one implication may be that differences across segments are more important than differences across countries, opening the way for common strategies directed to each specific segment. While this approach has been developed for general views on foods there are specific aspects of organic food choice which are targeted in the CONDOR project.

Both the approaches based upon the TPB and MEC fail to incorporate some key features which are likely to be important in the choice of organic foods. These are affective responses to foods and moral concerns about the ways in which foods are produced. There have been previous attempts to integrate these non-rational influences into the essentially rational model formulation of the TPB for other types of choices of foods (Raats et al., 1995; Sparks et al., 1995; Tuorila-Ollikainen et al., 1986) but not for the consumption of organic foods. Affective associations and moral concerns also need to be incorporated into the MEC/FRL framework and included in the segmentation model.

The overall objectives of the project are: (i) to provide a basic understanding of the processes involved in consumer decision-making on the purchase and consumption of processed and fresh organic foods; (ii) to model consumer choice of organic foods based on attitudes, values, affective and moral concerns over eight EU countries.

The project is organized as a series of work packages. The first of these seeks to develop new methods for the elicitation of affective and moral concerns from consumers. This part of the work was conducted in the UK, Finland and Italy and involved testing focus groups, word association and an open-ended method of eliciting emotions and beliefs as alternatives to the normal method of eliciting advantages and disadvantages of behaviours usually used in the TPB (Ajzen, 1991). This will be described in more detail later.

The second work package develops a preliminary consumer model; this again was carried out in the UK, Italy and Finland. Using the methods developed in work package 1, beliefs about organic foods and also affective and moral issues were elicited from 30 people in each country. These beliefs were then used to develop a standard questionnaire based on the TPB which was then administered to 200 people in each of the countries. An analysis of these results will test the relative impact of moral concerns as against more instrumental beliefs.

Work package 3 is on segmentation methods and involves laddering interviews with 100 consumers in each of Denmark, UK, Spain and Germany. These consumers will be chosen in order to cover specific food related lifestyle segments. The responses will be analysed in order to categorise the responses into attributes, consequences and values and examined for moral and affective reasoning in the way in which consumers think about choices of organic foods.

Work package 4 brings together the findings from each of the earlier work packages and takes place in each of the eight countries. Again beliefs and moral and affective concerns will be elicited from small groups of people in each country, and then a standard questionnaire based on the TPB and food related lifestyles will be developed and completed by 1000 people in each of the eight countries. These responses will be analysed for differences both across countries and across consumer segments.

Belief elicitation

I will now go on to describe in some more detail the methods and some results from work package 1. In each of the countries taking part in this work package (the UK, Finland and Italy) beliefs about consuming organic foods were elicited using four different methods. The first of these is the method conventionally used with the TPB which asks consumers to list the advantages and disadvantages they see in eating organic foods. The problems with this method are that it tends to lead to very rational responses and fails to elicit more affective responses and also does not really elicit much in the way of moral or ethical concerns. Three alternative methods were also used, each with different participants. These were focus groups, free association and an open-ended method. For each of the conventional method, free association and open-ended methods a standard set of stimuli were used: organic food, organic fruit, organic vegetable, organic ice-cream, organic milk, organic pasta, organic pasta

sauce, organic apple, organic carrot, organic jam, and in the case of the word association task only, organic farming was used as an initial stimulus. For the conventional method participants were asked to list the advantages they see in eating, for example, organic fruit followed by what they see as the disadvantages of eating organic fruit. And finally a question on what else do they associate with eating organic fruit? For the word association task, participants were asked for their first thought or image when presented with the stimulus, and the first three responses were used. They were then asked to rate how positive or negative the image was on a 5 point scale. In the open-ended method questions were asked on how organic fruit makes you feel, beliefs and thoughts about organic fruit and behaviours and actions relevant to organic fruit. Again each of these responses was then rated for how positive or negative it was felt to be by the respondents. It was hoped that by expressly asking about feelings in this method we were likely to find more affective responses. Finally there were four focus groups conducted in each of the UK and Finland, and two in Italy. The discussion started at a more general level on aspects of farming, shopping and types of foods bought and then moved to issues around organic food, including understanding of the term organic, naming organic foods, differences between organic and conventional foods, why someone would buy or not buy organic foods and the types of people who might be expected to buy organic foods.

The data from the focus groups were really quite different in format from the other methods and therefore were analysed separately. They were also analysed separately in each country. The UK results showed five main themes. One was on aspects of food production, including things to do with foods being home grown or for home cooking, local or from intensive farming. The second theme was on access to food with sub-themes of local, supermarkets and imported food. The third theme was control which again linked to imported food but also to food regulations and trust. The fourth theme was health issues. The fifth theme was moral issues which linked to considerations of profit, environmental impact, animal welfare and advantages and disadvantages of organic foods. There were also some issues which were raised which did not fit in within these themes including for example, names of particular organic foods or images or the definition of organic foods.

Since the remaining methods yielded more comparable data these were analysed together. Responses from each of the conventional method, word association, open-ended beliefs and open-ended emotions tasks were categorised so as to examine the types of categories of responses given in each of the methods. The responses to the fresh foods were analysed separately from responses to the processed foods. For fresh organic foods the most frequently used categories for each of the methods were quality, health and expense. Other major categories used for the conventional method were chemical, trust and shelf life. For the open-ended beliefs, chemical and natural and for the open-ended emotion, positive feelings and negative feelings were also relatively highly used. For word association the other main categories used were visual images and specific foods. For the processed foods again the categories used most were quality, health and expense and the results were very similar to the responses for fresh food. For the open-ended beliefs method trust was one of the most used categories rather than natural in the case of fresh foods. For the word association not known was one of the most used categories, demonstrating that people were not familiar with a number of the examples of organic processed foods. Also a frequently used category in the open-ended emotion method was having no feelings, along with having either positive or negative feelings. There were few differences between countries in the responses for each of the methods.

The word association task brought out more imagery and names of specific foods but did not give more affective or moral responses than the conventional method. The open-ended belief task yielded very similar categories of responses to the conventional method. Whereas, the open-ended emotions task generated additional categories which did more clearly relate to feelings and affect. Therefore, it offers some advantage over the conventional method of belief elicitation and can complement this method.

Conclusions

Organic markets are still relatively small overall, but there are increases in sales of organic foods and also large differences between European countries both in production and in sales. There is also an increase in sales of processed organic foods. The CONDOR project has been designed to answer a number of questions in relation to consumer choice of organic foods, including examining differences across both countries and across consumer segments in attitudes and beliefs about both fresh and processed organic foods and also to examine the role of moral concerns and affective responses to organic foods.

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(see also to Condor-Posters, 2005 – this proceeding p. 225)

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Methods used in research on food-related behaviour of older people (Food in Later Life project)

M. Raats

University of Surrey, Guildford)

One of the key objectives of the Food in Later Life project is to generate longitudinal, qualitative and quantitative data on the relationship between food intake, nutritional well-being, health and quality of life among older people. In 8 countries across Europe, the project compares men and women, those aged between 65 and 74 with those over 75, and those living with a partner with those living on their own. The work programme comprises of seven studies. Older people's attitudes and beliefs about convenience and functional foods are assessed using semi-structured interviews and questionnaires. The interaction between shopping, food selection, economic constraints and meal preparation skills in older people are evaluated using semi-structured interviews at home and whilst shopping, in-store observations and questionnaires. Satisfaction with food-related services (e.g. meals on wheels, lunch clubs) is evaluated using structured interviews with users and providers of food-related services. In depth qualitative interviews are used to determine the role of formal (e.g. food-related social or health services) and in-formal networks (e.g. family, friends) in enhancing health-promoting food provisioning and consumption. These interviews are also used to determine the differential role that meals, snacks and beverages play in enhancing health in later life. The project's final study will determine the relationship between food, nutritional well-being, health and quality of life using quantitative methods with a cross-sectional sample of older people in the 8 participating countries.



Monique Raats

Personal information:

Monique Raats a Registered Public Health Nutritionist, is co-director of the University of Surrey's Food, Consumer Behaviour and Health Research Centre. She previously worked at the Institute of Food Research, Health Education Authority and University of Oxford. Her research has focused on public perceptions of risks associated with food; development of conceptual frameworks for food choice and health; effectiveness of health interventions; and development and validation of food intake measures. She has also been involved in the evaluation of health promotion programmes (e.g. the HEA Folic Acid Campaign, point of purchase healthy eating schemes) and developing tools for use in nutrition education. Since her arrival at the University of Surrey in 2000, Monique has played a central role in securing research funding for both national and European projects. She is currently a coordinator of the EU-funded "Choosing foods, eating meals: sustaining independence and quality of life in old age (Food in Later Life) project.

Methods used in research on food-related behaviour of older people

M. Raats

University of Surrey, Guildford, UK

Food in Later Life
Choosing foods, eating meals: sustaining independence and quality of life

Methods used in research on food-related behaviour of older people

Monique Raats
University of Surrey, UK

www.foodinlaterlife.org

Food in Later Life
Choosing foods, eating meals: sustaining independence and quality of life

Project partners

- Denmark: The Aarhus School of Business
- Germany: Federal Research Centre for Nutrition and Food
- Italy: INRAN
- Poland: Warsaw Agriculture University and
- Poland: University of Warmia and Mazury
- Portugal: Faculdade de Ciencias da Nutricao e Alimentacao
- Spain: University of Barcelona
- Sweden: Uppsala University
- UK: University of Surrey

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Food in Later Life
Choosing foods, eating meals: sustaining independence and quality of life

Project objectives

- To generate longitudinal, qualitative and quantitative scientific data on the relationship between food intake, nutritional well being, health and quality of life among older people.
- To understand the specific food procurement and consumption requirements of older men and women living alone as compared to those living with others.
- To compare data from two age groups (65-74 and 75+).
- To undertake active dissemination and consultation with stakeholders, thus enhancing older peoples nutritional well being, health and quality of life through food and service provision.

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The workpackages

- WP1: Project management
- WP2: Food selection in later life
- WP3: Procuring foods and preparing meals in later life
- WP4: Older people's satisfaction with food-related services
- WP5: Formal and informal networks effecting food provisioning and consumption
- WP6: Meals in later life
- WP7: Assessing food-related quality of life
- WP8: Dissemination and exploitation of project results

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WP1: Project management

- to ensure effective management, monitoring and co-ordination of project quality, timing, resources (financial and personnel), organisation and communication
- to manage, monitor and co-ordinate the project's: internal decision-making, internal communication, external communication, resources (financial and personnel), progress, reporting, and quality

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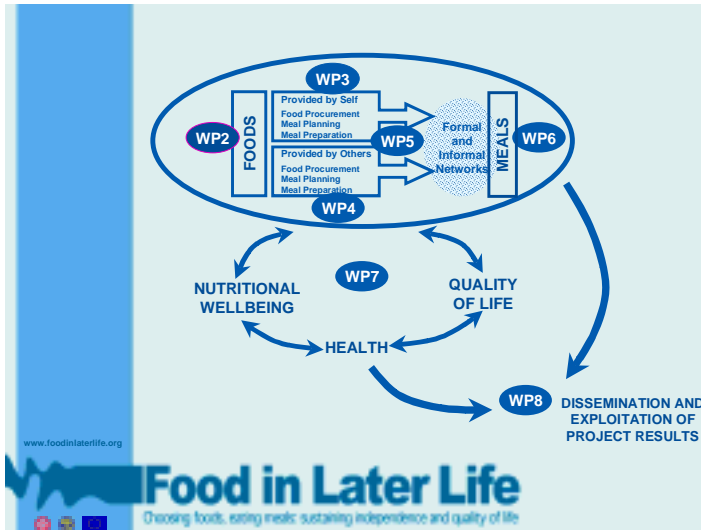


Background questionnaire

- Food (e.g. food shopping and preparation; nutrition; food choice; food-related quality of life; eating out)
- General health (e.g. medical treatments and health problems; mobility and activities; dentition; smoking and alcohol; use of health services)
- Social characteristics (e.g. education; present accommodation; income)
- Household composition
- Physical measures (height, weight)
- Health-related quality of life - SF36 questionnaire

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WP2: Food selection in later life

- determine older people's beliefs about and perceptions of functional foods
- determine older people's beliefs about and perceptions of convenience foods
- compare perceptions of functional and convenience foods across cultures, age groups and living circumstances
- identify items to be included in a food-related quality of life (Food-QOL) questionnaire for use with older people



WP2: Methods

Each country collects 96 semi-structured interviews with people that participate in shopping and cooking:

12 men and 12 women living alone, 65-74
 12 men and 12 women living alone, 75+

12 men and 12 women living with others, 65-74
 12 men and 12 women living with others, 75+

8 x 96 = 768 data sets in 8 different languages



WP2: Repertory Grid Technique

- Examine the three food products in front of you. Please, rank the three food products in the order in which you would choose to eat them, with “1” being the one that you would most likely choose to eat; with “2” being the one you are next most likely to choose; and “3” being the one that you would least likely choose to eat.
- Why did you choose “1” before “2”? Why would you be less likely to choose “2” than 1? (probe for “any other reasons?” until respondent has nothing else to say)
- Score each “construct” on scale: not at all - slightly - moderately - very - extremely

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WP2: General Procrustes Analysis

- General Procrustes Analysis (GPA) can be used to derive a perceptual map (configuration, i.e principal component plot) of a range of objects (e.g. foods) from the individual sets of data (e.g. constructs) of any number of people (e.g. 96 older people).
- Such a consensus (or average) configuration should represent the main perceptual dimensions common to all individuals

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Attitude questionnaire

cognitive attitude

affective attitude

subjective norm

perceived control

perceived need

behavioural
Intention

To what extent do you intend to eat foods with added health benefits in the next month?
To what extent do you intend to eat convenience foods in the next month?

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WP3: Procuring foods and preparing meals

- determine the typical patterns in which the supply of food products and meal preparation abilities interact in determining the menu of older people
- develop proposals regarding the development of new food products which take identified patterns/constraints into account
- compare food procurement and meal preparation plans across cultures, age groups and living circumstances
- identify items relating to food procurement and meal preparation plans for inclusion in a Food-QOL questionnaire for use with older people

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WP3: In-store interview

- getting to and from the shop
- shop selection
- what is bought - including why/planned use
- shopping list
- if no shopping list exists, on what basis are the foods/products chosen?
- influence of cost
- influence of the shoppers' partner/family
- comparisons with the past

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WP3: In-store observations

- General observations focussed on:
 - entering and leaving the shop
 - use of special offers and vouchers
 - use of a cafeteria
 - paying for the food
- Observations during in the shop when the participant selects the products:
 - visibility problems
 - physical barriers in reaching products
 - interaction with staff
 - handling of potential appliances (e.g. trolley)
 - ease of locating food items and orientation within the shop
 - use of special offers

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WP3: Home interview

- explore generally: changes – WHY and HOW (i.e. situation today and situation in the past)
- product storage
- product use of the (take into consideration food states and convenience classes) for which kind of meals
- preparation of the meals and dishes:
 - physical problems/consequences of impairments
 - applied methods/techniques, used appliances
 - kitchen equipment/facilities
 - fitness for use of different kinds and materials of packaging

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WP4: Food-related service satisfaction

- identify and appraise the alternative approaches to measuring user satisfaction with food-related services
- clarify the role that user satisfaction measurement should play in service delivery and policy formation
- compare user satisfaction with food-related services across cultures, age groups and living circumstances
- identify items relating to user satisfaction with food-related services for inclusion in a Food-QOL questionnaire for use with older people

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WP4: Key informant interviews

- Semi-structured interviews with key Informants working at managerial level such as:
 - Contract/purchasing/commissioning managers
 - Marketing directors/strategic operations managers
 - Home services managers responsible for community meal provision (MOW or day centre meals)
 - Dieticians responsible for community meal provision
- Interview topics:
 - Types/range of food services provided
 - Service specifications
 - Operational management of food services
 - Key factors in changes of food provision
 - Future developments in food services


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WP4: User and provider interviews

- Service types:
 - Meals on Wheels
 - Day Care Centres
- 25 service users who will have used the specified food service for more than a month
- 20 service providers - sample should consist of different service provider-types (commercial, non commercial, local government, charities) of the specific food service types

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WP4: Critical Incident Technique

- tool used for reflecting users' perceptions of quality as well as their satisfaction or dissatisfaction with the food service, based on *positive* and *negative* critical incidents (CITs)
- CIT is a classification system using content analysis of stories or 'critical incidents' as data.
- benefits - it provides conscious reflections of the individual user's experience, based on deeply held attitudes, values and judgements as well as identifying 'quality improvement points' for service providers.

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WP5: Formal and informal networks

- determine the role of formal (e.g. food-related, social or health services) in food provisioning and consumption
- determine the role of informal networks (e.g. family, friends, neighbours) in food provisioning and consumption
- compare the role of formal and informal networks across cultures, age groups and living circumstances

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WP6: Meals in later life

- investigate the nature of older people's meals including: time of day, composition of meal, types of foods consumed
- investigate social aspects relating to of older people's meals including the importance of other people and the roles they play
- investigate older people's meals across cultures, age groups and living circumstances

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WP5/6: Methods

Each country collects 80 tape recorded, in-depth, semi-structured qualitative interviews with:

- 10 men and 10 women living alone, 65-74
- 10 men and 10 women living alone, 75+
- 10 men and 10 women living with others, 65-74
- 10 men and 10 women living with others, 75+

8 x 80 = 640 qualitative interview transcripts in 8 different languages

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WP5/6: Data analysis

	Living with another	Living alone
Continuity of living circumstance	<i>'Always together'</i>	<i>'Always alone'</i>
Discontinuity of living circumstance	<i>'Newly together'</i>	<i>'Newly alone'</i>

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WP5/6: 7-day food diaries

- First day, via 24 hour recall with interviewer. Six days self-completion (and returned by post).
- Record of all food (and drink) events each day: time of 'meal event'; name of 'meal event'; what was eaten and/or drank (list of content); degree of ease of preparation; who prepared the meal; where eaten; who ate meal with
- Coded from recorded details of what was eaten.
- Categorised as: drink only; snack; cold light (small) meal; hot light (small) meal; cold main meal; hot main meal; elaborate main meal

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Cross-national qualitative research

“A sustainable comparative path, based on a qualitative approach is still proving to be elusive, mainly for practical reasons, including problems of co-ordination among different languages, expertise and team compositions”

Mangen S (1999) Qualitative Research in cross-national settings. *International Journal of Social Research Methodology: Theory and Practice* 2(2):109-24

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WP5/6: Introduction of error (1)

- the interview guide
 - designed in two countries and proposed to other teams - difficult to check bias in design
 - requires translation into 8 languages – difficult to check linguistic equivalence
 - tightly structured interview guide will only find out about what it asks; but an entirely open ended and flexible guide could make data incomparable
- comparing data in different languages
 - to compare qualitative data, translation must occur
 - qualitative data analysis relies on comparing meaning: problematic to assume linguistic and cultural equivalence
 - need to accept diversities

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WP5/6: Introduction of error (2)

- the code tree and analysis
 - problematic to retain a truly qualitative approach with vast amounts of data
 - data organisation tool – MAXqda - facilities to share memos and code trees
 - problem of how to ground concepts in the richness of the data with eight sets of data
 - risk that analysis may be reduced to a content analysis or a top down approach

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WP7: Measuring food-related quality of life

- develop and validate questionnaire to assess food-related quality of life for use with older people
- determine the relationship between quality of life, health and nutritional well being

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WP7: Determinants of satisfaction with food-related life

- Possession of resources
 - Material possessions/circumstances (e.g. income, access to transportation, availability of kitchen appliances)
 - Social network
 - Personal characteristics (e.g. cooking skills/abilities, health)
- Goals/strivings in food-related life, e.g.:
 - make varied meals
 - make healthy diet
 - avoid fat, have family or friends for dinner often
- Congruence between resources and goals – to what extent people possess the resources that are relevant to their goals/strivings

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WP7: Methods

Each country collects 400 interviews with:

50 men and 50 women living alone, 65-74
50 men and 50 women living alone, 75+

50 men and 50 women living with others, 65-74
50 men and 50 women living with others, 75+

8 x 400 = 3200 interviews

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WP8: Dissemination/exploitation of results (1)

- conduct workshops at which project results are presented and discussed with respect to their practical implications in relation to food provisioning for older people
- produce a set of generic and specific recommendations relating to food provisioning for older people for key stakeholder groups
- popularise scientific reports and make them available to journalists
- present results at joint sessions in connection with relevant European scientific meetings

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WP8: Dissemination/exploitation of results (2)

- publish results in national, relevant professional journals
- disseminate the final results through the organisations represented on the Advisory/ Dissemination Board
- produce and distribute a final project report to key stakeholder groups in participating countries

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Acknowledgement

This study has been carried out with financial support from the Commission of the European Communities, specific RTD programme “Quality of Life and Management of Living Resources”, QLK1-2002-02447, “Choosing foods, eating meals: sustaining independence and quality of life in old age”. It does not necessarily reflect its views and in no way anticipates the Commission’s future policy in this area.

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Choosing foods, eating meals: sustaining independence and quality of life

Quantitative and qualitative research – the case of the German National Food Consumption Survey (NVS)

C. Brombach

Federal Research Centre for Nutrition and Food, Karlsruhe, Germany

The Federal Research centre for Nutrition and Food conducts a nation wide food consumption survey. Baseline data on present food consumption will be collected, thereby providing a thorough picture on present food consumption (e.g. amount, frequency, patterns) as well as on every day life eating behaviours in Germany.

The NVS will allocate information for nutrition monitoring, nutrition research and nutrition policy.

Dietary intake cannot be estimated on behalf of a single methodology. Eating behaviour is determined by multiple biological and socio-cultural factors. Therefore various methods to collect dietary data are essential if we are to pursue questions about every day life eating behaviours, dietary intake and nutritional status of a given population.

Both, quantitative and qualitative methods will be implemented in the National Consumption Survey, thereby acknowledging “hard” and “soft” representations of the reality. Quantitative methods will allocate representative data on current and usual food consumption patterns as well as nutritional status. Qualitative methods will consolidate understanding of human eating behaviour as well as identify life style types and support generating novel dietary survey methods.

The NVS holds a modular design. A randomized sample of 20 000 German speaking inhabitants above 14 years will be surveyed. The field phase encompasses 12 months to cover all seasons.



Christine Brombach

Since 11/2003: project coordinator of the National Consumption Survey at the Federal Research Centre for Nutrition, Karlsruhe,
 2001-2003: research scholarship of the Federal State of Hesse,
 2000-2001: research assistant at the Institute for Nutrition, University of Giessen,
 1998-2000: postdoc research funded by the German Research Foundation (DFG),
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 1994: degree in education,
 1990: M.Sc. and second major in Gerontology at Kansas State University)
 1989: diploma in nutrition and home economics University of Giessen,
 1987: internship at the Cherokee Indian Reservation, Cherokee, North Carolina (USA),
 1984-1985: study at University of Tennessee, Knoxville, Tennessee (USA),
 1982-1989: study of nutrition and home economics, University of Giessen.
 Research area:
 Consumer and nutrition behaviour, dietary intake, food and meal patterns, nutrition in life course, nutrition epidemiology, nutrition monitoring

Quantitative and qualitative Research – the case of the German National Consumption Survey

C. Brombach

Federal Research Centre for Nutrition and Food, Karlsruhe, Germany

Introduction

More than 150 years ago the German philosopher Ludwig Feuerbach (1804-1872) resumed that “we are what we eat”. He did not foresee the lively debate we are currently facing on “what it is we should eat”, let alone on the “right” quantity and “right” selection of food we should consume.

It is common knowledge that eating is more than nourishment. Eating is linked to every part and every facet of our daily life.

Eating is as Marcel Maus phrased it a “social total phenomenon”(Durkheim & Maus, 1971). He denoted the fact that all humans must eat. Survival of humanity is dependent on food production, selection, regulation and distribution. All societies must succeed to produce food which is necessary to maintain its population. Each culture decides what is edible and what is not, what is regarded as “pure” or “impure” and how food should be handled, processed and prepared. Individual food choice as well as time, place and manners of eating are influenced by socio-cultural determinants. Food and its nutrient contents are influenced by way of production as well as preparation and cooking methods. In order to get data on the nutritional and dietary status of a certain population implies, that the total food chain has to be considered as well as the every day live situation of eating and its framework (Fig. 1).

Figure 1: The framework of eating



Individual and social welfare depend on a healthy population. Therefore health status of a population is a major political goal. Nutritional science needs solid data which form the backbone of future research. Malnutrition is costly, currently we have costs of more than 70 billion of Euros annually due to nutrition related diseases.

For nutrition policy making there is a need for representative, current, reliable and valid data on the nutritional and dietary intake of Germans. Therefore the Federal Ministry of Consumer Protection, Food and Agriculture commissioned the Federal Research Centre for Nutrition and Food in Karlsruhe to conduct a nation-wide new National Consumption Survey. The first representative National Consumption Survey dates back almost 20 years and concerned the old German States only. Since then there were major changes in our society in respect to food production and supply, preparation as well as diversification of working-, leisure- and consumer behaviour (Oltersdorf, 2003). The National Consumption Survey will give sound data to evaluate and implement nutrition related programs.

NVS-objectives

The National Consumption Survey has four levels of objectives:

- ⇒ Objectives of content: to get a broad description on the present situation of Germans in respect to food consumption, nutrient intake, nutritional status and nutritional behaviour and eating related data. It is the aim to acquire data on:
 - Data on individual usual dietary intake and habits
 - Data on current dietary intake
 - Data on food ways and patterns
 - Comparison of different groups
 - Identification of food-related risk groups
- ⇒ Structural objectives: to link the NVS to national and international surveys.
- ⇒ Methodological objectives: to develop innovative methods for dietary assessment and dietary surveys.
- ⇒ Conceptual objectives: it is the major goal **to implement a nutrition monitoring system** for Germany which is crucial for a continuous reporting on dietary intake and developments and which does not exist so far.

Design of the National Consumption Survey

The NVS holds a modular design. During the core-module baseline data will be collected. This will allow to identify research areas and food-related risk groups. It is planned to supplement the Consumption Survey with additional modules (Fig.).

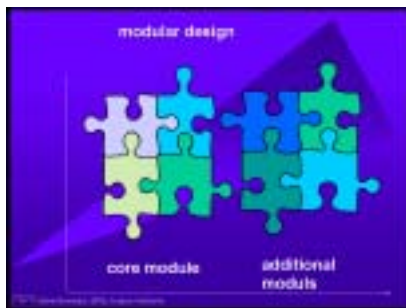


Figure 2: Modular design of the National Consumption Survey

During the main survey, the “core-module” data will be obtained from individuals living in private households. The interviews will start in summer 2005. The sample will encompass 20,000 German speaking residents aged 14 to 80 years. Out of approximately 14,000 communities a sample of 500 communities will be randomized. Addresses of participants will be recruited from registry offices of the sample points. In order to depict seasonality, the survey will be divided into four waves. 125 communities will be surveyed in each wave. A personal computer assisted interview (CAPI) will be conducted at the sample sites and supplemented by anthropometric measurements. Upon CAPI, respondents are asked to fill out a separate questionnaire at home and participate in two subsequent telephone interviews with 24h-recalls on two randomized days. The overall field phase will cover 14.5 months to represent seasonal aspects.

Participation in the national consumption is solely voluntary. This means, that the quality of the data depends both on participants willingness and ability to cope with implied methods. Applied methods therefore must be:

- ⇒ compatible to every day life situations
- ⇒ interesting and stimulating for participants
- ⇒ produce valid, objective and reliable data

In order to reach the target population and ensure a high response rate, measures of public relations will support a successful realisation of the NVS II. A conceptual formulation of actions for a nation wide acceptance of the survey is aimed at reaching the general population, the science community and professional organisations. In 2004 a concept for the NVS II was presented which develops PR-strategies and joins them in a reasonable dramaturgy. In the first phase of the project it was indispensable to build up networks which will be of use in order to win a high number of participants. Furthermore it was also important to establish partnership networks with representatives of the policy, public authorities and different associations, to position the NVS II in professional circles and to build important work structures. The interactive homepage (www.was-esse-ich.de) and the NVS II logo are important elements of PR measures to reach a high acceptance of the study in the public.

Planning, conceptual work and data analyses will be conducted by the BFEL while interviewing will be conducted through a market research institute. Computer assisted data analyses will allow to publish interim results during ongoing field phase. It is planned to publish overview data following the first wave of interviews.

Two advisory boards assist the National Consumption Survey. The advisory board of science provides help regarding methodological issues and the advisory board of the users attributes with aspects regarding the highest extension of the expected information.

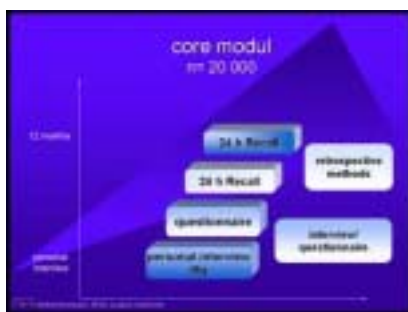


Figure 3: Methods used in the National Consumption Survey

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Unni Kjaernes

holds a degree in nutrition (cand real) from the University of Oslo. After a period as a research assistant at the university, focussing mainly on infant feeding practices, she moved to The National Institute for Consumer Research (SIFO) where she is now a senior researcher, for a period head of research. Kjaernes has managed and coordinated a number of research projects on food consumption patterns, food and nutrition policies, and on consumer trust, during the last decade mostly based on cross-country comparisons. She has produced a series of articles and book chapters and has edited several books and large reports, including 'Eating Patterns. A Day in the Lives of Nordic Peoples', 'Regulating Markets - Regulating People' (co-editor) and 'Trust in Food in Europe' (with C. Poppe). She is currently involved as a work package coordinator in an Framework 6 project on animal welfare.



Corinna Willhöft

holds a Diploma in Home Economics (m. sc.) from the University of Stuttgart-Hohenheim and is researcher at the Institute of Nutritional Economics and Sociology of Federal Research Centre of Nutrition and Food, Karlsruhe, Germany. She worked with socio-economic questions regarding nutritional behaviour of elderly people in private households. Qualitative and quantitative studies in the area of consumer information (consumer concerns towards food, evaluation of consumer education measures, impact of television messages on nutritional attitudes) followed. Within the EU funded sociological research project "Consumer trust in food" (2002 – 2004) she is currently the responsible partner of the German team.



Thorsten Lenz

(34 years old) is a political scientist. He holds an MA in Political Science and German Literature of the University of Freiburg. Focal points of his work are political and sociological gender issues and new forms of (political) participation in Western democracies. He gave several seminars in Political Science and Gender Studies at the University of Freiburg. Since 2002 he works at the Federal Research Center for nutrition and food in the European funded project "Consumer Trust in Food" and analyses the institutional conditions of "Consumer Trust in Food". He lives in Karlsruhe and has two children.

Trust in Food - How to assess the different roles of consumers

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A basic assumption of the European funded Trust in Food project is that trust in food is a social and relational phenomenon. It can be seen as an outcome of social and institutional processes, which in turn provide the basis for food consumption. Hereby personal and also interpersonal relations between consumers and actors in food markets are central. Consumers of food are seen not only as buyers, but also as eaters, citizens, co-producers and media users. These diverse consumer roles (institutionalisations) mirror these relations being the food purchase the key relation. This is where people as consumers interact directly with the retailing and manufacturing system, and indirectly with food authorities, scientists, consumer organisations etc.

On the basis of comparative data from consumer surveys, document analysis and key informant interviews the diverse consumer roles are described from actors' and consumers' perspective. The data are taken from the EU-funded study "Consumer Trust in Food" carried out in Denmark, Italy, Norway, Portugal, United Kingdom and Germany. The main aim is to develop proposals for policy makers and consumer organisations in order to produce and maintain consumer trust and to handle distrust.

Consumer trust in food - how to assess the different roles of consumers? An approach based on a comparative study

U. Kjærnes, C. Willhöft and T. Lenz

The point of departure is that people all over Europe are concerned with food issues. This is expressed through rapid shifts in demand, public opinion, boycotts and buycotts, mobilisation – and reflected in political and institutional responses. This concern raises issues of consumer trust. However, differences in consumer trust/distrust in food between countries are often bigger than variations between social groups (or regions) within the countries. Differences and changes cannot be accounted for by the number of scandals alone. The question is therefore: how can such variations and changes in trust be explained? The idea is that by learning more about the reasons for national variations, one can increase the knowledge about mechanisms of trust and distrust and about the role of consumers.

Psychology and communication research have been the dominant approaches to trust in food. Such approaches often focus on individual responses to information input, characterised as risk perception. Consumption is usually analysed as unit acts of decision-making – choice at the point of purchase. Distrust is an anomaly, an imperfection to be avoided. Knowledge and communication are the key answers. In public policy-making, such approaches are reflected first of all in programmes for scientifically based risk communication. Such studies do give insight into individual reactions, but there are also shortcomings. The individual focus means they are insufficient to explain national variations and shifts over time. Moreover, risk is understood only as safety hazard. We argue that trust is about social uncertainty related even to a variety of other issues (quality, price, ethics, nutrition, etc.). It might also be the case that expressions of distrust can be legitimate or potentially constructive.

As an alternative, we suggest a social and relational framing. By 'social' is meant that consumption is embedded in a social context. Consumers are not only buyers, but also eaters and citizens. And consumption should be analysed as routinised everyday practices, influenced by norms and institutional conditions. 'Relational' refers to the recognition that with market based distribution, consumers trust or distrust someone, not something. Food purchase is the key relation. This is where we interact directly with specific systems of food provisioning, indirectly with food regulators, experts, informers, watchdogs, etc.. Distrust is a theoretical challenge. How to recognise consumers as actors – with potential agency, while also seeing consumption as normatively and institutionally embedded routinised practices? The solution has been to focus on specific processes of institutionalisation within and between different arenas, including consumption, food supply, regulation and civil society. The idea is that trust and distrust are characteristics of these relations, as illustrated in (Fig.1). The roles of consumers will depend on individual and national factors on the consumer side, such as the structure of the family and the labour market, gender roles, social class, national cuisine, etc., as well as collective consumer mobilisation. But consumption and the role of consumers will also be strongly affected by the structure and performance of the provisioning system, and by public consumer protection arrangements.

Fehler! Es ist nicht möglich, durch die Bearbeitung von Feldfunktionen Objekte zu erstellen.

Figure 1: Consumer trust and distrust as a characteristic of relations between different arenas and actors

Based on this social and relational understanding of trust in food, the aims of the TRUSTINFOOD project are to identify and analyse factors which determine and influence trust in the food supply and information sources: (market actors, authorities, experts, NGOs, media, etc.) and to link these factors to consumer responses, individually and collectively.

Design and methods

The project is a comparative study including six European countries; Denmark, Germany, Great Britain, Italy, Norway, Portugal. Public opinion surveys and institutional studies have been conducted in all six countries, institutional studies even at the EU level. The institutional studies in the six countries and at the EU level are based on secondary data, statistics, key informant interviews, analyses of media debates. Two food cases have been particularly focussed, beef and tomatoes. While beef has received considerable attention over the past decade, tomatoes were selected as representing a more ordinary, routine food item.

The survey interviews were carried out with CATI (Computer Assisted Telephone Interviews). Random samples included 1000 in Denmark, Norway and Portugal; 1500 in GB; and 2000 in Italy and Germany. The questionnaire focused on various measures of trust, practices and strategies (as shoppers, eaters and citizens), the distribution of responsibilities for key food issues, and socio-demographic background. The first results have been published in (Poppe & Kjaernes, 2003). The following charts are based on data from this report.

Variations in trust

Figure 2 shows that there are considerable variations in people’s trust in food safety, both with regard to various food items and different countries. While the British respondents, together with Norwegians and Danes, are generally positive, Germans and Italians are characterised by being much more sceptical. This holds for all food items, as reflected in the additive index. The Portuguese are in the middle, but with a particularly strong distinction between beef and tomatoes. The chart also shows that vegetables, like tomatoes, are considerably more trusted than meats, like beef. A third observation is that people are generally more negative towards processed foods, like burgers and canned tomatoes, than they are towards the fresh varieties.

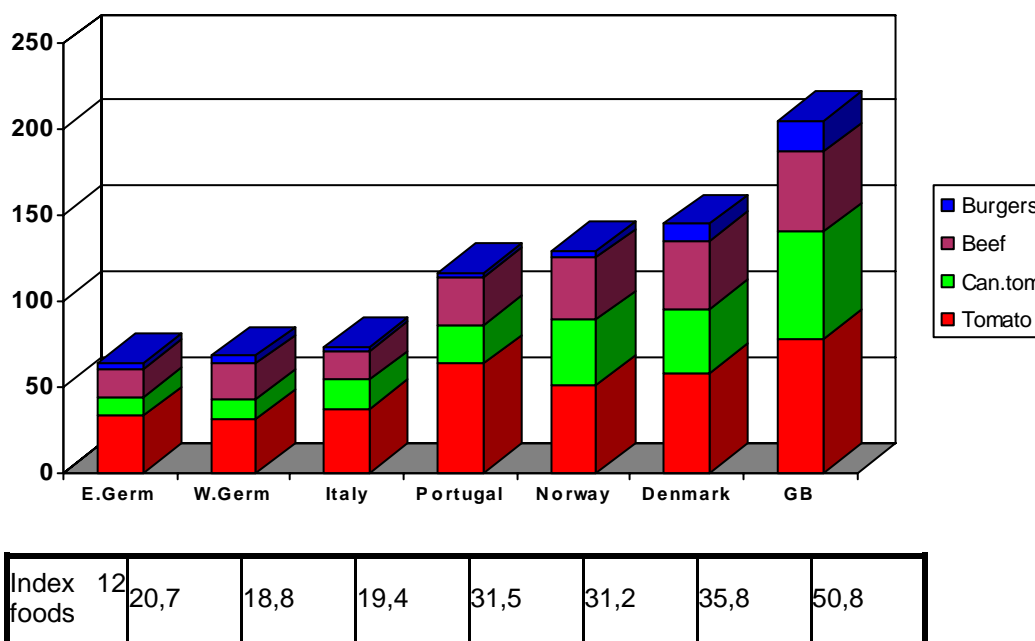


Figure 2: “Do you find the following food items very safe, rather safe or not very safe to eat?” Percentage who says ‘very safe’, index for 12 food items. Columns add proportions of ‘very safe’ for four food items, fresh tomatoes, canned tomatoes, beef (steaks, roasts etc.) and burgers.

As a different intake to trust, we also asked the question “Do you think that the conditions for (prices, quality, farming methods, health, safety) have improved, are more or less the same

or have rather deteriorated over the last twenty years?” We have calculated the relative proportions of improvement vs. deterioration. The results show that when adding together the net proportions for all five issues, again we find considerable national variation (Fig. 3). The British generally have a very positive opinion, while this time the Portuguese, together with the Italians, stand out as the most pessimistic. The results indicate that the variations in trust do not only refer to immediate responses to food safety, but to a whole range of issues. Yet, there are distinctions between these issues. With the exception of Italy, there are more people who think that safety has improved than who think that it has deteriorated. People are in general more worried about food quality and nutrition. In addition, there is considerable concern about food prices in the Euro zone countries.

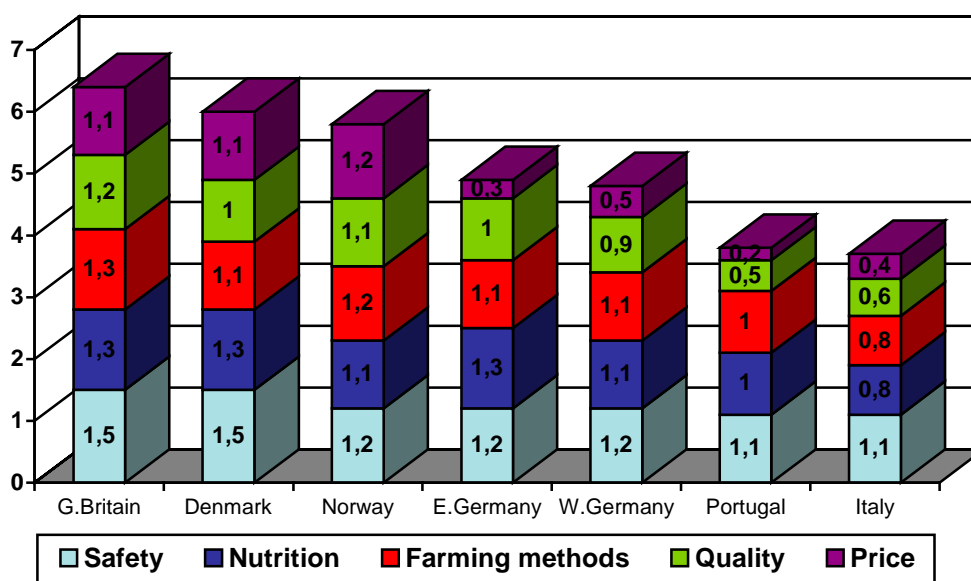


Figure 3: “Do you think that the conditions for (prices, quality, farming methods, health, safety) have improved, are more or less the same or have rather deteriorated over the last twenty years?” (>1 – net improvement, <1 – net deterioration)

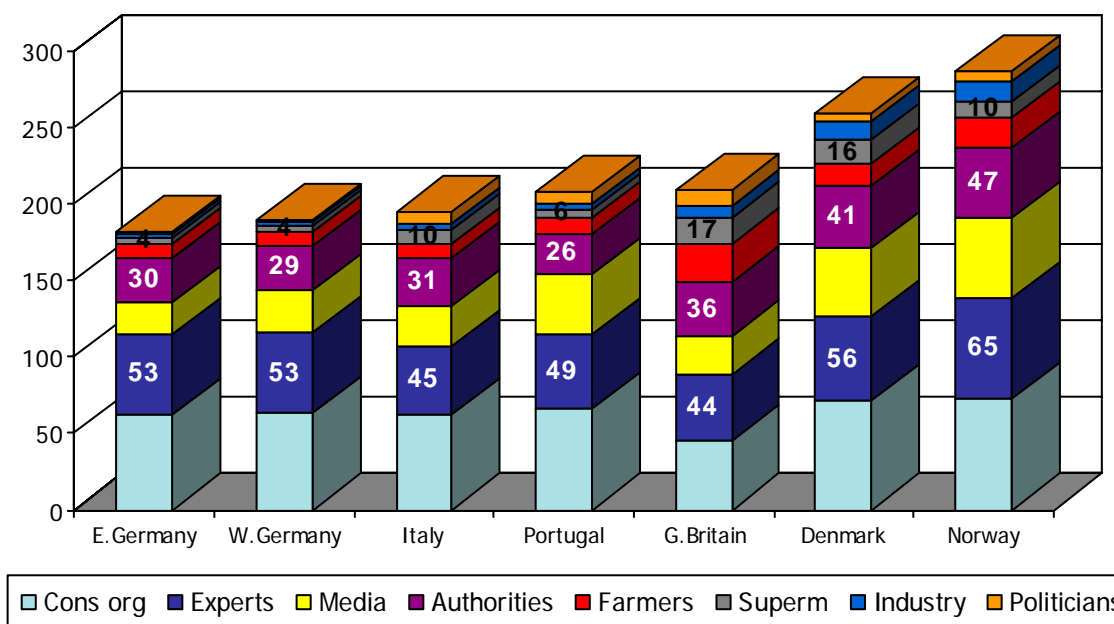


Figure 4: “Imagine a scandal with salmonella in chicken, would the following actors tell the whole truth, parts of the truth or rather withhold information?” Per cent who would tell the whole truth, added for all actors.

The relational aspects of trust were particularly emphasised in the question “Imagine a scandal with salmonella in chicken; would the following actors tell the whole truth, parts of the truth or rather withhold information?” Actors from various arenas were included. Figure 4 shows the proportions who would tell the whole truth, where percentages for all actors have been added together. The tendency of variation between countries is repeated, but this time the Nordic countries rank highest, while the British are more sceptical. Germany and Italy are at the lower end. Civil society actors, like consumer organisations, food experts and the media are most often believed to tell the whole truth. In the middle we find food authorities, while all market actors, including farmers, the processing industry and supermarkets, and politicians are very rarely believed to tell the whole truth and often withhold information. This ranking is identical in all countries, but the British stand out as distinguishing less between the truth-telling of various types of actors.

Taken together, we find systematic differences between countries on most trust dimensions, with high trust in Scandinavia and Great Britain, low trust in Italy, and low or medium levels of trust in Germany (East and West) and Portugal. We find very modest impacts of socio-demographic variables (results not shown here), with an exception for gender. Women are in general more sceptical than men. But this can of course not explain the observed variations. Rank orders of food items, key food issues and actors are quite or very similar. Trust in food safety seems to have improved in most countries, while other food issues cause more worry. However, distrust in food items is associated with trust in different types of actors in the various countries.

Can differences be explained by varying social, political and institutional conditions?

The aims of the institutional studies were to chart changes in the organisation of public regulatory policies and food provisioning systems, to identify concerns and priorities among selected strategic actors in the food system and their perceptions of each other in terms of roles, responsibilities and conflicts, and to identify the role of distrust in the production of trust – as a search for potential positive achievements of critical consumers.

In spite of regulatory harmonisation and market integration we find considerable differences. When it comes to public consumer protection, institutional reforms have been instigated in all 6 countries. But the solutions are diverging, sometimes pointing in different directions. There are variations in the degrees of centralisation, coordination, clarity, consensus, and performance. As a general tendency, safety issues are becoming more coordinated, while the regulation of other issues is less clear. Moreover, roles, powers and responsibilities for key food issues vary between the countries. The division of responsibilities between public and private actors is for example very different in Great Britain and in Norway. The roles and powers of the various actors along the food chain are also very dissimilar. While the big supermarket chains take a leading role in some countries, farmers and/or the processing industry are much more influential in other countries. Moreover, in spite of general tendencies of growing degrees of industrial processing, more power to the supermarkets and global sourcing, there are still large differences in the forms of food distribution and retailing. While the reliance on fresh foods sold through small shops and food markets is considerable in countries like Portugal, Italy and Germany, this hardly exists in Scandinavia. Taken together, these differences mean that there are variations in which actors people need to trust, such as who people interact with, who takes on responsibility and who has the power to control.

Modernisation of food systems seems to evoke both trust and distrust. Conditions and responses are specific for various food items and food issues. Fresh foods, sold through local networks and personal exchange, are evaluated through personal experiences, direct examination and the reputation and competence of the salesman. Such evaluations cannot work in extensive and complex systems of processing and retailing. An increasing development of norms and standards means that expectations become more codified and predictable. Among other things, this means an increasing focus on and control of accountability through quality assurance, traceability, audits, etc.. But codification also means that standards and expectation become negotiable – and potentially contentious.

The role of consumers is variable and in some cases controversial. The status of consumers is variable and changing status, but consumers often come out as marginal in decision-making processes. In some countries, like Norway, consumers are mostly private family members to be protected (by the state). The understanding of consumers as private is also prevalent in Southern Europe, but then referring mainly to the family and local network context, not to public protection. As opposed to this, we find a much more individualised understanding of British, to some degree even Danish and German, consumers, where they are perceived as individual - more or less rational – shoppers who influence through their purchasing choices. But particularly in Britain we also find a commonly accepted framing of consumers as active citizens demanding individual and collective influence.

The framing of the German consumer has been analysed in the German institutional study (Lenz, 2004). The study shows that views are very diverging between various actors. Many blame the consumers for not being consistent and having contradictory claims with respect to price and ethics. The survey results show that consumers, on their part, prefer state protection. Despite the change of responsibilities towards market actors the institutional study demonstrates the responsibility of the state in the last resort in consumers' eyes. Consumer responsibility is a key issue, but the solutions in terms of who should and can do what, and so the consequences, are not clear (different roles). In general, there is little formalised consumer involvement in decision-making processes. The controversy and lack of

clarity may indicate that Germany is in a transitional state, both structurally and politically. Considering the low levels on trust in food in Germany, it seems important to reach a better understanding of this situation in order to develop relevant policies.

The project has a particular focus on distrust. Does consumer distrust matter? Attention and formal arrangements again vary between countries and issues. Consumer scepticism and distrust imply different responses depending on how “the consumer” is framed, as a private family member - to be protected or to take care of themselves, as an individual buyer or customer, or as an active citizen. In a situation with unchallenged consumer trust in food, particular institutional solutions do not seem urgent. However, it seems that certain institutional arrangements are important to rebuild trust. Visible cooperation between actors and efficient procedures for mediating and managing conflicts among actors seem to be important. The independence of standard setting and monitoring (third party) has gained a new and more demanding function, where autonomy regarding all types of stakeholders must be demonstrated. Procedures are not only being monitored, even transparency for consumers/consumer advocates seems to be central. As indicated above, representation, mobilisation, public and political attention, as well as individual agency, are important to ensure the voice of consumers. In the low-trust countries, such institutionalised solutions for an active consumer are generally missing.

Concluding remarks

In general, the study supports the view that conditions for trust is influenced by basic changes in trade policies, regulatory policies, shifts in power in the food chain, technological development, and other large-scale tendencies of structural change. The following points summarise some more specific conclusions that can be drawn from what has been presented here:

1. Consumer trust and distrust vary considerably and consistently
2. Trust and distrust in food depend on the specific social and political context
3. Mechanisms behind trust and distrust include combinations of general cultural references and institutional structures and performance. Trust seems less dependent on consumers' own strategies
4. There are basic differences between the Nordic, British and South European situations, while Germany seems to be in a transitional state
5. European integration and globalisation have impacts, but these processes are being handled very differently across Europe (due to national economic interests, political traditions, etc.)

It must be emphasised that trust phenomena are dynamic and consumer trust is not won once and for all. Issues causing concern may be shifting. What we are seeing now is perhaps a changing focus from safety to nutrition and quality. Scandals (which cannot be understood as isolated events) referring to a variety of issues may turn into political crises and again erode trust. However, as a more long-term tendency, we may see the emergence of more demanding consumers. In such a situation, consumers may turn out as more active and critical, but also taking on more responsibility.

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(both publications can be downloaded from www.trustinfood.org)

Note:

The two former German parts have been kept separate in many survey analyses because previous studies of trust have indicated that history and different experiences have led to distinct conditions for trust. We have wanted to investigate to what degree trust in food is influenced by such long-term effects, as compared to more short-term conditions. The overall comparative analyses will, however, concentrate on Germany as a whole. For the same reasons, later analyses will also search for variations between different parts of Italy.

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Sustainable nutrition: Feasibility and consequences

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The principle of sustainability is to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. To fulfil this demand, all sectors of life need to be studied concerning their degree of sustainability. Sustainable nutrition implies that dietary habits are health, environmentally and socially compatible. Dietary recommendations aiming for sustainable nutrition are (amongst others) preference of foods of plant origin and minimal processing of foods.

To answer questions about the feasibility and consequences of sustainable nutrition the health and environmental impact of three diets differing mainly in their proportion of animal-derived foods and in the processing degree of foods are compared: (1) an average Western diet (control group), (2) a diet largely considering dietary recommendations (wholesome nutrition group) as an ovo-lacto-vegetarian or a low-meat version and (3) a diet consisting of 70 - 100 % of raw food (without beverages, raw food group). Cross-sectional data of 25 - 65 years old women from the VERA-Study, the National Consumption Study, the Giessen Wholesome Nutrition Study, and the Giessen Raw Food Study were used.

On the health level, the data of nutrient intakes and physiological parameters clearly show that a diet can be classified as favourable when emphasis is placed on plant-based food without going to the extreme of limiting food choice to a few food groups (such as raw food diet). As a result, the positive aspects of certain dietary patterns can be utilized and potentially negative aspects avoided or minimized. The wholesome nutrition group most consequently follows dietary recommendations through well-balanced food choice and shows the most favourable results regarding the nutritional and health status.

On the environmental level, the calculations are based on the German nutrition system with the subsystems of agricultural production and industrial food processing. Data indicate that the ecological impact for agricultural production is higher than for industrial processing and that for both this impact increases heavily with the proportion of animal-derived food in the diet. Comparing a Western diet (average proportion of animal and processed foods) to wholesome nutrition (with little or no meat and little processed foods) or to raw food diet (mainly unprocessed and vegetarian) results in an increasing reduction of the ecological impact by one to two thirds, depending on the extend to which the changes are made and the indicator studied. The ratio of use of primary energy to average energy intake reveals that the ovo-lacto vegetarian diet is most energy-efficient.

Thus, dietary patterns meeting sustainable recommendations are feasible and largely achieve the intended effects on health and environment. This effect may be even more pronounced when foods of organic farming and out of the region are chosen.



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Sustainable Nutrition: Feasibility and Consequences – An Overview

Sustainability: background and definition

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In 1987 the World Commission on Environment and Development prepared the report „Our Common Future” also known as Brundtland Report for the United Nations. Based on its results, the international community for the first time considered problems of poverty, population growth, industrial and social development, depletion of natural resources, and destruction of the environment as closely interrelated. In this report sustainable development is defined as development "... that [...] meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland, 1987).

New to the concept of sustainability is the equal consideration of the three aims: (a) environmental health, economic profitability, social and economic equity; (b) intra- and intergenerative justice and (c) the global reach.

In reaction to the problems identified in the report, the General Assembly of the United Nations called for the United Nations Conference on Environment and Development, generally known as the Earth Summit, held in Rio de Janeiro in 1992. It was the largest and most ambitious international conference ever held measured by the number of issues under consideration and the size and number of international delegations (United Nations, 1997).

Five documents were signed in Rio:

- Treaty on Climate Change
- Treaty on Biodiversity
- Convention on Forest Principles
- Rio Declaration
- Agenda 21

By many Agenda 21 was viewed as the most significant of those documents. The title of one important chapter is "Reduction in Unsustainable Production and Consumption Patterns". This chapter also concerns nutrition and calls for sustainable nutrition from the consumers' point of view.

Sustainable nutrition

Applying the definition of sustainability to nutrition leads to a "nutrition that contributes to the needs of the present generation, without endangering the possibility of future generations to meet their needs" (adopted from Schrader and Hansen, 2001). To evaluate sustainability of a specific diet, its effects need to be compared to the goals of the three dimensions of nutrition.

Goals for the dimension health: Avoiding disease and achieving general well-being, i.e. maintaining and promoting health by adequate intake of all essential nutrients, minimal intake of harmful substances and optimal intake of nutrients considered to be protective against disease.

Goals for the dimension environment: Maintaining the functions of the environment for present and future generations. This presupposes that the use of environmental resources and the emission of pollutants should not exceed the self regulating capacity of the natural environment.

Goals for the dimension society: Ensuring adequate living conditions worldwide and for all humans. This includes a worldwide just distribution of food, i.e. sufficient food must be accessible and affordable for everybody.

To achieve these goals, dietary recommendations have been developed for each of the three dimensions. Out of these recommendations, two are common to all of the three dimensions. Therefore, these can be defined as recommendations for sustainable nutrition. To improve the health, environmental and societal situations, reducing the consumption (1) of meat and (2) highly processed foods is recommended (Hoffmann, 2002b). For sustainable nutrition this means preference for foods of plant origin and minimally processed foods.

There are, however, questions about the effects and consequences of these recommendations on health, environment and society as well as the feasibility of sustainable nutrition. To answer these questions, data from studies on populations following these two recommendations to different degrees will be presented. One population does not meet the recommendations for reduced consumption of meat and highly processed foods (average Western diet), one population meets these recommendations (Wholesome Nutrition) and another population adheres to these recommendations to an extreme (Raw Food Diet).

The presented data derive from cross sectional studies conducted by the working group Nutritional Ecology at the University of Giessen and some data come from the First German National Consumption Study. Study participants included in this comparison were apparently healthy women aged 25-65 years on their habitual diet.

Population not meeting the recommendations for sustainable nutrition: subjects eating an average Western diet.

The data of those subjects on an average Western diet derive from the National Consumption Study (for environmental aspects) or from the control group of the Giessen Wholesome Nutrition Study (for health aspects). This population exhibits a **high consumption** of bread and bakery products (mostly as refined products), potatoes, meat/-products, soft drinks, coffee/tea and alcoholic beverages. The subjects show a **low consumption** of fruits, vegetables/legumes, nuts and seeds (Heseker et al., 1994, Alderink et al., 1994).

Population meeting the recommendations for sustainable nutrition: subjects adhering to Wholesome Nutrition

The subjects on this diet were participants of the Giessen Wholesome Nutrition Study. Their diet mainly consists of vegetables, fruits, whole grain products, potatoes, legumes, milk and dairy products, nuts and seeds. If eaten at all, the consumption of meat, fish and eggs is limited. This group can be divided into two subgroups: low-meat eaters (consuming about one portion of meat per week and one portion of fish every ten days) and ovo-lacto vegetarians (omitting meat and fish from their diet) (Alderink et al., 1994).

Population adhering the recommendations to an extreme: subjects practicing a Raw Food Diet

The participants of the Giessen Raw Food Study show a predominant or exclusive consumption of unheated food (70 - 100 % of the total daily amount of food eaten as raw food). This diet consists almost exclusively of foods of plant origin. Small amounts of food of animal origin are partly added. Raw Food Dieters consume about 60 % fruits and 30 % vegetables and legumes. A special characteristic about this diet group is that participants partly consume raw or dried meat or fish and raw eggs or mussels. Some drink distilled water and many consume exotic fruits not generally known, e.g. Cherimoya, Jackfruit, Durian (Hoffmann & Leitzmann, 2000).

Health consequences

With an **average Western diet** the generally known weaknesses of diets in industrialized countries can be observed, such as a high intake of fat and animal protein, a low intake of dietary fiber and a marginal or deficient status of folic acid (Hoffmann, 2002b).

The results of the **Wholesome Nutrition group** - the group meeting the recommendations for sustainable nutrition - are often between the results of the diet groups below or above the recommendations. This is the case for their nutritional and health status: they exhibit the advantages of favourable dietary habits and avoid potential disadvantages (Hoffmann et al., 1999).

The participants of the **Raw Food group** often show a very high or very low intake of single nutrients (example for high intake: vitamin C is fourfold above the recommendation; example for low intake: vitamin B₁₂ intake is 96 % below the dietary reference intake). On the long term unfavourable health effects cannot be excluded. Therefore, possible health effects were studied:

- **Menstruation:** About two thirds of the women participating in the Raw Food Study (70 %) had irregularities in their menstruation after changing to Raw Food Diet. With increasing amounts of raw food the Body Mass Index (BMI) decreased and the odds of having amenorrhea (total absence of menstruation) increased. One out of two women consuming 100 % as raw food during childbearing age experienced amenorrhea. This may lead to long-term health consequences (Koebnick et al., 1998).
- **Dental erosions:** In a subgroup of 64 females and 66 males consuming more than 95 % raw food, the frequency and severity of erosions on teeth were assessed. The Raw Food Dieters had significantly more dental erosions than the control group (Ganss et al., 1999).

In summary, the presented results confirm the recommendations for sustainable nutrition from the health point of view:

- Reducing meat or increasing fruits, vegetables and other foods of plant origin is decisive for favourable nutrient supply and blood concentrations of nutrients or risk factors. However, it should not lead to the conclusion: "The more foods of plant origin the better".
- The proportion of raw food should be within a medium range, since the effect of a high consumption of raw food can have positive as well as negative effects - depending on the nutrient or parameter studied.
- Milk and dairy products as foods of animal origin seem to play an important role for the supply of certain nutrients, e.g. vitamin B₁₂.
- A plant-based diet like Wholesome Nutrition including a broad food selection and a medium range of processed food promises the most favourable outcomes. This is mostly independent of whether this diet is practiced as a vegetarian or low-meat version.

Environmental consequences

To demonstrate the environmental effects of diets considering recommendations for sustainable nutrition to a different degree the indicators that will be presented are: primary energy (as a measure for use of the resource energy), CO₂- (as a measure for greenhouse effect) and SO₂-equivalents (as a measure for soil acidification potential). When the term "**ecological impact**" is used, it summarizes these three indicators, even though this does not give the complete picture of the total ecological impact.

Data on the ecological impact will be compared for an average Western diet (this time data from the first German National Consumption Study), Wholesome Nutrition as ovo-lacto

vegetarian and non-vegetarian version and Raw Food Diet. These data encompass calculations for the sub-systems agricultural production and industrial food processing.

Figure 1 shows the ecological impact of dietary patterns with diverging proportions of plant foods and of processed foods. It becomes obvious that (Hoffmann, 2002a):

(1) a diet including little vegetables and fruits, but more foods of animal origin (average Western diet) results in the highest ecological impact. The ovo-lacto-vegetarian version of Wholesome Nutrition and Raw Food Diet result in the lowest ecological impact.

(2) the ecological impact of agricultural production is higher than of industrial food processing. This is especially the case for those dietary patterns including more foods of animal origin.

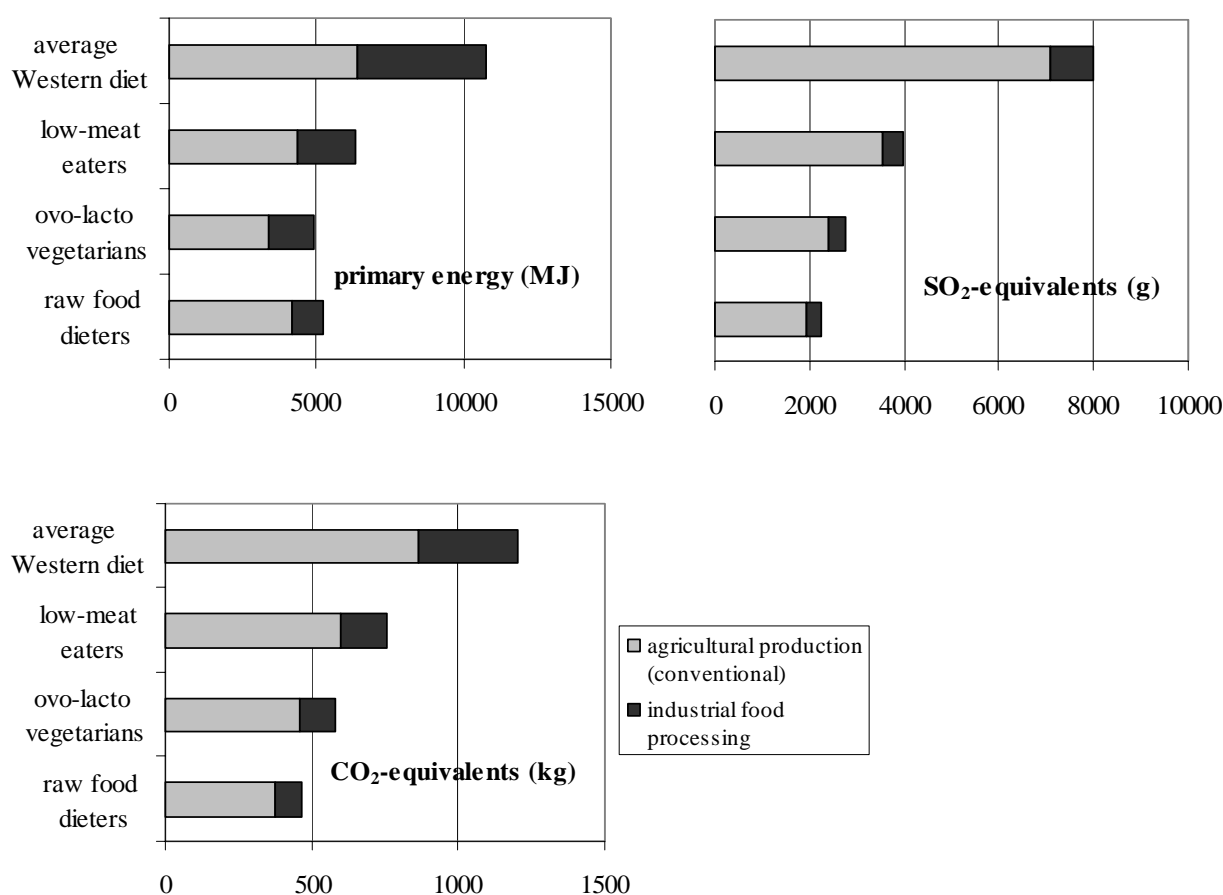


Figure 1: Ecological impact of agricultural production and industrial processing for different dietary patterns (per person and year) (Hoffmann, 2002a)

Therefore, the ecological impact of agricultural production and of industrial food processing depends heavily on the proportion of animal food included in the diet: The more food of animal origin the higher the emission of CO₂- and SO₂-equivalents and use of primary energy.

As for health, these results confirm the recommendations for sustainable nutrition from the environmental point of view:

- The proportion of plant or animal foods is the most important determinant for the ecological impact of a diet.
- Dietary patterns exceeding the recommendations do not lead to a significant further reduction of the ecological impact than dietary patterns meeting the recommendations for sustainable nutrition.

Societal consequences

Even though the presented studies provide only limited data for this dimension, three examples may demonstrate the impact of dietary patterns on societal aspects:

- Shifts in dietary patterns affect persons working in the food chain - locally and globally. Shifting from an average Western diet to a more sustainable diet results in an increased demand for vegetables and fruits, whereas the demand for meat and fish decreases. The consequences for agricultural production are especially important since the production of foods of animal origin is a mainstay of the German and European agriculture. This is one of the reasons why the recommendation for reducing meat consumption meets resistance. Conflicting interests become apparent: acting responsible from the environmental and also health point of view may cause social problems in other areas.
- With a reduction in meat consumption the nutritional needs of more persons may be met. When food that could be used directly for human nutrition is used as fodder less people can be fed than when this food is eaten directly. This is especially important with respect to a growing world population and a decline of fertile land.
- A shift towards sustainable nutrition means a more responsible use of finite resources and may affect future generations. The data of the presented studies confirm that the input of primary energy for the agricultural production of one kJ differs significantly between the different dietary patterns. For the consumption of one kJ in an average Western diet it takes 14.2 kJ primary energy, 8,7 kJ in the low-meat version of Wholesome Nutrition, 8,0 kJ in Raw Food Diet, and 7,3 kJ in the ovo-lacto vegetarian version of Wholesome Nutrition (Hoffmann, 2002b).

These examples support the recommendations for sustainable nutrition from the societal point of view. Corresponding to the dimensions health and environment also for the dimension society the reduction of food of animal origin is important. The consumed amount of food of animal origin has a substantial impact on societal aspects and is more relevant than the impact of industrial food processing.

The presented data clearly demonstrate that small changes in a diet may exhibit significant effects on health, environment and society. A diet may be considered sustainable when it reaches the goals for sustainable nutrition on the level of health, environment, and society. Failing the goal of one of these three dimension means that a diet may not be considered sustainable. Based on the presented data, Raw Food Diet may not be considered sustainable since it is not suitable for good health in the long term. An average Western diet is also not considered sustainable because it is not consistently favourable for health and environment. For the indicators presented, Wholesome Nutrition comes closest to the goals for health, environment and society and may therefore be considered sustainable.

Feasibility

With a theoretical approach, the feasibility and steps towards a more sustainable nutrition will be evaluated. For each section of the food chain (from agricultural production, industrial food processing, wholesaling/retailing to consumption, and interposed transporting and packaging), sustainability may be promoted. Some modifications towards sustainability can be implemented by consumers, others are only possible by regulations at the national or

international level. Exemplified by the ecological impact along the food chain, some steps towards sustainability taken by consumers can be pointed out.

1) Modifications of food selection

As demonstrated a modification of the food selection (mainly a lower consumption of meat and processed foods) results in a reduction of the ecological impact by about one third to two thirds – depending on the indicator considered (Tab. 1).

Table 1: Saving potential of different diets compared to an average Western diet (Hoffmann, 2002b)

	primary energy	CO ₂ -equivalents	SO ₂ -equivalents
average Western diet	100 %	100 %	100 %
Wholesome Nutrition:			
- low-meat version	41 %	37 %	50 %
- ovo-lacto vegetarian version	54 %	52 %	66 %
Raw Food Diet	52 %	61 %	72 %

2) Modifications in source of supply

Selecting the same food items, but changing the source of supply towards a more sustainable nutrition also involves a saving potential. Calculations based on the presented data show that preference of organic food items instead of conventional results in a decreased use of primary energy by about 40 %, a reduction of the emission of CO₂-equivalents by 25 %, and of SO₂-equivalents by 5 %. If the current proportion of organic produce in Germany (3 - 4 %) increased to 20 %, which is the government goal, savings of 7 % for primary energy, 4 % for CO₂-, and 1 % for SO₂-equivalents are possible.

Purchasing the same food items but considering regionality and seasonality offers another saving potential. If half of the German food imports came from Europe instead from overseas, 11 % of the ecological impact for transportation in the German nutrition system could be avoided. Restricting imports to food items that can not be produced in Germany (like citrus fruits and coffee) comprises a saving potential of 24 %.

3) Avoiding over consumption

One potential modification of nutrition behaviour, the avoidance of over-consumption, encompasses all sections of the food chain. The German Nutrition Report from 2000 (DGE, 2000) states that the intake of energy of males exceeds the recommendation by 10 % and of the females by 18 %, this means an average over-consumption of energy in Germany of about 14 %. If the consumers decided to reduce their consumption to the requirements a saving potential of 14 % would be possible (provided the reduction was equally distributed over all food groups).

All these examples along the food chain demonstrate that small changes in the diet implemented by consumers result in significant saving potentials. Comparing these potential modifications reveals that the reduction of meat consumption is most significant for the environmental dimension, but also for the health and societal dimensions. However, this does not mean that other modifications should be neglected, instead they should support the efforts towards sustainable nutrition.

Relevance

The question arises as to the relevance of nutrition in achieving sustainability. Also exemplified for the ecological impact, the study called “Sustainable Germany” (BUND and Misereor, 1998) pointed out that of all sectors of life, in Germany nutrition is responsible for about 20 % of the total primary energy and materials used and emissions of CO₂, SO₂ and NO_x (Fig. 2). Only housing has a higher ecological impact.

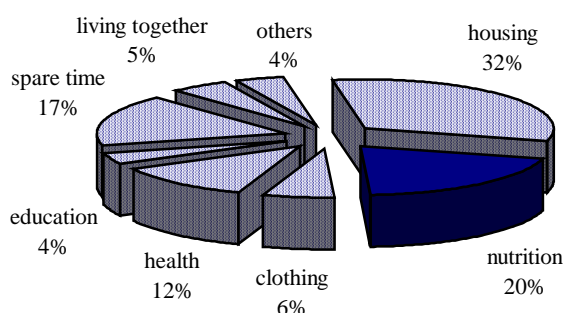


Figure 2: Proportion (%) of primary energy use in Germany for single sectors of life in 1988 (Weber & Fahl, 1993)

The relevance of dietary modifications becomes also apparent by comparing saving potentials with governmental goals. In Rio de Janeiro and Kyoto the German government agreed to reduce the emission of CO₂-equivalents by 21 % until the year 2012 (in comparison to 1990) (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2000). Theoretically this reduction needs to be achieved for each sector of life, also for nutrition.

Going back to the different diets, if a middle aged woman decided to shift from her average Western diet to a low meat diet, she can reduce the environmental impact of her diet by one third or even half, depending on the indicator considered. If she decided to become an ovo-lacto vegetarian, a reduction of more than half or up to two thirds would be possible. Therefore, if all women of the studied age group in Germany changed their diet to an ovo-lacto vegetarian diet, the emissions of CO₂-equivalents from agricultural production and industrial food processing for this population could be reduced by 50 %, which means double of what is targeted by the German government (Hoffmann, 2002b).

Even though it cannot be expected that 100 % of the population will change their diet, there are surveys indicating that 52 % of teenage girls want to become low-meat eaters (Jugendwerk der Deutschen Shell, 1997) when they are older and 16 % of the German population want to become vegetarians (dimap, 2001). If they will really do so, this would mean a reduction of the emission of CO₂-equivalents by 28 %, which still exceeds the government goal (Hoffmann, 2002b). Consequently, the effect of changes in consumer behaviour can exceed governmental goals.

Another example concerns transportation. Savings in the transport sector are possible by reducing covered distances and shifting to means of transportation with lower ecological impacts. Of those possibilities, the reduction of imports (which the consumers can influence) involves the highest saving potential, whereas a shift of means of transport (e.g. more use of rail rather than road traffic) has the least saving potential. The German government endeavours to double rail transportation and to reduce transportation via road. For the German nutrition system this would mean reducing the ecological impact by 4 - 6 %. In contrast, if the consumers chose regionally produced foods even higher savings would be possible (e.g. substituting 50 % of all imports from overseas as to imports from European

countries means savings of 11 % of the three studied indicators) (Lauber & Hoffmann, 2001; Hoffmann & Lauber, 2001a, b).

Concluding remarks

The presented aspects may give the impression that facts are very clear and that it is rather simple to take steps towards sustainable nutrition. However, only single pieces of the complete picture are known and much remains to be clarified. For example, conflicting interests arising when all dimensions of sustainability are to be accomplished simultaneously still need to be investigated.

Furthermore, new market developments call for further research. For example, there is an increasing demand for convenience products, also from organic produce. The question arises whether this is sustainable or not. Selecting convenience products from organic foods may promote organic farming, enhance employment (in the food industry) and it may be more energy efficient because of optimal and large scale production compared to home made meals as single units. However, there are concerns about health effects, increasing transportation and packaging. Many conflicting interests become apparent.

In the working group “Nutritional Ecology” we are just conducting a sub-study (“Assessment of organic convenience foods”) in the scope of a transdisciplinary research project (“From the turnaround in agrarian policy to a turnaround in consumption patterns” a study along the food supply chain from stable to table) funded by the German Federal Ministry of Education and Research. Convenience products made from organically grown foods are compared to home-made meals of organically grown foods and convenience products made from conventionally grown foods. The comparison will be undertaken for the dimensions health, environment, society, and economy, including conflicting interests.

From this and other studies, more information will be available to support consumers’ interest in sustainable nutrition and decision making. Already with the data and information available consumers may exert a potent influence on their own health, the environment and societal aspects. In contrast to an often stated opinion the consumers’ influence may be more effective than costly government measures for sustainable development.

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Sustainability in everyday life: Food choice, mode of transportation, and waste disposal

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Food provision and consumption influence the sustainability of households' everyday life in a multitude of ways. Food product may be produced in ways that harm nature or the welfare of employees and life-stock. The transport of food products from producers to retailers and from the retailer to home may cause emissions from motors and a host of other hazards. And the handling of waste from packaging, peelings, and leftovers may consume energy resources, produce emissions and be taxing on landfill space. However, all of these effects are influenced, to a smaller or larger degree, by choices made by consumers. Consumers can reduce the detrimental (and usually unintended) impact of their food consumption, for instance, by buying organic food, bicycling to the supermarket, and recycling their waste. In this presentation I will show that, to some extent, sustainability oriented choices in the three mentioned domains share a common motivational root. In addition, I will present research indicating that the alignment of these behaviours is at least partly due to an inherent desire to avoid being inconsistent. Implications for public policy for promoting sustainability in everyday life are outlined.



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Sustainability in everyday life: food choice, mode of transportation, and waste disposal

J. Thøgersen

Introduction

Food provision and consumption influence the sustainability of households' everyday life in a multitude of ways. Food product may be produced in ways that harm nature or the welfare of employees and life-stock. The transport of food products from producers to retailers and from the retailer to home may cause emissions from motors and a host of other hazards. And the handling of waste from packaging, peelings, and leftovers may consume energy resources, produce emissions and be taxing on landfill space. Figure 1 illustrates this broad array of environmental impacts with respect to milk.



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Source: Dr. Niels Jungbluth, ESU-services

Figure 1: The lifecycle for milk

According to lifecycle analyses, food consumption accounts for 10-20% of the environmental impacts caused by household consumption in developed countries (Jungbluth et al., 2003). As illustrated in Figure 1, these environmental impacts are produced over the full life cycle of production and consumption. One among several ways of reducing the environmental impacts at the production side is changing from intensive to less intensive production methods, such as organic agriculture. The environmental impacts can also be reduced, to a smaller or larger extent, by choices made by consumers. Lifecycle analyses show that consumer behaviors such as type of diet, wastes produced, use of cars and energy consuming household appliances, etc., significantly influence the environmental impact of food consumption. Hence, consumers can reduce the detrimental (and usually unintended) impacts of their food consumption, for instance by buying organic food, walking or bicycling to the supermarket, and/or recycling their waste.

In this paper I will summarize some key results from a research program, carried out at the Aarhus School of Business by my colleague Folke Ölander and myself. Our research shows that to some extent, sustainability oriented choices leading to buying organic food, using non-car means of transportation to the supermarket, and recycling share common motivational roots and that they tend to align over time at the individual level. The alignment of these behaviors is at least partly driven by an inherent desire to avoid being inconsistent. Some implications for public policy for promoting sustainability in everyday life are outlined in the concluding section.

Previous research

The suggestion that different environmentally relevant behaviors share a common motivational root is far from uncontroversial. For instance, a frequently cited contribution to this field of research concluded that "environmentally beneficial choices ... are not reflective of a general conservation stance, but are instead made on an activity-to-activity basis" (Pickett et al., 1993, p. 240). This claim seems to receive support from the fact that a large number of behavior-specific determinants have been identified in previous research. For instance, consumers' purchase of organic food has been related to

- (1) price, quality, and taste (e.g., O'Donovan & McCarthy, 2002; Sandalidou et al., 2002; Wier & Calverley, 2001),
- (2) labeling schemes (e.g., Thøgersen, 2002),
- (3) the availability of organic food (e.g., O'Donovan & McCarthy, 2002),
- (4) the person's past purchase of organic food (e.g., Thøgersen & Ölander, 2004a),
- (5) knowledge about organic food and food production (e.g., Hursti & Magnusson, 2003; Thøgersen, 2000).

Recycling has been related to

- (1) the convenience of recycling (e.g., Ölander & Thøgersen, 2005; Thøgersen, 1997),
- (2) past recycling history (e.g., Thøgersen, 1994),
- (3) knowledge about recycling systems and rules (e.g., Pieters, 1991).

Consumers' use of non-car means of transport has been related to

- (1) price (e.g., Kim et al., 2003; Thøgersen & Møller, 2004),
- (2) convenience (e.g., Jensen, 1999),
- (3) travel time (e.g., Hensher & Hotchkiss, 1974; Kim et al., 2003),
- (4) habit (e.g., Møller & Thøgersen, In press; Verplanken et al.),
- (5) symbolic-affective motives (e.g., Steg et al., 2001).

As indicated by this list of studies, most previous research on environment-relevant behavior, and most attempts to produce environment-friendly changes in consumer behavior, has focused on isolated behaviors or groups of behaviors. Studies such as these are helpful for achieving a deep insight into the determination of a specific, problematic behavior. However, if the goal is to achieve sweeping changes in lifestyles we need to focus more on mechanisms and barriers at the structural level. Inspired by this challenge, my colleague Folke Ölander and I have for the past several years studied consumer behavior at the consumption patterns level with the aim to identify ways of motivating consumers to change lifestyles in a more sustainable direction. And

contradicting those claiming uniqueness of each individual environmentally relevant behavior our studies have led us to the following conclusions:

- ◆ People tend to be consistent with regard to environmentally responsible behavior across behavioral domains, such as buying organic food, recycling, and using alternative modes of transportation
- ◆ General predispositions (environmental concern and biospheric values) can account for this general behavioral tendency
- ◆ Over time, individuals tend to become more consistent in their level of environmentally responsible action across domains
- ◆ Variations in behavioral consistency at the individual level can partly be attributed to external forces (behavior-specific barriers and incentives), partly to individual characteristics (e.g., different perceptions of specific behaviors, different importance attached to environmentally responsible conduct).

In the following I will summarize some of the evidence leading to these conclusions.

Data and data analysis method

The main data set reported on in the following comes from a telephone-based panel survey consisting of three waves of interviews in Denmark 1998, 1999 and 2000, based on a random national sample of 1,112 adults. In addition, I will draw on a self-administered questionnaire-based mall-intercept survey in Aarhus, Denmark, 1998, with a sample of 309 adult consumers.

Structural Equation Modeling (SEM) was used for most of the data analysis. The major advantages of SEM are that it allows correction for measurement error and that it makes modeling of complex relationships fairly easy. In SEM, the fit between the observed and the implied variance-covariance matrices is used to judge the adequacy of assumptions and hypotheses.

The analyzed behaviors

The analyzed behaviors are self-reported, measured by questions of the type “How often do you X”, where X refers to each of a number of environment-friendly behaviors, and using a 5-point scale with the labels “never”, “rarely”, “half the time”, “often”, and “always/every time”.

The analyzed behaviors cover the main phases of the consumption cycle (Pieters, 1991), a range of environmental and resource problems (energy consumption, product-related pollution during production and use, waste), and a range of settings (the home, the supermarket, waste facilities, transport). Due to differing requirements and prerequisites for performing these behaviors, consumers may differ in their abilities and opportunities as well as in their motivation to perform any of them. The mean performance of the individual behaviors in 1998 is shown in Figure 2. It appears that these environment-friendly behaviors differ greatly in popularity, as indicated by means ranging from below two to over four on a five-point scale.

Results

With reference to the behaviors in Figure 2, we investigated whether knowing an individual's relative performance on some of these behaviors makes it easier to predict his or her performance on other behaviors. In other words, we wanted to find out whether behaving in an environmentally responsible way is a general tendency or something purely domain-specific (Thøgersen & Ölander, 2004b).

How often ...

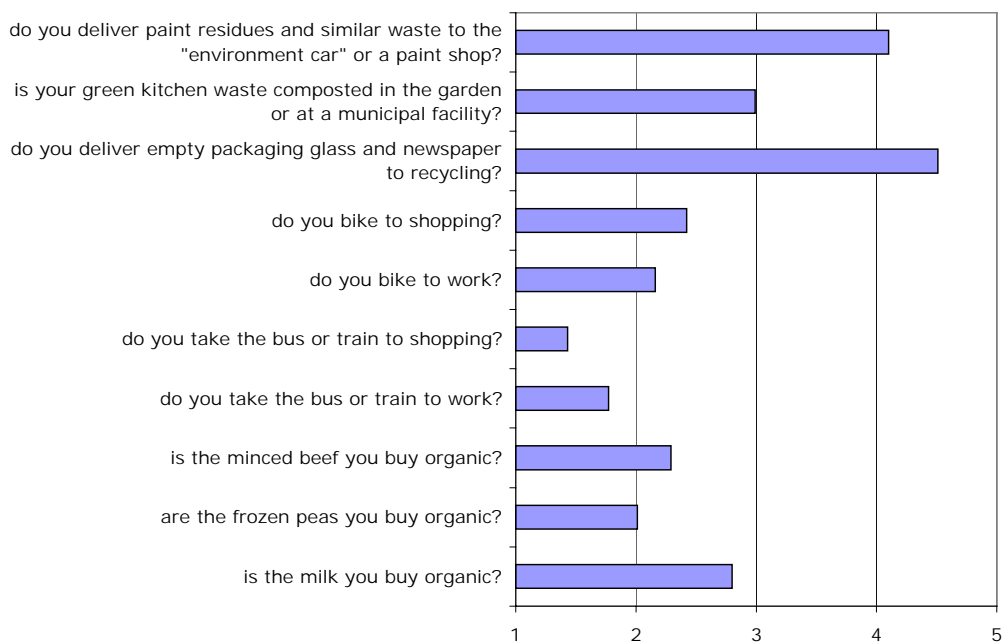


Figure 2: Analyzed environmentally friendly behaviors, Denmark 1998, means, n = 1,112

Answering this question may seem straightforward and methodologically uncomplicated. However, there are at least two sources of bias, which have been ignored in most previous research on behavioral consistency. First, if not corrected for, measurement error is bound to attenuate the true correlation between any two constructs of interest. The second, and even less recognized as a source of bias, is the possibility of disturbing background characteristics, which may act as suppressors (or inflators) of the correlations between behaviors.

We used confirmatory factor analysis (CFA) based partial correlation analysis to control for these two sources of bias. CFA is a way of aggregating, used here to produce a measure of the overall behavioral tendency within a domain while cutting away influences unique to a specific observation, including random error. Hence, rather than analyzing correlations between the individual items in Figure 2, we focused on more aggregate behavior categories: Buying organic food products (three items), recycling (three items) and using alternative means of transportation (two items, each formed by summing the use of bicycle and public transport to a specific destination). As a default in CFA, the latent variables are free to correlate, which makes CFA a convenient way to estimate correlations between variables such as these behavior categories. The main results are reported in Table 1.

Table 1: Correlations between 3 environmentally responsible behavior categories, n = 1,112

	Raw correlations		Corrected ¹		Corrected and controlled ²	
	Organic	Recycling	Organic	Recycling	Organic	Recycling
Using alternative means of transportation	0.21*	0.06	0.17*	0.16*	0.06	0.07
Buying organic food		0.31*		0.31*		0.13

¹ Corrected for background characteristics. ² Corrected for background characteristics and controlled for biospheric values and environmental concern.

* p < .05.

The “raw” correlations between the three analyzed behavior categories are reported in the first two columns in Table 1. As expected, these three types of environmentally friendly, but very different, behaviors are positively correlated. However, the correlation between recycling and using non-car means of transportation is not significant at the conventional level.

As mentioned above, it is possible that “true” correlations between these behaviors are suppressed due to structural conditions, which may be important in many ways, but not for the issue of whether an individual strive to be consistent in his or her behavior. If there are conditions which facilitate one and restrict the other of two positively correlated behaviors, and these conditions are not controlled in the analysis, suppression of the true (i.e., theoretically interesting) correlation between the two behaviors will occur.

So, in the analysis reported in the two columns in the center of Table 1, we controlled for a number of descriptive background characteristics. The most important effect of controlling for these variables is that the correlation between buying organic food and using non-car means of transportation nearly tripled and now is statistically significant at the conventional level. The increase in the size of the correlation shows that the “raw” correlation between recycling and using non-car transportation is suppressed by one or more of the included demographic characteristic(s). Inspection of the parameters revealed that the most important suppressor is having children: Households with children recycles significantly more and uses non-car transportation significantly less than households without children. When not controlled, this effect disguises the positive correlation between the two behaviors, which exists among households with as well as among households without children.

Hence, we can conclude that, although we do not dispute that choices within the analyzed behavior categories are influenced by causes, which are different from one category of behavior to the next, there is a certain amount of covariation between choices of different kinds, which should be accounted for.

The covariation between the analyzed behaviors may reflect a general tendency to behave in an environmentally responsible way across domains and also a general predisposition for doing so. However, it needs to be demonstrated empirically that general predispositions actually account for the covariation. Predispositions that can account for variation in behaviors as different as those analyzed here must necessarily be of a general nature. The most frequently studied general motivational antecedents of environmentally responsible behavior are environmental

concern and biospheric values. Hence, we investigated whether these two variables can account for the covariance between the three analyzed behavior categories. Our operationalization of the variables and the mean item-scores in 1998, are shown in Table 2.

Table 2: Environmental Concern and Biospheric Values, Denmark 1998, n = 1,112

	Means	Cronbach's alpha
<i>Environmental Concern</i> ¹		.74
Pollution	1.53	
Electricity consumption	2.85	
Use of pesticides and artificial fertilizers	1.82	
Car traffic	2.72	
Household waste	2.53	
<i>Biospheric Values</i> ²		.67
Unity with nature	7.90	
A world of beauty	8.38	
Protecting the environment	9.03	

¹ "How concerned or unconcerned are you about X?" Measured on a 4-point scale with the values 4: not concerned, 3: a little concerned, 2: somewhat concerned, 1: very concerned.

² "How important or unimportant is X as a guiding principle in your life?" Measured on an 11-point scale with the end points "totally unimportant" (0) and "of decisive importance" (10).

According to Table 2, the average Dane is somewhat to very concerned about pollution in general and a little to somewhat concerned about the four more specific environmental issues mentioned. Further, biospheric values are very important as guiding principles in his/her life.

In order to investigate whether the covariation between the three analyzed behavior categories is due to all of them being dependent on these concerns and values (i.e., a common motivational root) we performed the correlation analysis again, but this time controlling for environmental concern and biospheric values, in addition to the already controlled background characteristics. The (partial) correlations are reported in the last two columns in Table 1. None of them are statistically significant at the conventional level. Hence, we can conclude that the correlations between the three behavior categories can be explained by the existence of common motivational antecedents.

In sum, contrary to widely held beliefs, it appears that not only do environmentally responsible behaviors covary across behavioral domains; the covariation actually do reflect a general conservation stance.

Do environment-friendly behaviors become more consistent over time?

If different environment-friendly behaviors share common motivational roots, we should expect a tendency, at the individual level, for environment-friendly behavior in different domains to become more consistent over time. In order to confirm or disconfirm this expectation, we re-interviewed our sample one year later (Thøgersen & Ölander, 2003). This allowed us to investigate whether the extent to which a person performs a particular environment-friendly behavior depends on how much he or she performed *another* behavior one year earlier. The results of this analysis are reported in Figure 3.¹

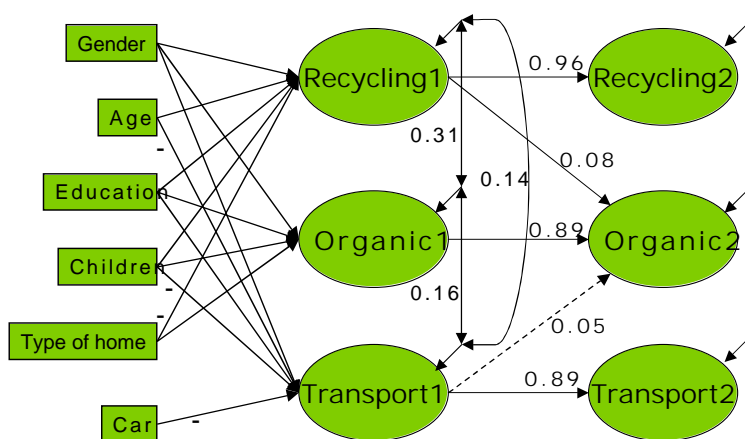


Figure 3: Stability and Spillover-Effects in Environment-Friendly Behaviors, Denmark 1998-1999, n = 1,112

¹ In order not to clutter the picture, the measurement model and paths not significant at the $p = .07$ level have been left out. The full AMOS output can be obtained from the author.

Notice first the very strong auto-regressive effects (or stabilities). They show that all the three behaviors are characterized by considerable inertia at the individual level. Notice also that the significant (partial) correlations between behaviors at t_1 , which we already saw in the two middle columns in Table 1, disappear at t_2 where we control for past behavior. The reason is that the measure of past behavior captures determinants of specific behaviors, including biospheric values and environmental concern, as long as they are stable.

The cross-lagged paths capture the influence of one behavior on another, after controlling for (the factors reflected in) the auto-regressive effect. It appears that, in the present case, there is indeed a tendency, at the individual level, for environment-friendly behaviors to become more consistent over time. This tendency is reflected in the change in the purchase of organic food between t_1 and t_2 being dependent on how much the person recycled and used alternative means of transportation at t_1 . One can only speculate why the tendency to align these environment-friendly behaviors led to adjustments in exactly the purchase of organic food and not in the other two behaviors. A plausible reason is that the availability of organic food products improved (e.g., Willer & Youssefi, 2004) more than the opportunities for performing the other two behaviors during this period, leaving more room for adjusting the former than the latter two behavior(s).

In conclusion, this study indicates that there is an intrinsic tendency for individual-level environmentally responsible behavior to spread and generalize over time, although it also seems to be a gradual and slow process. Under "normal" circumstances, behaviors such as the ones analyzed here are very stable at the individual level.

What makes people strive to behave in a consistent way?

The studies reported above indicate that environmentally responsible behaviors share common motivational roots and that such behavior has a tendency to spontaneously generalize across behavioral domains. However, individual variation exists in the extent and speed of this process. Why do some individuals apparently strive harder than others to be consistent in their environmentally relevant behavior? In order to answer this question, it may be fruitful to consider the motivational properties of inconsistency (Thøgersen, 2004).

According to Festinger's (1957) cognitive dissonance theory, it is emotionally disturbing and, hence, unpleasant to hold inconsistent attitudes and/or perceptions or to behave inconsistently (for empirical support, see Elliot & Devine, 1994; Zanna & Cooper, 1974; Zanna et al., 1976). This unpleasant state is called 'cognitive dissonance' and because of its unpleasantness it is assumed that individuals strive to avoid it by behaving consistently, for example. The desire to avoid cognitive dissonance provides some of the "energy" for generalizing environmentally friendly behavior or making it "spill over" from one behavioral domain to another.

We analyzed the importance of cognitive dissonance for behavioral consistency in the environmental domain in an indirect way, by investigating whether two sources of individual variation in felt dissonance had the predicted effect on behavioral consistency.

Although the desire to avoid cognitive dissonance is assumed to be a general motivator, it is not claimed to be invariant across individuals and situations, on the contrary. Most cognitive dissonance research has been based on experimental manipulation of how a situation is perceived by the individual. The real-life counterpart of these manipulations, outside the laboratory, is variation in objective situational characteristics and/or in subjective perceptions of situations. It is well documented that individuals who attribute their inconsistency to powerful external conditions do not feel any cognitive dissonance (e.g., Collins & Hoyt, 1972; Festinger & Carlsmith, 1959). Hence, individual variation in how much (they feel that) external conditions justify behaving differently in different domains may lead to variation in the level of consistency across domains.

An additional source of individual variation in felt dissonance was suggested by a revision of cognitive dissonance theory, proposed by Elliott Aronson (1968; 1992). According to Aronson, the amount of dissonance depends on whether the inconsistency threatens important aspects of one's self-concept (e.g., competence or morality). If he is right, the amount of cognitive dissonance produced by being inconsistent within a particular domain (say, the environmental domain) depends on how important that domain is for the person's self-concept.

Data

In a somewhat complicated research design, a sample of 309 individuals were asked to report their level of activity with regard to 15 environmentally relevant consumer behaviors (including most of those reported in Figure 2 and in the same format). In addition, they were asked to assess the similarity of pairs of these behaviors on an 11-point scale with numeric values from 0 ("have nothing in common") to 10 ("have a lot in common") and without being cued about the attributes or dimensions in which it would be relevant to make such an assessment. In this way we aimed to capture whether and to which degree pairs of loosely defined situations (i.e.,

environmentally relevant behaviors) are perceived as similar or different in a personally relevant way.

Results

From the proposition that the internal pressure to behave in a similar way (i.e., consistently) in different situations is weaker the more dissimilar the situations are perceived to be we can derive the prediction that pairwise correlations between behaviors increase with how similar the same pair of behaviors are perceived to be. This prediction is confirmed by the regression analysis reported in Figure 4 (slope = .09, $r^2 = .41$; n refers to the number of pairs of behaviors included in the calculation).

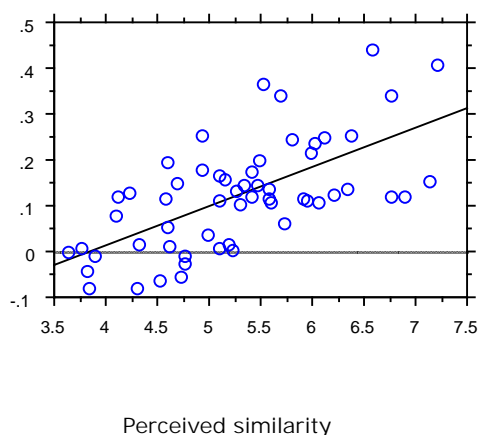


Figure 4: Similarity assessments and pairwise correlations between environmentally friendly behaviors, $n = 57$

The potential for inconsistency to produce cognitive dissonance also depends on how important it is to the person's self-concept to behave in an environmentally responsible way, according to Aronson. We measured the personal (moral) self-relevance of behaving in an environmentally responsible way by asking respondents to score seven environmentally relevant behaviors on a 9-point-semantic differential scale with the end points "right" – "wrong". For the analysis reported next, these seven items were summed to form an index, which was dichotomized at the mean.

We then analyzed whether the correlation between buying organic food products and recycling, measured as latent constructs in a confirmatory factor analysis (in the same way as in Table 1 and in Figure 3), depends on the personal (moral) self-relevance of behaving in an environmentally responsible way *and* on the perceived similarity of the two behaviors (also dichotomized at its mean). The analysis is similar to a two (low-high self-relevance) by two (low-high similarity) analysis of variance, but we compare correlations instead of means and we use multi-group CFA and AMOS 5 for the analysis. When the effects of the two grouping variables are analyzed one at a time, we find that the correlation between the two behaviors depends on how similar the two behaviors are perceived to be (high: .82, low: .43, $F_{1 \text{ d.f.}}^2 = 5.73$, $p < .05$) as well as on the (moral) self-relevance of behaving in an environmentally responsible way (high: .75, low: .47, $F_{1 \text{ d.f.}}^2 = 2.95$, $p < .10$). The correlations in the four groups created by combining the two grouping variables are shown graphically in Figure 5.

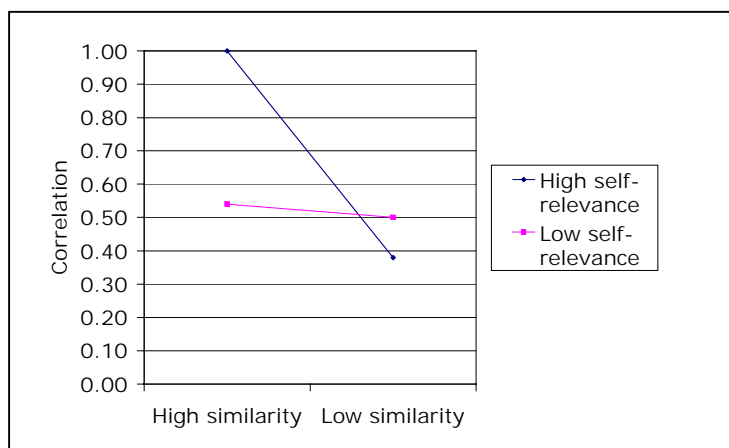


Figure 5: Correlations between buying organic and recycling in four groups, defined by similarity rating and personal (moral) self-relevance, n = 309

¹ If the correlation between the two behaviors is restricted to be equal in the two groups in Figure 5 characterized by high self-relevance, it results in a significant ($p < .05$) increase in χ^2 (8.27, 1 d.f.). On the other hand, if the correlation is restricted to be equal in the two groups characterized by low self-relevance, the increase in χ^2 (0.02, 1 d.f.) is not significant. The high self-relevance-low-similarity group is also not significantly different from any of the low self-relevance groups, $\chi^2 = 0.28$ and 0.22 , respectively (1 d.f.).

When analyzed in the 2 x 2 framework it becomes obvious that it is only when a high similarity assessment is combined with high self-relevance that an increase in the propensity to be consistent is produced.¹ This finding is consistent with the notion that behaving differently (i.e., inconsistently) in two situations does *not* produce cognitive dissonance if either (a) how one behaves in the situations is not considered very important (self-relevant) or (b) the situations are sufficiently different to justify the different behavior.

In conclusion, the evidence supports the proposition that the tendency to behave consistently in the environmental field is produced by a desire to avoid cognitive dissonance. In spite of cognitive dissonance aversion, some people behave inconsistently. Sometimes the reason is that they fail to perceive the relevant similarity between different environmentally responsible behaviors. In spite of what others may think, these people perceive no inconsistency. Other times, people behave inconsistently in the environmental field because for them environmentally responsible behavior is not very important (self-relevant). Therefore, they can more easily endure this particular type of inconsistency.

Summary and implications

I started this paper by noting that food consumption is responsible for a number of different environmental problems, related to different phases of the food lifecycle. In particular, consumers can influence the environmental impacts of their food consumption, not only through their product choices in the supermarket, but also through their choice of means of transportation when going shopping and through their waste handling practices. In this way, a number of quite different consumer behaviors are connected by their common influence on the state of the environment.

In this paper I have summarized research showing that this connection is also mirrored in consumers' motivational structures. Environment-friendly behaviors as different as buying

organic food products, recycling, and using non-car means of production are positively correlated in the population due to all of them being rooted in environmental concern and biospheric values. And, consistently with the existence of shared motivational roots, there is a tendency for the level of environment-friendly behavior in these three areas to become more aligned over time. Finally, the alignment process is energized by the desire to avoid cognitive dissonance; an unpleasant state which is produced by unjustifiable inconsistency within areas of high self-relevance.

These findings have a number of policy implications.

When the environment-friendliness of broad consumption patterns in society are related to environmental concern and general values, it makes sense to apply strategies which directly aim at strengthening relevant concerns and values. What is called for here is primarily educational means, keeping the population well informed about the state of the environment and relevant processes and relationships in nature, as well as about relationships between consumer behavior and environmental problems.

The identified spontaneous process of generalizing environmentally responsible behavior is gradual and slow, but it can be strengthened. A prerequisite for the process to start is one or more area(s) where consumers knowingly and willingly behave in an environmentally responsible way. In addition, there needs to be other areas where there are obvious opportunities for acting in an environment-responsible way. Governments and others can facilitate the process by reducing important barriers for action and by increasing consumer awareness about relevant similarities between environmentally significant behaviors

With *no* relationship among various types of environmentally responsible behavior, or without knowing why any actual relationships exist, the only remaining environmental policy strategy would seem to be one of "piecemeal engineering". The findings presented here do not reject the need of a focused effort in specific problem areas. But they demonstrate that a generalized effort, focusing at promoting a sustainable consumption pattern, can be a useful supplement.

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Note: Standardised solution. Dashed: $p = .07$. All other shown paths: $p < .05$. $\chi^2/df = 2.267$, RMSEA = 0.034, CFI = 0.97.

¹ In order not to clutter the picture, the measurement model and paths not significant at the $p = .07$ level have been left out. The full AMOS output can be obtained from the author.

Social quality of products – Assessment and signaling

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1. To gain an in depth understanding of consumer concerns for different qualities of products the distinction between
 - search qualities
 - experience qualities
 - credibility qualities
 - is necessary.
2. Empirical research proves evidence that a growing number of consumers witness a lack of information on product qualities especially in respect of their hidden qualities.
3. One of the most important aspects of the hidden qualities of products focus on the social dimension of product quality.
4. The assumption of a social dimension of product quality may refer in general to all phases of life cycle assessment including also marketing related concerns.
5. The current discussion on sustainability and sustainable consumption shows that the working conditions in context of producing consumer products and different human rights issues are seen as most important.
6. The assessment of the social quality of products therefore has to evaluate the production of consumer products, which implies in many industries also to broaden the view to the supply chain.
7. In the last ten years a few approaches of serious assessment of the Corporate Social Responsibility have been developed.
8. Besides the assessment also the signaling of the social quality of products is serious challenge for companies. Claims on the social quality of a product have to be credible. Companies are facing a dilemma. Communication of credibility statements has to be based on what it aims to create: credibility.
9. Independent organisations have to gap the lack of credibility by delivering assessments about the social quality of products.
10. The running pilot projects of the German Stiftung Warentest assessing the corporate social responsibility of companies will have a major impact on more holistic considerations of product qualities.



Ingo Schoenheit

Vita

Mr. Schoenheit has founded the imug Institut at the University of Hanover in 1992 together with Mrs. Prof. Dr. Dr. h.c. Ursula Hansen. Previously, Mr. Schoenheit worked in Berlin as head of department at the "Stiftung Verbraucherinstitut" which served as a brain trust of NGOs in Germany.

As scientist he has concentrated on innovative projects at the interface of corporate socially responsibility and consumerism.

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Social Quality of Products – Assessment and Signalling

The politicisation of consumption

I. Schoenheit

One of the fundamental doctrines of our market-based economic system is that the free exchange of goods and services on markets, subject to the forces of supply and demand in line with certain rules and regulations, provides a framework to foster the development of that on offer and, in principle, the fair distribution thereof. The tautological principle is that consumers always act according to their preferences, the observation of which behaviour in turn allows material conclusions to be drawn as to those preferences. Consumers are the "seekers" of consumer goods markets and – at least according to the model theory – influence the offer by way of their buying behaviour in that they select that which corresponds best with their preferences. According to today's dominant economic theory, consumers are always and only interested in satisfying their own personal egoistical goals and wants – whatever they may be – through their consumption.

This image of a consumer always and only after his best advantage does, in fact, have to be qualified when one takes the reality of consumer behaviour into account, taking Germany as an example:

- Products manufactured in an ecological way are gaining ground in some sectors.
- "Bio-labels" promoted by the state are continuously expanding their market share.
- Products which refer explicitly to the social fairness of production conditions in the source countries, i.e. by way of the "TransFair" label, are now a fixed part of the supermarket product range.
- In Germany, 4 billion Euro have been invested in green or sustainable funds.
- Companies known to violate certain social, ecological and/or other ethical standards are frequently boycotted.

Looking at this situation one might think that at least some consumers are doing more than trying to optimise their personal benefits, and are taking ecological and social aspects into account when buying. Even in societies where striving for individualism is celebrated, there are frequent and impressive examples of consumption marked by solidarity and altruism. The question as to how an individual citizen can hope to participate in the swaying of opinions, exert an influence and affect decisions with respect to global and networked issues can actually be answered in a surprisingly simple and novel way: by drinking coffee, wine or filling the car, or by "investment decisions" - each act an expression if you will of social commitment, interpreted as a kind of "political consumption".

In 1988, Bennigsen-Foerder, when he spoke of "customers as citizens and citizens as customers", forecast that the previously clear cut and distinct roles of, on the one hand, a political citizen, i.e. one who votes, is politically organised and possibly writes an occasional letter to the editor, and, on the other, a consumer acting in a rational economic way, always after the best deal, would increasingly overlap (Bennigsen-Foerder, 1988); e.g. that consumption would – in some areas – become a form of expression, of political participation in major social debates and processes. A crucial consequence of this development is the consumer's changing need for information. Awareness of the conditions of manufacture of products and observation of the social and ecological performance of the companies offering products and services, will ultimately change into and become a new challenge both for companies as well as institutions offering supplier-independent consumer information.

Production qualities as a hidden product characteristic

Whereas in the past consumers demanded information limited to details like price and quality of use, i.e. functionality, durability etc., recently there has been an increasing interest in those qualities of a product which one can expose neither by subjecting it to a technical test nor through its use or consumption. The hidden qualities of products, i.e. those aspects known as trust characteristics, gain in importance. Information economists differentiate between three types of product characteristic (Nelson, 1970; Darby & Karni, 1973):

- Search characteristics can be fully judged by the purchaser prior to purchasing the goods by way of own inspection.
- Experience characteristics only develop after purchase/after using the product.
- Trust characteristics cannot be judged by the purchaser prior to purchase or only at a prohibitive expense. Even own experience with purchased products is not conducive. Whether or not the purchased product had or has these specific certain characteristics simply has to be “taken on trust”.

The social conditions of production at suppliers to the textile industry, species-appropriate breeding and husbandry of animals, ecological power generation, fleet consumption of a car manufacturer or the investment policy of a pension fund: these are referred to as trust characteristics because an individual consumer is wholly unable to judge them based on experience (Fig.1). Statements as to these hidden properties have to be taken on trust.

Open and hidden product characteristics			
	Search characteristics	Experience characteristics	Trust characteristics
Food	<ul style="list-style-type: none"> § Price § Appearance 	<ul style="list-style-type: none"> § Taste § Workmanship § Shelf-life 	<ul style="list-style-type: none"> § Ingredients (genetic eng.) § Type of husbandry § Eco production
Textiles	<ul style="list-style-type: none"> § Price § Style, fashion § Fit 	<ul style="list-style-type: none"> § Care § Workmanship § Storage 	<ul style="list-style-type: none"> § Health/ allerg. reactions § Ecological production § Compliance with social standards
Cars	<ul style="list-style-type: none"> § Purchase price § Colour/ Design § Room 	<ul style="list-style-type: none"> § Fuel consumption § Repairs § Mileage 	<ul style="list-style-type: none"> § Emissions § Fleet consumption § Ecological production § Compliance with social standards
Power	<ul style="list-style-type: none"> § Price § Contract period 	<ul style="list-style-type: none"> § Change contracts § Service § Reliability 	<ul style="list-style-type: none"> § real pollution of power generation § Type of power generation § Environmental commitment of suppliers
Riester-Pension		<ul style="list-style-type: none"> § Price/costs § Yield § Security 	<ul style="list-style-type: none"> § Future pension payments § Application of ethical criteria in investment policies

Source: Schoenheit, I. (2004): Was Verbraucher wissen wollen. Empirische Studie zum Informationsbedarf der Verbraucher. Bundesverband Verbraucherzentrale e.V. (Hrsg.), Berlin 2004.

Figure 1: Information-relevant product characteristics (Schoenheit 2004, p. 7)

The current discussion on sustainability and sustainable consumption shows that the working conditions ambient in the production of consumer products and various human rights issues are regarded as most important.

The growing significance placed on the processes of manufacture and the responsible behaviour of a company in its entirety by modern (in part political) consumers is emphasised by a number of empirical studies concerning the subjective need for information.

- A number of studies based on opinion polls have demonstrated the burgeoning importance of social and ecological responsibility in relation to a company's image (Dialogue 4, 1995; Dialogue 5, 2000).
- Other studies taking a more in-depth look at relevant aspects of responsible corporate behaviour have spotlighted the general willingness of many consumers to select those companies which are demonstrably more responsible in their activities than are others (Imug, 2003; MORI, 2000).
- A number of reports focussing on the information demanded by consumers corroborate that there is demand for information concerning specific production qualities (value chain) and also concerning specific constituents and health risks which is not satisfied by existing information offerings (Schoenheit, 2004).

While these studies did not entail the direct investigation of actual buying behaviour of consumers, they nonetheless indicate the existence of definite expectations, both within critical public opinion as well as amongst consumers, projected on to corporations to the effect that said corporations must be seen to be acting responsibly throughout. And companies falling short of these fundamental standards of responsible behaviour can expect to be promptly penalised by consumers acting in response to this groundswell of expectation.

Corporate social responsibility as a trust characteristic

In the recent past, corporate experts have been increasingly presenting phrases like corporate social responsibility (CSR) and corporate citizenship as well as sustainable corporate management as descriptive terms for more or less vague concepts of what exactly responsible corporate management might be. Whereas the term sustainable corporate management is generally based on the conventional three pillar model, whilst simultaneously claiming to consider economic, social and ecological goals, the concepts of corporate citizenship (CC) and CSR place a much sharper emphasis on the voluntary acceptance of social responsibility by the company. The EU Commission presents the following definition: CSR is a "... concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis". The company acts in a socially responsible manner when it seeks to set the trade-offs between their requirements and the needs of the various stakeholders into a balance which is acceptable to all parties. (EU Commission, 2002, p. 3). A number of major corporations have taken this concept on board and have formed a European corporate organisation known as CSR-Europe (www.csreurope.org). German companies have also joined forces to create a network known as the "econsense forum for sustainable development" as their contribution to such discussions and activities (www.econsense.de) (Ecosense, 2004). And the question is then raised, in particular for those companies which do indeed act especially responsible, as to how this crucial socio-political activity – which it undoubtedly represents – can be adequately communicated. Is it not the case that consumers are especially suspicious when a producer claims something positive, but something not really "provable", about either his product or his company? Shouldn't a critical consumer not invariably assume that in such cases the positive aspects will be "exaggerated" and the negative "glossed over", if not completely ignored? The dilemma of corporate signalling is therefore that the communication of trust characteristics presumes the existence of exactly that which it is seeking to generate, i.e. trust (Kaas 1992, p. 482). The knock-out question is therefore, how can companies send out credible signals concerning the hidden qualities of their products or about their overall social and ecological performance?

Modern economic theory includes an explanation for such sceptical behaviour by consumers. One of the most crucial of recent model-theoretical basic assumptions for arriving at a better

interpretation of markets interactions specifically includes the option of opportunistic behaviour by those involved (Williamson, 1985, p. 47). Wherever opportunistic behaviour cannot be excluded, behavioural uncertainties are created. This is the reason why it is often not clear exactly what it is that individual corporations actually provide in terms of social and ecological essentials. Comparative corporate tests are an instrument specifically developed to ameliorate this informational dilemma and generate more transparency about responsible corporate behaviour.

Comparative corporate tests as a working concept

Comparative socio-ecological corporate tests can be defined, in a broad analogy to comparative product tests, as a specific working instrument, "... with which companies are investigated by an unsolicited and independent third party to assess the extent to which they act with social and ecological responsibility in certain areas. Information gleaned is then published in summary form...". (imug, 1997, p. 75). Comparative corporate tests have adopted the modern understanding of a company as being a "quasi official organisation", which in its more management-oriented variations focuses on the need to achieve a balance, albeit a very difficult one, between the interactions of a company with its internal and with its external stakeholders (Freeman, 1984).

The comparative corporate test therefore comprises a working concept with specific objectives and working procedures which must be maintained and observed in order to generate the required degree of transparency concerning the social and ecological qualities and performance of a company as a whole or of individual business units of a company. They therefore fulfil not only an information but also a control function in that they subject key elements of a corporate image to a critical test. In order to reflect the perception that "responsible corporate behaviour" is a social construct constituting many normative elements, it is necessary to set tough benchmarks not only for transparency, credibility and seriousness when specifying test content and criteria, but also during data gathering, data review, as well as data assessment (Fig. 2).

The first corporate tests with a solid methodological base took place in 1993/1994. 250 companies in the food and luxury goods sectors were investigated based on over 70 social and ecological and other ethically relevant criteria and published as a book entitled "Der Unternehmenstester – die Lebensmittelbranche" (imug et al., 1995). By 2001 no less than four industry-specific shopping guides had been published in Germany along these lines. They were published by the imug institute in cooperation with the German association of consumer organisations (AgV, today the Bundesverband Verbraucherzentralen, vzbv), the consumer advice offices of Baden-Württemberg, Hamburg, Hessen, Niedersachsen, Nordrhein-Westfalen and Sachsen as well as the Verbraucher Initiative (consumer initiative). The investigative work for the individual book publications took place under the overall leadership of imug Institut (www.unternehmenstest.de)

In the last ten years a number of "shopping guides" have been published in other European countries concerning responsible corporate behaviour, whereby they are all based in principle on the "Shopping for a better world" publication of the Council on Economic Priorities (CEP) and as such have a strong "moralistic tenor". The lack of continuity¹ and limited impact of the shopping guides should also be borne in mind (Schoenheit & Hansen, 2004, p. 242 ff.).

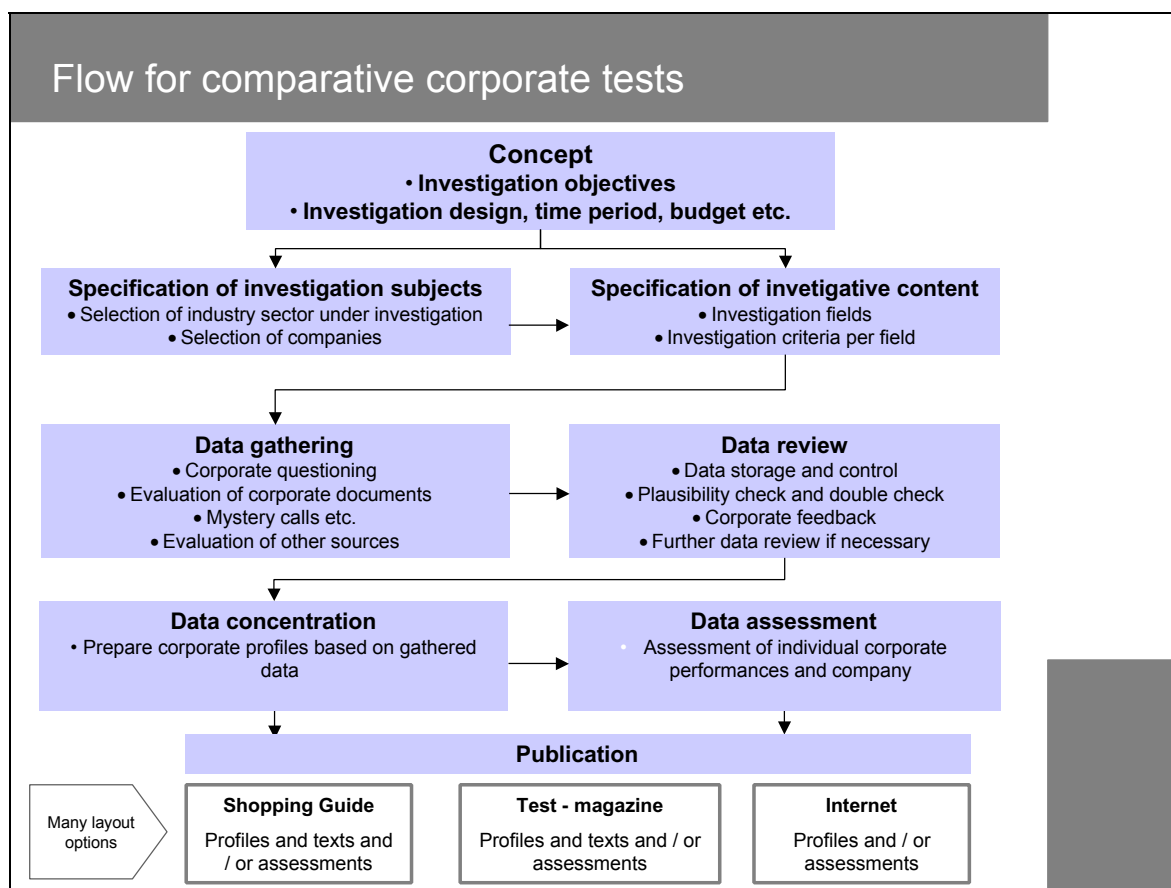


Figure 2: Workflow of comparative corporate tests (Schoenheit & Hansen, 2004, p. 247)

This situation makes it all the more laudable that Stiftung Warentest is currently involved in plans to append its “classic product tests” with concurrent complementary investigations in order to provide information and assessments as to the ethical, social and ecological behaviour of the respective manufacturers for the interested readership of its “Test” magazine. Stiftung Warentest is by far the best known consumer organisation in Germany and enjoys great esteem both amongst consumers as well as in many sectors of the business community because of its independence and competence. In relation to the increasing importance placed on the hidden qualities of products, the challenge facing Stiftung Warentest is therefore to assimilate a new and furthergoing understanding of quality within the consumer goods markets, one which can develop into an element which fosters competition. Consumers should neither be rendered insecure by irrelevant or even confusing information nor should companies be allowed to gain the impression that voluntary acceptance of responsibility in the manufacturing of products and within overall corporate management is not noticed or perceived as such by either consumers or by Stiftung Warentest acting on their behalf.

Stiftung Warentest’s CSR pilot projects

Stiftung Warentest first gained experience in the publication of product and corporate statements in 2003. In the June issue of its “Test” magazine it published an article entitled “Social responsibility – fit for fairness?” comprising an “ethic check” of nine selected manufacturers of jogging shoes which included not only quality-related product assessments but also introduced the ecological and social production context of the running shoes. The responsibility for the investigative conceptualisation and execution as applied here was, however, not borne by Stiftung Warentest itself but was realised in the framework of a project of the ICRT group - an amalgamation of 25 consumer organisations from all parts of the globe.²

During 2004 Stiftung Warentest organised three pilot projects to, for the first time, investigate the social-ecological context of production as a complement to its classic product tests, and provide interested readers of the "Test" magazine with "... information and assessments of the ethical, social and ecological behaviour of the respective manufacturers...". (Brackemann 2004, p. 57).

Social aspects in the farming and marketing of salmon

It is basically not feasible for consumers to understand today's methods and processes of food production. Consider the case of salmon farming: as a consequence of globalisation, it is now virtually impossible to determine who is actually responsible for not only social conditions but also for pollution and conformity with fundamental animal protection standards within the production chain. Wild salmon bought in Germany is caught in Alaska and processed in China. It was this background which in late 2004 motivated Stiftung Warentest to not only test the product quality of wild salmon but also, and for the first time, seek to answer the question as to whether vendors and producers are fully informed about their suppliers and their production practices and whether they meet their social and ecological obligations. Under the title "Acceptable for man and animal?", readers of the "Test" magazine were given details of tests of deep frozen salmon filets with a scope including not only test ratings on product quality but also statements as to whether and how the respective vendors and producers of deep frozen salmon filets accepted responsibility for animal and environmental protection aspects as well as their activities on social issues, for example relating to employees (Stiftung Warentest, 2005, p. 22 ff.).

The test covered a total of 20 suppliers and their producers. The investigation of corporate responsibility was based on a total of 65 criteria³ focussing on social, ecological and consumer-relevant aspects in the following fields:

- Corporate policies (producer and vendor)
- Animal and environmental protection (producer)
- Further processing and transport (producer)
- Transparency (producer and vendor) and
- Employees (producer).

The focus of the investigated employee sector was into social aspects of the production of deep frozen salmon filets. The criteria related both to administration of employees within the company as well as to the acceptance of responsibility for compliance with social standards throughout the processing chain. The social criteria included:

- Corporate obligations regulating staff administration
- Measures to implement health and safety aspects within the company
- Number and development of accidents at work within the company
- Activities to implement minimum social standards at production facilities relevant to the production of the product in countries in which compliance with fundamental minimum social standards is not unequivocally guaranteed.
- Assurance of application of internationally accepted minimum social standards (ILO core labour standards) by the company amongst its suppliers and outsourcers in countries in which compliance with fundamental minimum social standards cannot be unequivocally guaranteed

- Efforts made by the company (business unit) to conform with and monitor minimum social standards amongst suppliers/outsourcers in countries in which compliance with fundamental minimum social standards cannot be unequivocally guaranteed
- Company reporting on social aspects of company activities.

The direct questioning of the companies (which related to these and other criteria) was complemented by an evaluation of all relevant and publicly available documents of the company as well as additional "mystery" enquiries. Details gleaned from investigations of secondary sources were also part of the information gathering exercise. Details provided by the company directly were subjected to independent review. All suppliers and producers were visited after data gathering, subject to their consent. This "direct" review, performed by an expert acting for Stiftung Warentest, involved the more detailed investigation and verification of particularly relevant or contradictory data.

The results of this corporate test were kept separate from the product-related quality ratings of the deep frozen salmon filet. As far as Stiftung Warentest was concerned, this information was made available to the consumer as an addition, such that they could themselves decide whether and how it might influence their buying decisions.

The additional information on the social aspects of production are summarised in a separate ratings table. Five of the vendors stand out because of their "clear initiative" on behalf of employees, salmon and environment. Six of the twenty vendors refused to co-operate at all (questionnaire and willingness to accept external inspection). Three of these were retail chains. Apparently some producers and traders are not yet willing or prepared to respond to investigations seeking to satisfy the new information demands of consumers as outlined here. That will soon change. In a recent publication Stiftung Warentest announced its intention to organise such investigations on a regular basis in the future, also into the social quality of products.

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¹ Up dated versions of the shopping guide appeared on an approximate two-year cycle. The last guide was published by CEP in 2000. The CEP has since disbanded. The „inventor“ of the shopping guide, Alice Tepper Marlin, received the alternative Nobel Prize for her work in 1990. Today, she works as president of the Social Accountability International organisation (SAI) in New York within which she was also responsible for the concept of the SA 8000.

² This ethic check was undertaken on behalf of the ICRT by Stock at Stake, a research subsidiary of a Belgian research agency for ethical investments. Primary goal of this organisation is to disseminate existing test methods for product and service testing on a global scale and to help develop improved test methods. For more detailed information about the ICRT please visit www.international-testing.org

³ For a listing of all investigation criteria please go to the Stiftung Warentest homepage (www.test.de/downloads)

The complexity of nutrition communication

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This presentation begins by characterising nutrition communication. It then seeks to make some of the assumptions on which much communication is based explicit. A specific model of human behaviour is typically involved. A certain model of communication is commonly implied. The substance of what is communicated is usually distinctively delimited. Those who are to receive/hear about nutrition communication are increasingly frequently named 'consumers'. These assumptions themselves signal complexity. The presentation proposes that the complexities extend still further to encompass features on which nutrition communication remains silent. It ends, optimistically, with some observations on the extent to which success can realistically be expected.



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Overview: The Complexity of Nutrition Communication

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Successful nutrition policy relies on communication between expert and consumers. How can nutrition policy improve communication strategies? Which strategies should be fostered to communicate effectively?

So ran the preamble for the session on nutrition communication of this congress. Accepting the kind invitation to present a view of this field engendered a sense of relief that the organisers of the 2004 international congress "Nutrition and Consumer" had added: "Nutrition communication: *chances and limits* to reach dietary goals" (emphasis added). This short paper is based on the conference contribution and concentrates on some of those chances and limits. Less of an overview and more a critical reflection, what follows reaches a possibly surprisingly optimistic conclusion, but not before perhaps saying the un-sayable. The background is, of course, familiar. Crudely, it can be summarised something like this. Despite great efforts at nutrition communication, too many people persist in eating an ill-advised diet. Two questions then arise: either "what is wrong with them?" or "what is wrong with nutrition communication?". These questions are not perhaps always expressed in such a direct fashion, but versions of them are in all probability very familiar. What follows is divided into three: the first illustrates different types of nutrition communication, briefly describing selected examples; the second considers nutrition communication's complexities by making explicit some underlying assumptions, while the third extends discussion of the complexities of nutrition communication still further, to deal with aspects on which nutrition communication tends to remain silent.

Selected examples of nutrition communication

Commonly, perhaps, the first type of nutrition communication that comes to mind is the formal, official version made available to the general public by government departments. An example of this is a recent booklet presented under the auspices of several government departments and authoritative institutes published in France. Entitled 'La Santé Vien en Mangeant' it is produced in full colour, amply illustrated with lively diagrams of faces composed of various food items. A second example of formal, official government communication is one produced by the UK's Food Standards Agency which explains the labelling claims that can legitimately be made for a food. A second type which in several respects is very similar to the first in that it also draws on and represents current thinking in nutrition research is provided by major medical charities (organisations independent of governments which may fund medical research but also supply health and nutrition education to the public). An example of this is provided by the British Heart Foundation's leaflet entitled 'Eating for your Heart'. A third moves into the commercial realm. Here is to be found plenty of examples of information leaflets which food retailers, in particular the large supermarkets, make available free to their customers. A possibly newer type (at least in the UK) is the advertising for personal nutrition advice coupled, sometimes, with so-called fitness training often located at gyms and health clubs. A similar instance is illustrated by a leaflet accompanying a special promotion of Lucozade 'hydro active' an example of what the company describes as 'fitness waters'. Available to members of a health club in north London in 2004 this leaflet also represented nutrition communication, explaining the need to avoid dehydration when taking exercise as well as advertising the company's product.

Undoubtedly, the reader will be familiar with most if not all these types. What is important to remember is that nutrition communication does not solely originate from official channels.

Commercial interests may also represent a source of nutrition communication, and to varying degrees, accompany nutrition information by advertising for specific processed foods/drinks.

The complexities of nutrition communication: the limitations of key underlying assumptions

Three major assumptions can be identified underpinning the types of nutrition communication just exemplified. First, communication is based on an individualistic/psychologistic model of human behaviour. Second, the categories in which the information is presented are limited to those readily recognised by nutritionists and nutrition researchers rather than 'real life' of non-experts. Third, a 'deficit model' of expert communication is implied.

What is described here as an individualistic/psychologistic model centres on an individual as the unit of analysis and treats phenomena such as ethnicity, kinship, gender, age, employment status and occupational category, household composition as attributes of characteristics of that individual – a little as if a label button for each phenomenon is pinned onto their coat as the way of defining and classifying them, and in terms of which their behaviour is explained statistically. Such an underlying model is in clear contrast to a more sociological or social anthropological model of behaviour which concentrates on the social relationships implied by designations of gender, ethnicity, age etc.. It is the *relationship* between an employer and employee or between males and females, child and parent, which becomes the focus, thus shifting the emphasis away from employee status, being a man and so on, as defining attributes of the individual. Since daily life is composed of a complex web of social relationships, failure to acknowledge them contributes to keeping nutrition communication distant from 'real life'.

A second way in which nutrition communication remains distant from 'real life' is found in the persisting use of categories to present the information that is the vocabulary of experts, nutritionists and others, typically 'food groups' or 'nutrients': eg increase your intake of fruit and vegetables, assure your calcium intake. Yet it has been repeatedly observed that people do not eat 'food groups' or 'nutrients' (Murcott, 1988). Research findings of the last two or three decades confirm that the terms in which people think and talk about food are those of the *social* arrangements for eating – meals and platefuls, dishes and recipes (e.g. Mäkelä, 2005; Murcott, 1982) as well as, or perhaps even more frequently than, those of nutrients and food groups.

Bear in mind that the preamble for the present discussion states that 'Successful nutrition policy relies on communication between *expert and consumers*' when turning now to the next underlying assumption of nutrition communication. This third assumption involves the implication that the consumer, the recipient of the information, is ignorant – rather like a school child who has not yet had their very first lesson. The information is being conveyed by experts, top-down as it were, to this ignorant member of the public. Known as the 'deficit' model of the public understanding of science (Wynne, 1995), this implies an image of the public as not only ignorant but passive. Assumptions of this type have been shown to be unduly simple, mistaken, and are involved in experts' continuing to misunderstand the public (Marris et al., 2001).

Identifying the complexities of nutrition communication as *limitations* entailed in the underlying assumptions of nutrition communication is self-evidently significant for assessing the effectiveness of such efforts. Thus, in attending to the congress organisers' concerns listed at the beginning of the present discussion, a serious question poses itself: are strategies confined to this mode of communication still worth fostering?

The complexities of nutrition communication: silences.

Silence tends to prevail in the discourse of nutrition communication in respect of the ideological and political circumscription of its practice. One or other type of communication reflects the kind of relation that is deemed appropriate between the state and the citizenry in the dominant political philosophies of whatever period is being considered. The examples of nutrition communication considered above require that information as to how to adopt the optimum diet determined on the basis of evidence (ordinarily the consensus of clinical and epidemiological researchers) is, primarily, translated into communication to the public. Such communication takes the form of advice, of guidelines, or is transformed into memorable slogans such as '6 a day' in order to help 'get the message over'.

The distinctiveness of this form becomes clearer when contrasted with aiming for the same optimum evidence-based diet translated via quite other means. These others include fiscal measures, legislation or some other form of regulation or rationing of the food supply – means which become more politically acceptable under different circumstances, notably war-time. While not communication in the sense of provision of a document setting out information about nutrition, fiscal measures resulting in a new price structure representing a professionally advised optimum diet still communicates a message. The same applies to legislation (formally sanctioning what is and is not allowable) and rationing, which literally represents that which is more and less valued, by physically controlling access.

The ideological and political context currently prevailing to a greater or lesser extent in many 'Western' nations has several features: an individualistic focus held to be consonant with the individual's freedom from 'interference' from the state; a 'reduction' of the state in favour of the market, which entails voluntary self-regulation by producers rather than legally binding regulation; and definition of members of the public as 'consumers' rather than as citizens (let alone environmentalists, fathers etc.). All this is set, however, against the backdrop that no state can (for long) remain indifferent to the nutritional status of the population. If supply is not assured, then, at the extremes and eventually, there is a risk of food riots or civil unrest. And if the diet of the population falls below a nutritional minimum, the nation's health is – again at the extremes – put in jeopardy, entailing a double cost in terms of loss of labour power and burden on the health services. At the same time, however, no state can ignore the health of the economy, nationally/internationally, and since nowhere has, as yet, nationalised food production, processing and distribution, then its food industry makes a measurable contribution to a nation's wealth. In consequence, the food sector is to receive whatever support, operate in whatever regulatory framework is deemed appropriate for the industry *qua* industry where the imperative means that criteria are more likely to be industrial rather than nutritional. As a result, only certain, constrained types of nutrition communication – such as those described above (together with constrained types of research to support it) can be tolerated without fear of challenging the ideological and political orthodoxy. By the same token, adopting different communication strategies from those discussed earlier may be judged too daring: the hands of those engaged in communication efforts which may be more effective are thereby liable to be tied.

Concluding remarks

The foregoing sketches what is politically acceptable in peace time, reflecting prevailing politico-economic ideology and alignment with the interests of the state, identifying what some would argue is but a small variation between official nutrition communication and commercial nutrition communication. So, to return to the congress organisers' interest in nutrition communication's 'chances and limits to reach dietary goals' the two sets of complexities discussed above can swiftly be considered.

The second set is tougher. Adopting different nutrition communication strategies such as fiscal measures, rationing and so on, may, of course, not be politically possible in peace time. Indeed, such means may also be considered undesirable by persons committed to improving nutrition communication and the achievement of dietary goals. So there may be less that anyone is able or wishes to do about the silent complexities of nutrition communication.

When it comes to the first set of complexities, however, there is more scope: something can be done about these. So, such heavy reliance on an individualistic/psychological model can be rethought so that framing the effort in terms of social relationships and the analysis of social contexts can be devised. Working at recasting the categories in which the information is couched and to adopting those of 'real life' is also possible. And collaboration with, rather than 'talking down to' members of the public by treating them as active and informed (albeit perhaps partially) would contribute to evading such heavy reliance on the 'deficit model'.

All of which leaves a final observation – but one which sounds an optimistic note. For, given the constraints most especially of the second set of complexities, those engaged in the work of nutrition communication can probably be judged as not doing nearly as badly as is sometimes thought.

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Nutritional education via television – An effective chance to reach consumers?

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Exploding costs in the health care system, dramatic increases of diabetes type II, a growing amount of overweight children and adolescents – there is a lot left to do for nutritional education institutions. Effective methods of education, which can lead to persistent changes in consumers' nutritional behavior, are intensely discussed by experts. The role of the mass medium television has been largely excluded from this discussion: While judging controversially its potential as an educational medium, many nutritional experts presuppose mostly negative effects of existing nutritional depictions in television. These assumptions, however, have rarely been empirically grounded.

It is the aim of this presentation to discuss from a communication scientific point of view the potential and limits of television as a mediating channel in successful nutritional education: By which particularities is this medium characterized compared to other mass media or traditional means used by nutritional education institutions? What makes education via television effective and attractive, and which aims cannot be attained? Undisputed, one of its greatest advantages is the uniquely broad range of several millions of German consumers watching habitually about 200 minutes a day. Additionally, the combination of visual and acoustic stimuli makes its messages especially effective. In contrast, television is suitable for target group-specific communication only within limits, and nutritional information passing by hastily on television is not that easy to keep in mind compared to other media like books or brochures.

Selected media effects theories are introduced pointing out the power of television with regard to effective nutritional education. They are illustrated by results of empirical research or concrete case studies from today's television programs. Concerning entertainment programs, e.g. the concepts of "cultivation" and "entertainment education" can be seen as promising theories. While the cultivation approach considers how the world presented in television affects recipients' perceptions of social reality and their worldview, entertainment education aims at motivating people to change attitudes and behavior by integrating specific health care topics into entertainment settings.

Finally, a research project is outlined which has been conducted in cooperation of nutrition researchers and communication science scholars. For the first time, the question of potential influences of nutrition messages in German television on nutrition-related attitudes and behavior has been investigated. A content analysis, a survey and a lab experiment have been combined. Results will be available in the Nutritional Report 2004 published by the German Nutrition Society in November 2004.

The presented theories and case studies help outline innovative strategies for German nutritional education institutions by discovering the potential of television as a mediating channel while nevertheless being aware of its limits for nutritional education.



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- health and nutrition in mass media
- entertainment in television
- entertainment education

Nutritional Education via Television – an Effective Chance to Reach Consumers?

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Introduction

For years now, experts of nutritional education institutions discuss effective methods to change consumers' nutritional behavior. Unfortunately, an active part of the mass medium television as a mediating channel has been largely excluded – on the contrary: Many nutritional experts assume only negative effects of nutritional depictions in television. It is the aim of this presentation to clarify some prejudices and raise interest in the mass medium television: It can be a potential mediating channel in successful nutritional education, if one is aware of its limits and particularities.

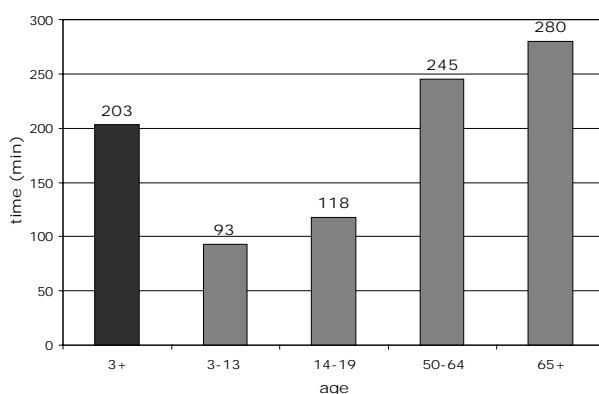
To discuss television's usefulness in educational efforts, general advantages and limits of television are outlined with respect to other mediating channels. Afterwards, some educational strategies are presented that find support by communication scientific theories. The presentation will conclude with some final remarks.

Television – a Useful Medium for Nutritional Education

Television is a mass medium, in other words a channel of indirect communication, like newspapers or the radio. It is a very different channel compared to the measures of direct communication (like hotlines or seminars) which is the preferred way of nutritional education institutions. Some facts will be presented now that underline television's power and advantages, followed by an explanation of its limits if confronted with other mass media or measures of direct communication.

Chances

- In 2003, on an average day, 74% of German consumers switch on the television set. The "average German" watches television about 203 minutes a day, kids about 1 ½ hours, and the general tendency is "growing amount of time with growing age" (Fig. 1). No other mass medium is used more habitually and more intensely.



Source: GfK (Gesellschaft für Konsumforschung) 2003. Taken from: Darschin & Gerhard 2004.

Figure 1: Daily amount of time spent watching television in Germany

- The combination of visual and acoustic stimuli easily raises attention of a broad range of people. For this reason, communication scientists judge television to be the most powerful of the mass media (e.g. Bonfadelli, 1999; Jäckel 2002).
- Like family and other parts of one's social network, television is a socialization agent and offers social orientation in everyday life (Reimer & Rosengren, 1990). It cultivates individual ideas and attitudes, and its role in daily life becomes stronger for those people who keep few social contacts and watch a lot of television in their free time.
- As people mostly believe "what they can see with their own eyes", it is considered the most credible and competent information source compared to other mass media (radio, newspaper and internet; Berg & Ridder, 2002).
- Polls show that people frequently get their nutritional knowledge from television – not only from their doctor or family (e.g. Linzmaier et al., 2004; Friebe et al., 1997).
- Finally, those who watch most are the elderly, people with little education and lowest income – exactly the target group described as having the poorest nutrition habits by nutritional education experts (e.g. Fischer, 1986; Willhöft & Ulrich, 2001). So these groups are hardly reached via direct communication, but easily reached via television.

To be summarized: Television raises attention and awareness of certain topics in broad population groups, and people usually trust its messages because television is judged as credible medium. Consumers are basically interested in nutritional information via television.

Limits

But television's power is limited too, not all educational goals can be achieved. So

- it has only limited power to change behavior. This ambitious aim is better reached via measures of direct communication which offer not only one-way, but reciprocal communication channels.
- Television is suitable for target group-specific communication only within limits, even if population groups like adolescents, young mothers or people in retirement age are well defined through the program structure and particular programs.
- Attention during reception usually is not that high, television is called a low-involvement-medium.¹ The consequences are threefold: First, messages have to be short and entertaining, background information reaches only people who are already interested in that topic. Second, messages need to be watched repeatedly before being absorbed. Third, nutritional information seen only once in a short sequence is not that easy to keep in mind. Additional sources like the internet or teletext have to compensate this gap.
- Finally, it is hard to isolate television's potential educational effects because it unfolds cumulative, long-term effects.

But taken all together, television has one great advantage. Traditional measures of nutritional education like brochures, seminars and also the internet offer information particularly to those groups who are already interested in nutritional knowledge, and the number of people reached is quite limited. Television, on the contrary, raises attention and awareness of certain nutritional facts and problems to a broad audience – and raised awareness is a precondition for raised interest and motivation to get further information!

In the following, some examples of useful strategies of nutritional education via television are introduced based on communication scientific theories.

Strategies for Nutritional Education in Television

Nutritional depictions in television are integrated in a great variety of program contexts. These contexts can be roughly divided into information, entertainment and advertisements. Strategies for nutritional education in information programs are outlined first.

Information

In the news shows, especially reports about food scandals or economic balances of food companies can be found, while service magazines or cooking shows offer consumer-based instructions for preparation and new cooking ideas. Especially the last program type, the cooking shows, has expanded over the last years. Currently there are about 16 such shows broadcast on public and private television stations.²



Figure 2: Examples for nutrition-related information programs (news, magazines, cooking shows)

Especially in information programs, journalists have an important function as gate-keepers. They decide which news are broadcast and which news are not. And these decisions depend on news values such as actuality, prominence, dynamics or sensationalism. But also such simple factors like availability of video material or low complexity of the message's content are relevant. It has been proved that television has the power to influence what people think about, called Agenda Setting Theory (Rössler, 1997; Schenk, 2002). So, topics that are talked about in television are brought into peoples' minds. But it does also matter how a certain message is presented. Journalists offer to their audience a certain interpretation context, a certain "look" at the story line which can be called Framing (Entman, 1993; Schenk, 2002).

It should be the aim of those who represent educational institutions to influence what is talked about and how it is talked about. Therefore, they can't make too much effort in working on three aspects:

1. offering press releases to journalists that contain news values to make nutritional messages salient, as it is already made for instance by the weekly newsletter of the "aid infodienst",
2. being present themselves for statements in news, service magazines and cooking shows to influence what is talked about and how; and finally
3. making journalists aware of additional information sources that can be integrated in the programs, like teletext or webpages.

Entertainment

Also in entertainment programs, nutritional messages frequently occur. For example, protagonists are constantly shown eating, drinking or preparing a meal in soap operas, series and films, and therefore these actors show “nutritional life style” in television. This kind of program type offers the greatest variety and potential of innovative educational strategies because it is here that protagonists show role modeling behavior.



Figure 3: Examples for nutrition-related entertainment programs (talk shows, films, series, daily soaps)

It has been found out in US-American studies that the nutritional value of the actors’ “television diet” is everything but healthy, showing them eating especially sweets and snacks, drinking alcohol and coffee (e.g. Kaufman, 1980; Story & Faulkner, 1990; Bell et al., 2004). Nevertheless, the protagonists usually remain slim and healthy. So every day the television audience “ingests” negative and inconsistent role model behavior. This fact is alarming, as it is known that not only the direct social environment (family, friends...) but also the television world influences peoples’ perceptions and attitudes about the real world. This socialization process via television has been explained by the Social Learning Theory (developed by the social scientist Albert Bandura, 1979), and by one of its theoretical progresses called Cultivation (for an introduction see Gerbner et al., 2002). The central message of this approach is that for people who watch a lot of television, certain conceptions of and attitudes towards social reality are shaped by the depiction of reality in television, while conceptions of those people who use television moderately are shaped mainly by other socialization agents (like family, friends or school). For example, two studies showed that children’s nutritional knowledge and behavior got worse with increasing daily television amount (Signorielli & Lears, 1992; Signorielli & Staples, 1997). The authors don’t only blame advertisements for this result, but especially the unhealthy depictions of eating and drinking in US-American soaps and series. In the German Nutrition Report 2004 there can be found more information about the nutritional “value” in German television and eventual effects on perceptions and attitudes of German consumers (Lücke et al., 2004).

It is also known that people build up emotional relationships with some famous protagonists: They get interested in the actor’s life style and sometimes even feel like a friend of them. We call this phenomenon Parasocial Interaction (for an introduction see Gleich, 1997). In this process, some people start to identify with the actor’s behavior and find social orientation for their own everyday life.

All mentioned theories can be used in an educational context which is known as Entertainment Education: It proposes to contact producers of series and daily soaps with the aim to change some aspects of the actors’ behaviors (Lampert, 2003). Here’s an illustration: Fa-

mous and popular actors could integrate little educational messages into the scenes, behave healthily and show an “active lifestyle”, for example just coming home from sports, taking time for meals or eating fruit salad instead of burgers and pizza. Soaps, for example, have a clearly defined target group (young women, less men at age 10-29), so messages can be shaped target-group-specific. And daily soap-fans are deeply involved in the plots and highly identify with their stars, so attention is guaranteed. In the past, a lot of trends have been developed in daily soaps because adolescents admire their protagonists and adopt certain parts of the actors’ behaviors.

In the USA, this concept of Hollywood-Lobbyism is successfully applied to series and soaps, for example to avoid car accidents caused by drunk drivers (Center for Health Education, 2003). Such activities promise a positive image change towards more healthy nutrition behavior. First activities can also be observed in Germany. So the Federal Center for Health Education (BZgA) worked in cooperation with the producers of a daily soap (“Jede Menge Leben”, ZDF) in 1997 and implemented the storyline of an HIV-positive protagonist together with educational messages into a long lasting plot (Schwarz, 2003). The effects of this kind of nutritional education have not yet been measured empirically but can be valued by the activities of food interest groups. They already pay for implementing short messages into series plots: For example, the Marketing Society of the German Agriculture (CMA) paid 170.000 Euro for a subtle praise for milk in a series about a female teacher, “Sabine!” (ZDF).³ And there are continuing rumors about the pharma industry paying for implementing certain diseases (like the menopause) into the plots of soaps and series to promote their products. So, the concept of Entertainment Education helps sensitizing and motivating people to change attitudes and behaviors by integrating specific health care topics into entertainment settings.

Advertisements

Last but not least, a lot of food ads are broadcast especially on the private television stations. Ten out of the Top-Thirty product groups in 2004 television advertisements are for food (IP-Deutschland 2004). Behind car ads, chocolate and sugar-ads range on the second place.⁴



Figure 4: Examples for nutrition-related advertisements (sweets, convenience food, milk products, beer, coffee)

Many nutritional experts believe that food advertisements in television lead consumers to pursue negative nutritional life styles (e.g. Pudiel, 2000, 133). But these “general-effects-assumptions” are hardly based on empirical facts. From the age of about ten, adolescents and adults usually realize that television ads are a persuasive kind of communication, and its messages are judged critically. A great part of the television audience actively avoids television ads. Marketing strategists and communication scientists agree in ascribing only limited potential to those ads to change consumer behavior. The general aim of advertisements is to raise attention to the product and positively influence its image in the long run. A lot of spot repetitions are required to reach these goals that are preconditions for affecting the consumers’ behavior. And the latter is determined by a great variety of additional factors (e.g., indi-

vidual interest and involvement, ability to process information, avoiding of cognitive dissonance, situational conditions).

However, the following demand is not new but it is nevertheless useful: Nutritional Education could produce Public Service Announcements, educational spots using creative techniques of advertisement industry, showing positive and emotional messages. It is expensive to produce and broadcast such spots, and they need to be repeated regularly. But they offer the chance to raise attention of millions of people, and it may be possible to build up Public Private Partnerships to reduce costs. For example, the Federal Center for Health Education successfully built up such partnerships in the 1990ies with various television stations to broadcast anti-AIDS-spots. It has been empirically tested in the USA that these kind of spots can lead to positive effects (e.g. Goldberg et al., 1978; Cantor, 1981; Reece et al., 1999). Nutritional education institutions could follow a new path covering television with educational spots –and it would be worth trying out.

Conclusion

It has been shown that nutritional images are overtly present in television. Unfortunately, there are quite few efforts so far to lead these messages into a positive direction from the nutritional education point of view, or to broadcast educational spots. Taking efforts to change this unpleasant state would be helpful and even successful if there are respected some particularities of this mass medium. Television could be a goldmine as a first step to reach large population groups and especially those who are hardly reached by traditional measures. But there can't be expected too much: Television raises attention and awareness of certain topics, it rarely changes behavior directly. Corresponding changes are motivated more successfully in a second step, via direct communication.

But the concept of Entertainment Education is a promising strategy to influence attitudes and even behavior. In soaps, for example, famous role models are presented acting in everyday situations. Many adolescents strongly identify with these protagonists, they are deeply involved in the plots and even find social orientation. Why not take advantage of this condition by making popular protagonists promote healthy new trends? Nutritional education institutions can and should apply such new methods to motivate people to eat and drink in a more thoughtful way.

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Notes:

¹ In contrast to the press which is called a *high-involvement-medium*, given that people need to choose actively the articles to read and to pay attention to the content while reading.

² Public television stations present the following shows: „Alfredissimo“, „Kochcheck“ (ARD, currently launched), „Einfach besser kochen“ (ZDF), „Johann Lafers Culinarium“, „Gesunde Küche mit Geschmack“, „Frisch gekocht unterwegs“ (3Sat), „Kochkunst mit Vincent Klink“, „Himmel un' Erd“, „Was die Großmutter noch wusste“, „Fröhlicher Weinberg“, „Einfach köstlich“ (SWR), „Hessen à la Carte“, „Kochen um die Wette“ (HR). On private television stations cooking shows seem to mark a trend, too: „Zacherl: Einfach kochen!“ (Pro7, but stopped in August 2004), „Das jüngste Gericht“ (VIVA), „Schmeckt nicht, gibt's nicht“ (VOX) and „The Naked Chef“ (RTL II) joined „Kochduell“ (VOX) in 2003. Additionally, there are a lot of magazines with regular cooking events, e.g. in the „ARD/ZDF-Morgenmagazin“, „ARD-Buffer“, „Volle Kanne – Service täglich“, „ZDF-Fernsehgarten“ (ZDF, during summer), „Kaffee oder Tee“ (SWR), „DAS! ab 2“, „DAS! ab 4“ (NDR), „Hier ab vier“ (MDR), „ServiceZeit Essen und Trinken“, „ServiceZeit Kostprobe“ (beide WDR), „Frühstücksfernsehen“ (SAT.1) or „Avenzio – Schöner leben!“ (Pro7).

³ The main protagonist asks: "There is a milk bar in this school?" The school director answers: "Yes, milk makes clever." (see Jakobs/ Ott 2004).

⁴ Food Industry spent 231.642.000 Euro for chocolate and sugar-ads in the first six months of 2004. Milk products (white) can be found on place 6, beer on place 7, tins, meat and fish on place 11, soft drinks on place 12, coffee, tea and cacao on place 20, soups and sauces on place 21, artificial nutrients on place 24, convenience food on place 27, and finally bread products on place 30.

Preventing obesity: Old constraints and new strategies?

A. Ferro-Luzzi

WHO CC for Nutrition, INRAN, Rome

The unfolding epidemic of obesity requires that appropriate and effective action be undertaken with maximum urgency. It appears that much of the action that has taken place so far has achieved close to nothing to forestall the impending catastrophe. Recently, progress in the way of thinking about the problem promises a better impact. Central to this thinking is the recognition of the environmental pressures on individual choices and therefore the need of a new framework for attenuating the intricate web of circumstances that makes the healthy choices of diet and lifestyle difficult. Also, the conceptual change of overweight from an undesirable - but not serious - condition at the individual level, to the category of "risk of obesity" at community level, now emphasizes the dynamic nature of the condition. The analysis of the roots of the problem has convincingly identified the role played by the energy density of foods and diets in the development of passive overconsumption. It highlights their prominent responsibility in the causation of obesity, although the reduction of physical activity is an important allied factor. It is thus critical that a two-pronged approach be undertaken to make it possible for communities and societies to modify their diets and raise the level of everyday physical activity. Campaigns that educate and inform of the required changes have failed so far to modify the behaviour of individual consumers. An in-depth, multiple level analysis is required to bring along the structural and behavioural changes that allow the individuals to make the right choices. But behaviour will change only if the informative channels will be inspired by the same sophisticated manipulative techniques used by the private sector to influence consumers' choices.



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Obesity: Old Constraints and New Strategies

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The Obesity Epidemic

The unfolding epidemic of obesity is sweeping worldwide and threatening to reach catastrophic dimensions (WHO, 2002). Already a scary scene in itself, this epidemic is further aggravated by its heralding an escalation of several associated pathologies, first and most serious among these diabetes Type 2 (Fig.1), with its dramatic outcomes of blindness, renal dialysis and transplants, limb amputation, heart failure (www.who.int/diabetes). The current approaches to obesity management and practices of prevention appear to have failed to curb the progression of the obesity pandemic. This failure derives from an incomplete grasp of the complex roots of the problem and the improper timing of the interventions. A sound understanding of the causes and contexts leading to the spread of obesity is the essential pre-requisite of effective action.

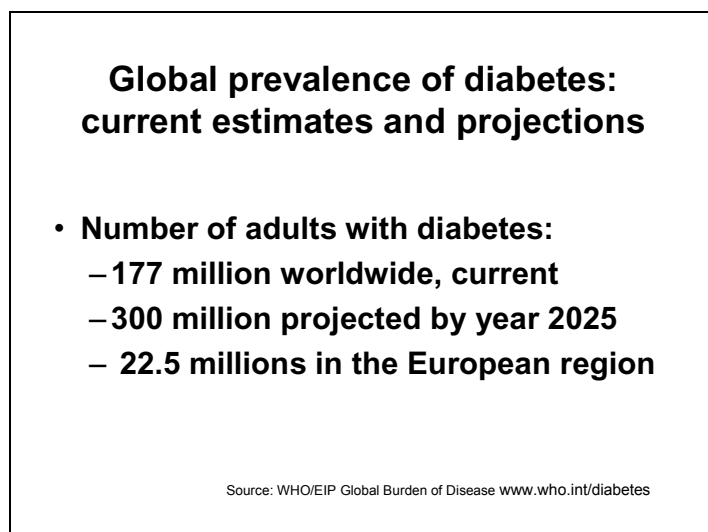


Figure 1

The Root Causes of Obesity

In the most simple terms, obesity develops when the balance between energy intake and expenditure stays positive over a sustained period of time. One of the two arms of energy balance is the energy spent in physical activity. The other is the energy introduced with foods.

What drives energy expenditure are the external circumstances that make it necessary to move and act. A large proportion of these are linked to working activities, household chores, personal or other persons' care, societal interaction, travel and any other everyday life activities such as those of leisure time. In other words, the level of physical activity is largely dictated by the environment one lives in, and the specific circumstances that shape the environment. However, a powerful and inherent feature of human nature, namely to contain any avoidable engagement in physical activity, counters and tempers these external pressures. In other words, in absence of a stressor, the drive to exercise is weak, while fatigue, discomfort – are powerful disincentives

to sustained physical efforts. Under the appropriate circumstances this can easily lead to very sedentary life-styles.

The other arm of the energy balance is energy intake. Contrary to the strong drivers that limit energy expenditure, the drivers that control excessive energy intake are weak. Food is available round the clock, eating is a pleasurable experience, and the stimuli of hunger are strong. The immediate reason of excessive eating has been convincingly shown to be linked to the energy density of the diet, this effect being mediated by satiety and satiation. Satiety is the effect of a food or a meal after eating has ended. Satiation determines the amount of freely available food that is consumed. Figure 2 illustrates the phenomenon and shows the effect of energy density on appetite regulation: energy consumption can be seen to increase linearly and positively with the increase of the density of the diet (Stubbs et al., 1995; Prentice, 1998). This phenomenon has been called passive over-consumption, and has been shown to be driven by energy density and not by the lipid content of the foods, although admittedly high fat foods tend to be also high energy dense.

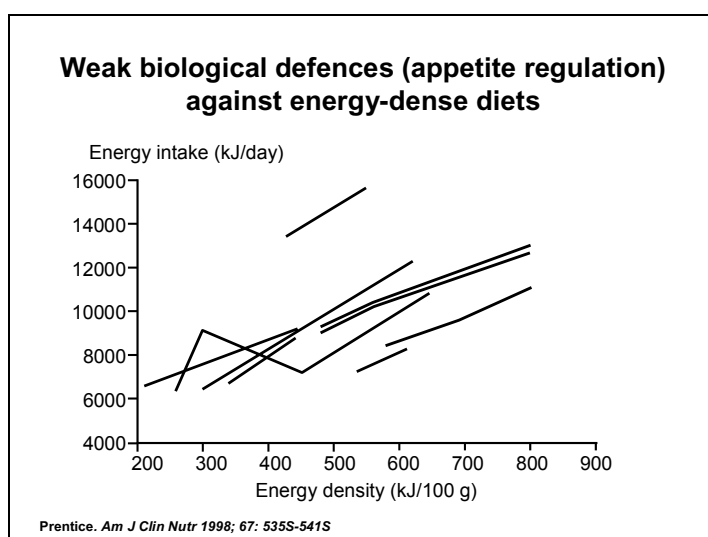


Figure 2

Given these two drivers of energy balance, it appears obvious that the management of obesity – be it primary or secondary prevention – requires a two-pronged approach. This means that efforts must be equally and simultaneously directed to modify the energy density of the diet as well as to raise the level of energy expenditure through increased physical activity. Interestingly, the food industry and leisure time industry have enthusiastically embraced the physical expenditure side of this equation, but are failing so far to attach the appropriate importance to the dietary aspect and to recognize its impact on energy balance. They argue that it is not excessive food consumption, but insufficient exercise that causes obesity, which is quite a clever move, inasmuch it diverts the attention from foods, protecting the economic interest of a very powerful private sector, at the same time expanding the economic returns of the sector of sport and exercise.

The Failures

Society has failed to successfully impact on obesity, and it is obvious that something has gone wrong in the conventional approach adopted so far. The epidemic is unfolding worldwide at an accelerating pace. It has taken Japan five decades to move from a low fat to a high fat diet, but China is doing the same dietary shift in barely two decades (Chopra & Darnton-Hill, 2004).

Another example of disappointing impact is the Five-A-Day initiative, which by promoting high fruit and vegetable consumption should, as a side effect, lower the energy density of the diet. A recent analysis of the impact of the Five-a-Day campaigns in the USA reveals that the habitual diet of the target communities has changed only minimally, with the addition of less than one extra portion of fruit and vegetables (Pomerleau, 2004). The same applies to physical activity, be it bicycling, walking or any other type of intentional activity, which has largely remained unchanged despite intense and well meaning efforts. A recently published systematic review of 22 studies on the effectiveness of various methods of promotion of shifting from car driving to walking or cycling, has shown that the change in behaviour of motivated subgroups consisted, at best, the modest shift of only about 5% of all trips (Ogilvie et al., 2004).

The New Conceptual Approaches

It appears self-evident that new ways to deal with the problem are needed. Creative solutions must be found, based on new perspectives that go beyond and besides the immediate causes of obesity, the blinds that hide the root causes of the unhealthy behaviour must be lifted, innovative approaches must be adopted. Luckily, some progress has been made in nutrition policy terms in the last couple of years. The first one has been the recognition of the dynamic nature of obesity and therefore of the importance of overweight. Overweight has been thought so far as an undesirable but not serious condition. This has now changed, and overweight is seen as a crucial “obesity risk”, thus stressing its continuum with obesity and emphasizing the highly dynamic feature of the phenomenon, at community level. The progressive shifting of the distribution curve of BMI in a population, described by Rose already in 1990 (Rose & Day, 1990), serves to illustrate the case. It can be seen in Figure 3 that a shift of only 2 units in the mean BMI of a population, even when the mean remains under the threshold of obesity, translates in the doubling of the proportion of obese people. The implications, namely the disproportionate increase of the right-hand side of the distribution for only modest increases of the median BMIs of a population, has been improperly addressed by the public health sector.

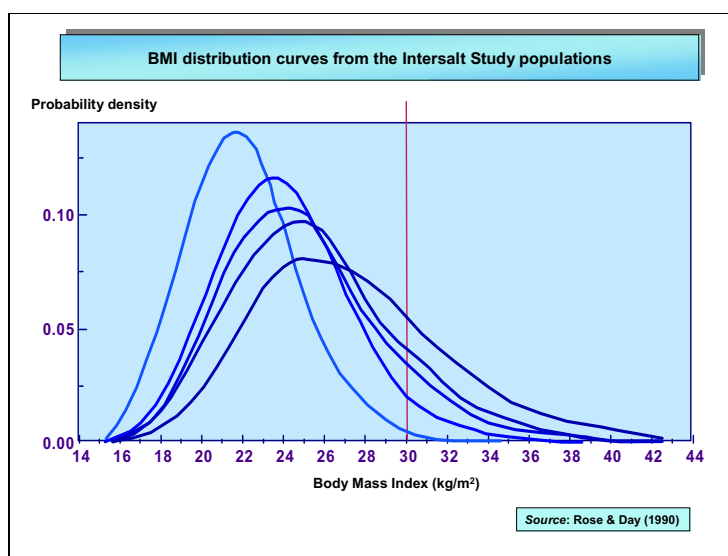


Figure 3

The second big stride forward in nutrition policy terms has been the recognition of the role played by the complex web of multiple environmental pressures on individual choices. This specific web of constraints has been - very aptly - called the obesogenic environment (Battle & Brownell, 2002). This new concept was first put forward in the Report 916 (WHO, 2003), and

taken up and further developed in the Global Strategy for Diet, Health and Physical Activity. It is interesting to note that, prior to the 2001 WHO Report on Diet and the Prevention of NCDs, the individual responsibility position was not only the dominating one, but the only existing approach, revealing the immaturity, timidity, short sight and lack of analytical vision by the public health sector. It is now widely accepted that individual choices of lifestyles and diets are powerfully driven by external circumstances. This construct contrasts with the conventional and traditional proposition that assigns to the individual the whole responsibility of choice of diet, life style and physical activity. This position has been vigorously defended by the food industry, motivated by a libertarian approach to a purported “democratic” freedom of choice, each person being deemed free to choose to become/remain obese. The corollary of this thinking is that any action undertaken by the relevant authorities to forestall the unfolding epidemic of obesity will focus on the individual. This attitude was adopted till very recently by most official bodies and governments, hence their entire reliance on campaigns of nutrition education or information. On the other hand, the new approach to the management of obesity places its highest priority on the need to influence and modify the web of environmental constraints impeding the free – and healthy – choices of the individual. Even the official position in the USA, notoriously in favour of the individual approach, has recently shifted and the Chair of IOM panel of the National Academy of Sciences has -on September 30, 2004 - for the first time acknowledged a collective responsibility (Fig. 4).

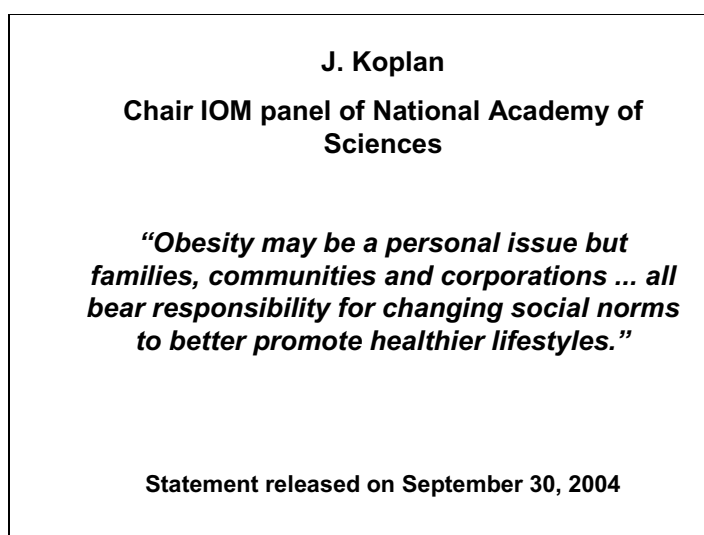


Figure 4

The Obesogenic Environment

The nature and complexity of the multiple, interlocking components of the obesogenic environment is now under close scrutiny, and agents of change are being analysed.

Concerning the diet, some of the outstanding features of the eating patterns prevailing during the last century were the domestic preparation of foods, largely produced locally, or bought unprocessed or minimally processed; these foods were consumed mostly at home, in two main meals and a couple of snacks. The nutrient profile of these diets was a low fat content, a high complex carbohydrate and fibre content, a low to moderately low sugar content; vegetable foods prevailed over foods of animal origin. This earlier model has been to a large extent swept away, and currently there is overwhelming reliance on industrially processed and transformed foods and pre-prepared meals, consumed in several snacks throughout the day, prevalently away from

home (Fig. 5). Also the nutrient profile of the diet has changed deeply, with reduction of the complex carbohydrates and fibre content, an increased presence of simple carbohydrates –

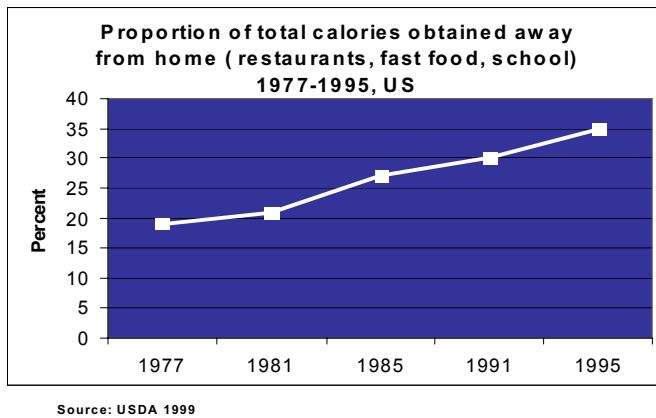


Figure 5

especially sugar, a remarkable increase in total fat and in saturated fats. This move has taken place over many decades, but is still in progress and may lead, eventually, to total dependence on technologically transformed and processed food commodities. The problem with these foods - confectionery, baked goods, soft drinks, pre-sugared breakfast cereals, savoury snacks, and a large variety of fast foods – is that they are energy dense (Fig.6) (Prentice & Jebb, 2003), low in fibre, micronutrients and antioxidants, and high in salt. Their energy content derives primarily from fats and/or added sugars. Being energy-dense, the risk of passive over consumption is high.

Energy density of typical fast foods

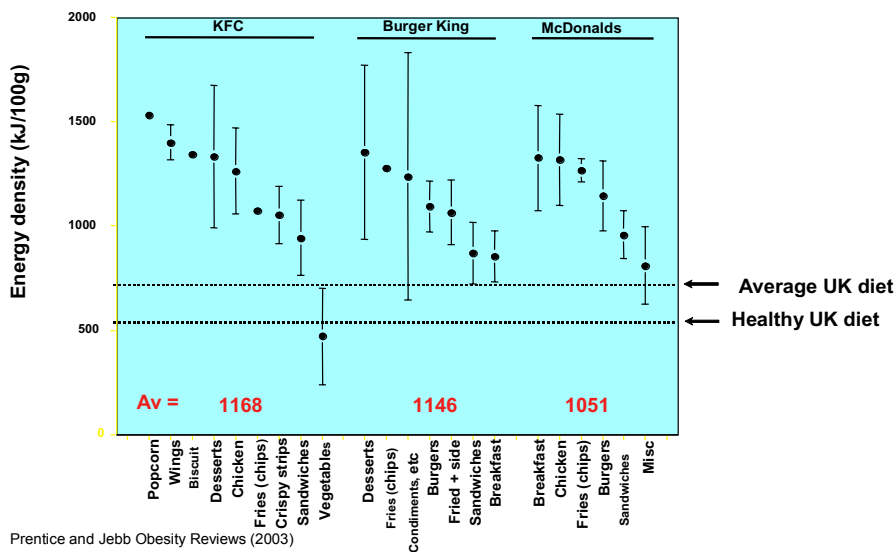


Figure 6

Similar complex and profound changes have taken place in the physical activity profile of our daily lives. The transition has occurred over the second half of the past century, and has led to a spectacular drop in the amount of energy used for everyday life, be it in occupational activities, in leisure time or in transportation. Physical activity has been literally engineered out of our everyday activities, and the decline of physical activity in modern society is well documented. Energy saving in everyday life is pervasive and subtle. The physical demand of manual jobs has dropped substantially due to advances in manufacturing processes, robotics and heavy equipment. Manual jobs that traditionally required high energy expenditure in lifting, transporting, holding, bending and walking are now extensively mechanized and workers' role is usually limited to a light supervision of machineries. The car is preferred to walking, the lift to the stairs. Advances in technology have also had a major impact on the energy cost of domestic work. Most household chores (laundry, cooking, cleaning, shopping and gardening) can now be performed with minimal effort thanks to labour-saving devices. All this may well be a conquest for the production sector, but it has had a cost in terms of health. Even leisure time is spent increasingly in sedentary entertainment including remotely controlled TV, video games, computers and internet surfing. Even sports can now be practiced at a reduced energy cost, such as golfing with a motorized caddy and tennis with automatic collection of the balls. In the USA, it has been reported that only about 40% of the adults walk continuously for more than 10 minutes during leisure time (Pratt et al., 2004). Americans older than 13 years spend 7.7 hours/d sitting, but teenagers report the greatest amount of sitting, 9.5 hrs /d. The ultimate example of this behaviour is the drive-through-the-window fast-food restaurants, where a maximum of energy can be obtained on your tray with the minimum of exertion (Ebbeling et al., 2002).

The Circumstantial Constraints to Individual Choices

The dietary and lifestyle transition described above has not taken place spontaneously. It has been driven by societal, cultural, structural, and economic forces which have created a tight interlinked web of circumstantial constraints to individual choices, the same ones that now represent invisible, but very powerful barriers to change. Unless these barriers are effectively removed, behavioural and educational efforts designed to reduce energy intake and to augment physical activity will have little impact.

The dietary transition has been driven by societal changes as well as by aggressive and competent promotion of private interests that have derived immense profit out of it. These agents of change have led to the modern eating patterns, and now they act concurrently and powerfully to undermine individual's efforts to modify them. To name all of the factors is an impossible task, also because they play different roles under diverse local circumstances. A powerful factor has been the increasing participation of women in the workforce, and the development of convenience foods and meals as a response to their need to cater for the family. Linked to this change, and in a way responding to it, there has been the emergence of alternative "eating sites", namely the pervasive presence of restaurants and other food service outlets and vending machines at shopping moles, gas stations, movie-theaters, highway rest shops, sporting events, schools, that offer opportunities to eat meals and snacks at any time and practically anywhere. One must only reach in the pocket for the few coins needed to meet any immediate urge to eat, often prompted by visual or olfactory cues, rather than by real nutritional need. Another important element of change has been the affordability of these foods. Evidence has shown that price influences purchasing habits (French et al., 2001). Highly effective food processing companies have been able to reduce the relative cost of manufactured food. Moreover, as an incentive to consumption, the food industry has increased portion sizes, and large meals can be purchased for little additional cost over smaller portions (Fig. 7) (Nielsen & Popkin, 2003). But the crucially important driving force of consumers' purchasing and consumption preferences has been undoubtedly the commercial environment. The impact of marketing and other promotional techniques on purchasing priorities is grounded on very robust

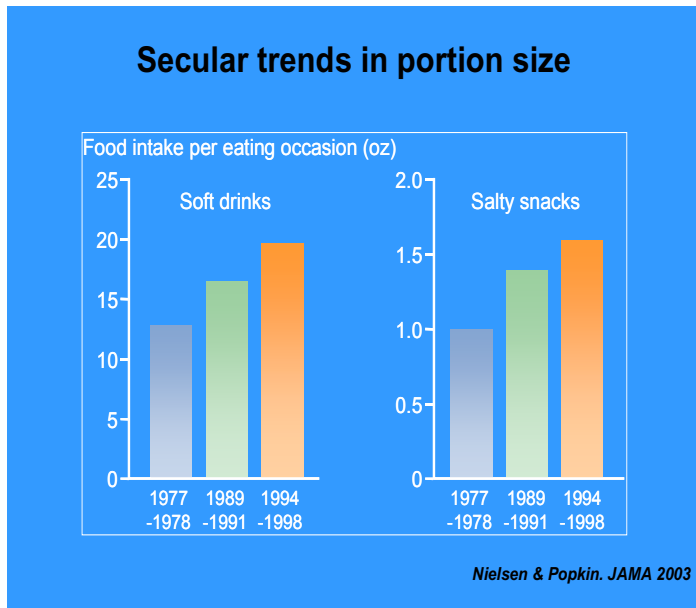


Figure 7

evidence. Food companies relentlessly bombard the consumer with messages to eat their foods. In the U.S. alone, the industry spent in 2000 about \$26 billion advertising and promoting food products and brands (Elitzak, 2001). Marketers are becoming increasingly sophisticated in developing promotional strategies and techniques. These are well rooted in psychological and sensorial research, which have revealed that consumers do rarely make rational choices, and that what guides the choices is not the cortex of the brain, but the limbic system, seat of emotions and instinctive responses (Fig. 8) (Walsh & Gentile, 2002).

THE POWER OF THE MEDIA

The technology of electronic media and the art of advertising have combined over the past 60 years to create very powerful tools of influence. The tools have proven capable of shaping attitudes, values and behaviours of large numbers of people.

The limbic brain is the primary target for marketers and advertisers because it is the seat of emotions

- emotion focuses the attention
- emotion determines what we remember
- emotions are essential ingredient in development of attitudes
- emotions are the basis of motivation
- the link between emotion and behaviour is a tighter link than that between thought and behaviour

Children and youth are most susceptible to influence, their brains are more malleable and their attitudes are more fluid

Walsh D: Slipping under the radar: Advertising and the mind, 2002

Figure 8

Food marketing aimed at children has increased dramatically over the last two decades, as the food companies have realized that children are good business. Not only the child lacks the ability to discriminate between programming and advertising up to 8 or 12 years of age, but children also have influence now over a considerable amount of money (McNeal, 1998). Children's spending power in the US doubled each decade of the 1960s, 1970s and 1980s and tripled in the 1990s. Children four to twelve years old spend and directly control at least \$24 billion a year in purchases, but they influence another \$500 billion in spending by their families and others (McNeal, 1998). One third of this money is spent on foods and beverages. The situation in UK provides a picture of what is the situation in Europe. Data show that the amount of money children spend on their way to or from school or at school has reached over 13.000 million pounds annually, mostly spent on junk food and on fast food (Fig. 9) (Clayton & Fewell, 2002). For these good reasons, a large proportion in the marketing campaigns specifically target children, linking food brand names to toys, games, movies, clothing, collectibles, etc.. The great majority of TV advertising promotes pre-sugared breakfast cereals, soft-drinks, confectionery and savoury snacks. The average American child views more than 40.000 TV commercials each year, with more than half of the ads promoting high-calorie foods and beverages. But child-oriented strategies also include marketing in schools, Stealth Advertising through Product Placement, and Pester or the so called "Nag Power", i.e. counting on children to wear their parents down and on parents to give in.

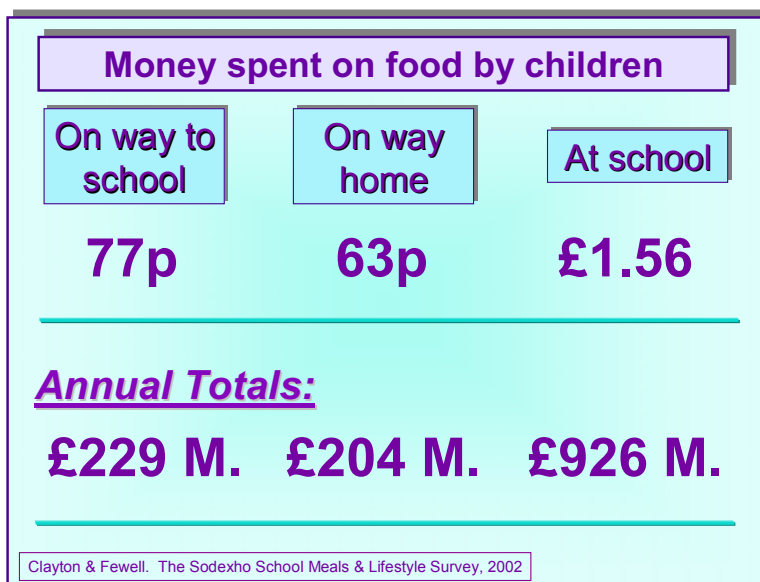


Figure 9

For what concerns physical activity, the factors that have led to its substantive reduction in modern life are many and complex. One of these is indeed associated to the built environment, as it impinges on travel and physical exercise behaviour by discouraging walking, cycling and use of staircases. The perception of safety on the roads, in parks and in staircases, the distance that needs to be traveled to the job site or to the stores/parks/schools, availability of parking spaces, the climate, the presence of sidewalks, the steepness of the roads, the time factor and many other diverse factors represent a powerful disincentive to cycling or walking. However, the relationships between these and manner of displacement is far from being straightforward. The assumed direction of causality and many other issues have not yet been resolved, and almost no data exist on the effectiveness of public health initiatives (Ogilvie et al., 2004). Purposive exercise in school, at home, in gymnasiums and in open air sports is prevalently practiced by

privileged and especially motivated subgroups, the wealthy and educated. Opportunities to exercise (accessibility, affordability and awareness of its health value) are low and competing needs (time pressure) and preferences (TV viewing, other passive leisure) are many and powerful.

The New Strategies

The new strategies of obesity management need fundamental measures to detoxify the adverse environment. The broader determinants of overnutrition and sedentary life styles must be addressed and the first priority should be to empower the consumer to make choices free from any type of constraints. Unless the obesogenic environmental factors are modified, educating the public is unlikely to make any appreciable impact. To be effective, substantial political will and investment is required. Given the complexity of the environment, the involvement of a large number of stakeholders from diverse segments of society is a crucial prerequisite (Fig.10).

The Angelo Strategy to Exemplify the Environmental Complexity of Obesity Prevention						
Environment	Physical		Economic		Socio-cultural	
	Food	Activity	Food	Activity	Food	Activity
Micro settings	Proximity of fast food outlets	Street safety	Canteen subsidies	Fees for sports centres	Family eating	Peers' activities
Macro settings	Food laws	Town planning	Subsidies	Petrol tax	Food advertising	National sports

Adapted from Egger G and Swinburn B. BMJ, 1997, 315, 477-480

Figure 10

State and local governments at many levels can and must play a role, as many of the issues involved in the prevention – such as actions on street and neighborhood design, plans for parks and community recreational facilities, locations of retail food facilities - need decisions by the county, city or town officials. The food, beverage, restaurant, entertainment, leisure and recreation industries share in the responsibilities for obesity prevention and may be induced in supporting this goal (Koplan et al., 2005). Conceptual frameworks for understanding economic influences on diet and physical activity must be put in place, appropriate strategies and agents of change identified, economic efficiency, effectiveness and feasibility estimated, etc.. Several such frameworks have been proposed. One of the earlier example of action structured at multiple levels is that proposed by Egger and Swinburn in their Angelo framework (Fig. 11) (Egger & Swinburn, 1997). Other proposals such as HELPSAM model, but also SLOTH and SESAME, are more recent examples (Fig.12) (Haglund et al., 1996; Pratt et al., 2004), but basically they all say the same thing: namely think wide, encompass the system, take on board immediate and removed factors, tackle with the multiplicity of the constraints, calculate the effectiveness and the cost-effectiveness of various environmental, policy and economic strategies.

The Health Promotion Strategy Analysis Model, HELPSAM

Implementation	Approaches	Actors	Target groups	Levels/arena	Procedures & tools	Expected outcomes
Strategies						
Policy development						
Regulation						
Reorienting organizations						
Advocacy						
Alliances/awareness						
Mobilizing/empowering						

Haglund, Pettersson, et al. 1996

Figure 11

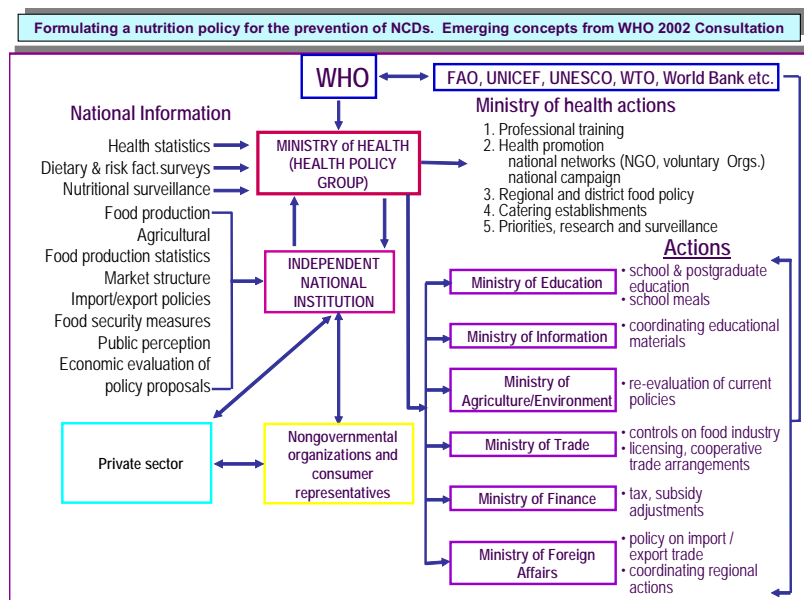


Figure 12

Conclusion

The rapid development of obesity in genetically stable populations can be attributed to environmental factors that influence dietary habits and lifestyles. To curb the unfolding epidemic of obesity, we should understand the processes involved and define strategies encompassing the various factors that promote consumption of energy-dense diets and sedentary lifestyles. Viable and sustainable alternatives should be offered to the public. This requires the active participation of a large number of stakeholders.

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Nutrition communication in the context of consumers' everyday life

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The connection between eating and health is probably one of the most important and discussed aspects of our present food habits. Yet, the choice of food is not a simple matter. Some claim that the traditional, self-evident rules or conventions of choice and food patterns have been disrupted. Our changing eating patterns have opened up new possibilities and made food choice more complex than ever.

However, it seems that consumers often have quite a lot of factual nutrition knowledge. It is the application of this knowledge that can be difficult. Although people strive for 'good' and 'healthy' eating, everyday practices are often a bargain between 'good' food and 'bad' food. Therefore, I suggest that successful nutrition communication must better relate to consumers' everyday life. Nutrition communication should be formulated in connection to the practices and skills of everyday life. Moreover, these practices and skills vary among consumer groups.

One problem is that nutrition recommendations and communication should be at the same time solid and flexible. Solid in order to be simple and understandable. Flexible in order to give room for individual solutions. Successful communication is also a question of trust. Whom or what do people trust? Research will produce new information about 'right' and 'correct' nutrition that might challenge previous recommendations. The increasing variety of alternative views is also a challenge to conventional ideas.

Nutrition education in Finland has been successful to a certain degree. On one hand, longitudinal studies show that Finns have changed from full fat milk and butter to skimmed milk and vegetable oil spreads. On the other hand, people now consume more cheese and sweets.

In order to ponder how nutrition communication relates and could relate with consumers' everyday practices, I show some samples of Finnish nutrition communication. The examples are visualizations of the national nutrition recommendations, the food and cooking section of a popular morning TV show and a series of leaflets promoting consumption of especially bread and fibre in general.

Finally, I discuss the painfulness of information. How much can people absorb and how much should people know? An overload of information can be an obstacle in obtaining intelligible, applicable, tangible and attainable nutrition information.



Johanna Mäkelä

Expertise

Food sociology, consumption sociology, meals, styles and practices of eating and their changes.

Research programmes
Consumers in a changing food economy.

Projects

Acceptability of functional foods among different consumer groups
Consumers, confidence and the food chain

NUTRITION COMMUNICATION IN THE EVERYDAY LIFE OF THE CONSUMER. SOME EXAMPLES FROM FINLAND

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Healthy eating and the dilemma of food choice

The connection between eating and health is probably one of the most important and most frequently discussed aspects of contemporary food habits. In particular, the increase in obesity among Europeans and especially children, in Finland, too, has triggered off widespread concern for their future health (Helakorpi et al., 2004). During the past few decades several campaigns promoting healthy dietary habits have been launched in Finland, as in other countries.

Yet choosing food is not a simple matter. Some claim that the traditional, self-evident rules or conventions of choice and food patterns have been disrupted (Fischler, 1990). Our changing eating patterns have opened up new options and made choosing more difficult than ever. The globalisation of our diet is concretised on the food store shelves. Once seasonal summer products like strawberries and new potatoes are now available in late winter already. New functional foods can blur the idea of general healthy eating by targeting certain bodily functions. Food scares have become part of everyday life for the European consumer, who has begun thinking about the ethical consequences of what he eats. Making healthy food choices is therefore even more complicated, since the healthfulness of eating is only one dimension of food choice in the complex web of opportunities and resources in life today (Mäkelä, 2002).

Nutrition in Finland

Nutrition education and communication have to some extent been successful in Finland. In the 1970s, the focus was mainly on fat and salt. The large-scale 'fat' education is epitomised in the well-known North Karelia project. Its aim was to improve cardiovascular health. Since then the Finns' eating habits have on the whole drawn closer to the nutrition recommendations. The intake of saturated fats has decreased remarkably. Longitudinal studies show that the Finns have adjusted their consumption baskets away from full-fat milk and butter towards skimmed milk and vegetable oil spreads. The consumption of salt is slowly decreasing as well (Nutrition in Finland, 2005). The National FINDIET 2002 Study (Männistö et al., 2003) shows that women consume more vegetables, fruit, berries and cheese than men, whose diet includes more potatoes, milk, meat and sausages when adjusted for energy intake. The best nutritional quality diet is to be found among middle-aged and older women.

Attention should, however, still be paid to the quality and the proportion of both fats and carbohydrates. Notice should also be taken of the energy obtained from alcoholic beverages, to the consumption of fruit and vegetables and the intake of vitamin D. Exercise has recently been introduced as an important companion to healthy food habits.

From facts to acts

To a certain degree, the Finnish case of changing food habits seems to prove the effectiveness of nutrition education and communication. Longitudinal studies show that the Finns have listened to the experts. However, it seems that new problems are both emerging and being recognised. Yet the changes taking place in the past three decades could not have been possible had consumers not known at least the basics of healthy eating. On the one hand, it seems that consumers often have considerable factual nutrition knowledge.

On the other hand, it is the application of this knowledge that can be difficult and prone to misunderstanding.

One example of a misinterpretation is the classification of vegetable oils as 'light' (Palojoki, 1997). Fragmented information can result in consumers putting together two separate snippets of information and drawing the wrong conclusions. Vegetable oils do not feature in traditional Finnish cooking but have been promoted as healthier than butter. Furthermore, the Finns have been instructed to 'lighten' their diets. As a result, some consumers have concluded that as oil is healthy and light food is healthy, oil must make their food 'lighter'.

According to Päivi Palojoki (2003), nutrition information consists of three elements: factual knowledge, value knowledge and practical knowledge. One of the problems at the moment is possibly that people do have factual knowledge but not enough knowledge to put these facts into practice. In order to reach consumers, communication should be able to take into account these different aspects of nutrition information. Nutrition communication should be formulated in the context of everyday practices and skills. Moreover, these practices and skills, and even know-how, vary among consumer groups. Hence, successful nutrition communication must relate better to the consumer's everyday life.

In order to see how nutrition communication does and could relate with consumers' everyday practices, let us examine some examples of Finnish nutrition communication. The examples are illustrations of the national nutrition recommendations – material promoting the consumption of bread in particular and fibre in general, and the food and cooking spot on a popular morning TV show.

Circles, triangles, plates and pyramids

The first examples are dietary models of the Finnish nutrition recommendations made by the National Nutrition Council, an expert body under the Ministry of Agriculture and Forestry and celebrating its 50th anniversary in 2004. The Council is responsible for the Finnish Nutrition Recommendations and Action Programmes related to the recommendations. It lists as its aims to decrease the total intake of energy, salt and fats and especially of saturated fats and to increase the intake of carbohydrates and fibre. It also draws attention to the rising consumption of sugar and alcohol, and is promoting exercise along with healthy dietary habits.

Nutrition recommendations have long been presented and popularised as pictures or figures. Usually these figures include pictures of actual foodstuffs. The food circle was introduced in the 1950s (Fig. 1), the food triangle in the 1970s (Fig. 2). The latest addition, in the 1990s, is the plate model showing the recommended amounts of different foodstuffs as a plate with three sectors (Fig. 3). These three models are all used in the current nutrition recommendations of 1998. The next, updated recommendations will be published in 2005 (VRN, 1998).

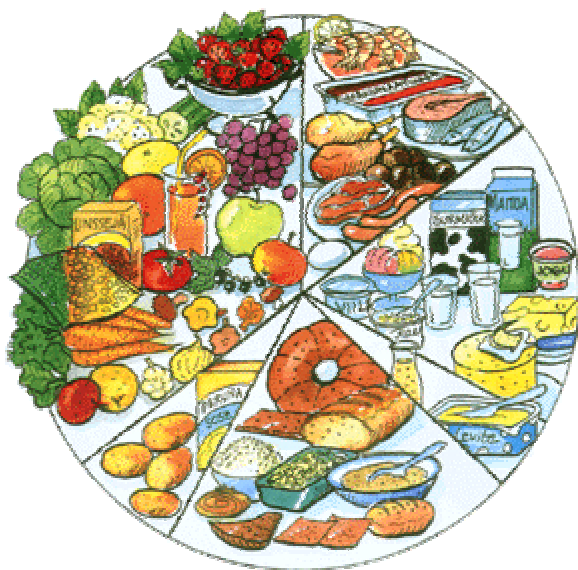


Figure 1 The food circle of the National Nutrition Council

The food circle with its six sectors reflects the variety and the proportion of different foodstuffs in a recommended diet. It also aims to describe the importance and use of different foods, and it incorporates the idea of basic and supplementary food. In other words, the most important ingredients of a healthy diet are at the bottom of the triangle.



Figure 2 The food triangle of the National Nutrition Council

The plate is the simplest of these models and is clearly related to meals. Its purpose is to act as a guideline for constructing an actual meal with vegetables, potato/rice/pasta and fish or meat in suitable proportions supplemented with bread, low-fat milk and berries or fruits as a dessert.

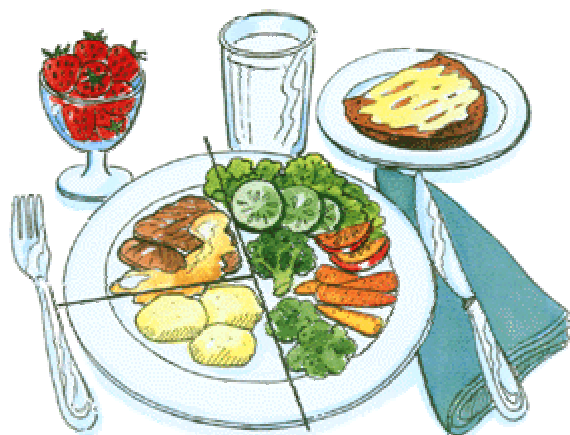


Figure 3 The plate model of the National Nutrition Council

The models created by the National Nutrition Council are probably familiar to all Finns. They are frequently used in nutrition education in schools and by extension organisations. The plate model can, for example, be found on the cover of the nutrition guide issued by the Marttaliitto, one of the oldest Finnish extension organisations.

In addition to fat quality, recent Finnish nutrition education has focused on carbohydrates. Sourdough rye bread was traditionally the staple bread in Finland, but the modernisation of Finnish food habits has also whitened the bread. However, the latest research results on the beneficial properties of rye have increased interest in rye bread. Bakeries are engaging in active product development. Multigrain breads with rye are popular, especially if they are pre-sliced.

Finnish Bread Information is a private organisation promoting the use of bread and cereal products in order to enhance the quality of the nation's nutrition, and it has accordingly produced a wealth of nutrition education material. The increasing focus on fibre intake is naturally an important part of its nutrition communication, but it has also published a leaflet (The new Finnish nourishment guide, in Finnish) giving general guidelines.

The leaflet includes yet another variation on the popular triangle or pyramid theme. On the cover is a pyramid superimposed on the USDA food guide pyramid (Fig. 4). This leaflet is also available in Swedish and there is another leaflet for vegetarians.

Ruokapyramidi

2000 kcal:n energiataso



Figure 4 The food pyramid of Finnish Bread Information

Triangles and pyramids are popular means of promoting healthy eating, yet even they are open to misinterpretation. The circle is too general for use in everyday food selection, and the top of the triangle or pyramid has sometimes been interpreted as being most important.

The USDA pyramid has recently caused considerable dispute since the introduction of Willett's Healthy Eating Pyramid (e.g. Willett & Stampfer, 2003) that placed the glycaemic index of carbohydrates, different types of fats and the role of supplements and exercise on the healthy eating agenda. The power of these pictures is nevertheless strong, since alternative diets often use these familiar formats. The four food groups of the living foods diet are, for example, presented in a pyramid format similar to that of the 'mainstream' recommendations (Safron, 2003). The USDA pyramid is likewise being updated.

Putting knowledge into practice

"She cooked with great professionalism and sympathy, she prepared both everyday and festive dishes, she gave valuable advice and tips, she introduced new products. (After she quit) I do not watch the morning show anymore." An admirer of Kati Nappa in an Internet chat group www.jippii.fi.

The challenge facing all nutrition communication directed at the general public is how to put the good advice into practice; how to promote healthier food choices, cooking methods, food habits. One person can play a vital part in putting new knowledge into practice. In Finland, one such person is Kati Nappa, a well-liked and influential food journalist and home

economist who has been promoting healthy food habits for decades. She is probably best known for her food and cooking spot Katin keittiössä (In Kati's kitchen) in the popular morning TV show Hyvää huomenta Suomi (Good morning Finland) on MTV3. She has now retired from the TV show but still gives her recipes on the local radio.

Kati Nappa's TV performances and recipes have been a very concrete and efficient way to promote healthy eating and healthy cooking methods. The book based on the show is sold out. Many people watched the show at least partly because of her. The power of her approach lies in its balanced mix of tradition, novelty, clever shortcuts for busy days, seasonality, and an appreciation of Finnish foodstuffs and traditions.

In a way, the understanding of foods boils down to cooking. Kati Nappa's recipes meet the current nutrition recommendations on a very tangible level, telling how to prepare healthy dishes in real life.

The recommended fibre intake is usually stated in grams (e.g. 25-35 grams). Consumers may, however, have difficulty translating their daily consumption of bread, cereals and the like into grams of fibre. To help solve this problem, Finnish Bread Information has introduced a fibre test on its website (<http://www.leipatiedotus.fi>). This gives 'fibre points' according to the information fed on the form. The results are four ordered outcome categories, each associated with implied advice that varies from 'you are doing great' to 'your diet needs an overhaul'. This is yet another relatively concrete way of evaluating personal food habits.

The painfulness of information

Life today is full of information. The question is: how much should and can people know? Too much information can be an obstacle to obtaining intelligible, applicable, tangible and attainable nutrition information. People grow wary and are unable to absorb new facts.

One problem is that nutrition communication should be both solid and flexible. It should be solid in order to be simple and understandable, and flexible in order to leave room for individual solutions. People have different diets and life situations. Successful communication is also a matter of trust. Whom or what do people trust in the information society? Research will produce new knowledge of the 'right' and 'correct' nutrition that might challenge previous recommendations.

Yet people have a tangible longing for straightforward advice on what constitutes the best possible diet. The bewildering variety of alternative views is also a challenge to conventional ideas. People today have an almost endless choice of diets (Sobal & Maurer, 1999). The popularity of various alternative diets could be said to lie in their relatively strict and precise manuals, which may act as lifelines in a world of insecurity and infinite variety.

The continuum of eating

Although in principle people strive for 'good' and 'healthy' eating, everyday practices are often a bargain between 'good' healthy food and 'bad' unhealthy food. On the level of ideals, healthy eating is often strongly underlined by fairly strict definitions of 'good' and 'bad' food. Everyday practices reduce the contradiction to a continuum on which definitely 'good' and 'bad' foods keep company with 'not so bad' and 'not so good' foods.

The process of 'educating' people is sometimes slow and even painful. The dialogue between old habits and new ideas is not always smooth. The willingness to follow nutritional and other recommendations meets different obstacles. Firstly, there are problems in understanding the given dietary guideline and education (Anderson et al., 1995; Palojoki, 1997). Secondly, there is a contradiction between attitudes and everyday eating practices. Despite the information about healthy eating, people are not willing to follow the instructions. The encounter of ideals and practices reveals a contradiction between beliefs and behaviour (Calnan, 1990).

In order to be successful, nutrition communication must relate to the everyday life, skills and practices of the consumer. The existing knowledge and communication about healthy eating are based on scientific research that speaks a very different language from the consumer's. The results of research must therefore be translated into the language of the layman. Furthermore, the messages should speak of practices familiar to the consumer. The question, however, is who the consumer is.

One of the problems of nutrition communication is that it is often addressed to all and is therefore particular to none. Even though the EU has now defined the average consumer as 'reasonably well informed, reasonably observant and circumspect' (COM, 2003), the real test for nutrition communication is its ability to reach people in a way that makes consumers, citizens, people feel that this knowledge really concerns them and that they should act upon it. The problem of averageness is that we rarely measure up to it. The average consumer seldom exists in real life but the world is probably full of people who are in some sense below or above the average. The challenge for nutrition communication is therefore deciding how to be more circumspectly tailored and customised for consumer groups with different needs and resources and living in diverse worlds.

Pictures by the courtesy of The National Nutrition Council in Finland and the Finnish Bread Information.

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Poster Session

"Methods and approaches to consumer research"

Consumer's knowledge on probiotics and consumption of these products in the city of Thessaloniki, Greece

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The aim of the study was to analyse the consumer's knowledge on probiotics, their behaviour concerning the consumption of these products and to investigate whether this consumption was incident or it was based on nutritional knowledge on their functionality.

The sample consisted of 103 consumers (52 female and 51 male) aged 20 to 60 years old living in the city of Thessaloniki. Their knowledge and attitudes to probiotics was assessed from a questionnaire consisted of 22 questions. The results showed that although most men and women were not familiar with the term probiotics (71 % and 82 %, respectively) they consumed probiotic milk products (63.5 % of men and 57 % of women). 54 % of men and 51 % of women knew what the term "live yoghurt" meant. Kefir was also high in the preference of men. Only 25 % of men know that probiotics had a beneficial effect to health. Women (50 %) were more aware of this property of probiotics. There were also misconceptions concerning fat and energy content of probiotic products. Concerning age and educational level consumers of 20 – 39 years old and those of higher level of education had a better knowledge on probiotics.

Consumers, nutrition and organic food

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This research is part of a BMBF project “Regional wealth reconsidered - the contribution of the organic food sector to quality of life”. The project as a whole deals with typical questions of social-ecological research. More information: www.regionalerwohlstand.de.

The poster presents one part of this project dealing with the following question:

- | What expectations do consumers have regarding organic agricultural and nutritional products and services in Berlin-Brandenburg?
- | Depending on gender
- | Depending on social standing

The research is carried out by means of “type-specific” focus groups with participants who are active in a variety of sports in Berlin. The participants were selected with of a typology questionnaire.

The project investigates six types of social groups: (using the original German terms). The typology questionnaires used are:

- | „Etablierte“ (Type: success valuing, realisation oriented and exclusivity demanding) (Fig. 1)



Figure 1: „Etablierte“

„I am pleased that I have followed a career after studying. Having ambitions and planning for the future was worth it: with my current income and material situation I do not have to worry about money. I enjoy my free time and also the luxury and individuality that I can afford. I like to go to the theatre, the opera or museums, to learn about interesting things in life and read

relevant newspapers, TV programs and the Internet. I get strength primarily from my family life and my circle of friends and acquaintances.“

| „Konservative“ (Type: Humanistic duty oriented, conservative and cultivated) (Fig. 2)



Figure 2: „Konservative“

„It is good that I can look forward to my retirement without too much concern (or I can enjoy it now). I have reached my life goals: involving myself in a harmonious family life and becoming financially secure. The so-called traditional values and an all round education are very important to me. A sense of duty and responsibility is fundamental to society. I have concerns about many of the developments in politics, society and the economy. I am pleased that I have a stable social environment and also have many other interests.“

| „Bürgerliche Mitte“ (Type: status oriented, professional / social integration aspiring, and stability and harmony aspiring) (Fig. 3)



Figure 3: „Bürgerliche Mitte“

„Family, relationships and friends take the first place in my life. Society is very important to me and I therefore engage enthusiastically in organisations and/or undertake a lot of activities with others. I like to get to know new people and I am open to new technological innovation. I have a positive view on life, like to take on responsibility and am pleased to have achieved a certain standing and quality of life. Hopefully I can retain both of these for a long time. I could bear a social decline only with difficulty. Life experience and education, as well as a well-kept appearance, are important to me.“

| „Postmaterielle“ (Type: Post-material value oriented, globalisation critical, and intellectual) (Fig. 4)



Figure 4: „Postmaterielle“

„It is important that I have a good education. It allows me to have a lot of freedom, and above all the freedom to think and to have an independent opinion. For example, I am critical of current consumerism and globalisation trends. Financial independence and my career are important to me, but not at any price. I must be able to pursue personal development through my work. My family and my friends take priority as well as those in need of help, for whom I gladly make a contribution. In my free time, I like to read and to improve my education. I am interested in cultural opportunities and respected newspapers and magazines.“

| „Moderne Performer“ (Type: Unconventional intensive lifestyle living, multi-occupational, flexible and multimedia enthusiastic) (Fig. 5)



Figure 5: „Moderne Performer“

„My excellent education, my activities, my future planning and flexibility as well as my comparably high income allow that I lead an exciting life. I enjoy my independence and individuality as well as the opportunity to try different things – in my career, as well as in my personal life. Success and recognition are very important to me. I have a big circle of friends and I am often around new acquaintances. I get fulfilment from many different activities, whilst still being able to be spontaneous. I am enthusiastic for technology like multimedia, I like to play sport and take good care of my body.“

| „Experimentalisten“ (Type: Highly individualistic, self-contravening, spontaneous, and self-declared lifestyle avant-garde) (Fig. 6)

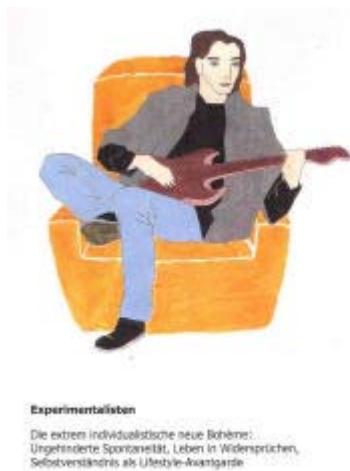


Figure 6: „Experimentalisten“

„Fun, friends, individuality and self-development are important goals in life. To achieve these one can and must try things out. I am very active during my free time and I am always open to new things. Political and social activities as well as creative activities play an important role. I enjoy the cultural life of this town and my large circle of friends. In my job, I have long-term goals and aim for recognition. I remain however an individual and try to keep as many options open as possible.“

The 12 focus groups use different visual and conversational methods. Every group works for example with multiple-choice statements: What does organic food mean to me? “Luxury, health, joy of life, a fraud or something that is not genuine or environmentally friendly.” (Fig. 7)



Figure 7: “What does organic food mean to me?”

Pictures were used for the question: “Do I associate these pictures with organic food?” (Fig. 8)



Figure 8: “Do I associate these pictures with organic food?”

The focus groups also discussed particular brands. (Fig. 9)



Figure 9: Brands

Expected results of the project are:

- overall understanding of the image of organic food
- advice on marketing and promotion strategies
- particular advice for the organic sector in the region with the aim to improve production and services.

At the moment the project is at the empirical phase.

References:

Illustrations 1-6: Jasmin Glasing in ECOLOG 2002: „Nachhaltigkeit kommunizieren – Bürger aktivieren“

NATIONAL FOOD CONSUMPTION SURVEY

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NVS II

Background:

The Federal Research Centre for Nutrition and Food conducts a nationwide food consumption survey (NVS II). The first representative NVS dates back 15 years and concerned only the old West German states. Since the last survey both the food supply and the working-, leisure- and consumer behaviour of the population changed markedly. New data are therefore necessary for planning prevention programs as well as for precise recommendations.

Objectives:

- to collect representative data on current food consumption patterns,
- to provide data on nutritional status and nutrition behaviour,
- to supply data on health parameters (BMI, physical activity),
- to analyse data on food level and nutrient content,
- to identify life style types and nutritional patterns,
- to generate innovative methods in the field of dietary surveys,
- to implement a revised version of the German Food Code and Nutrient Data Base ("BLS"),
- to initiate nutrition monitoring for Germany.

Methods:

In the *core module* 20000 German-speaking persons above 14 years will be interviewed (personal interview and questionnaire) nation-wide about food consumption and nutrition behaviour (for example nutrition knowledge, purchase, food preparation, health, nutrition style and leisure activities). In subsequent telephone interviews participants will give information about their current nutritional behaviour. The field phase will begin in spring 2005. The survey extends over 12 month to determine seasonal differences. Further questions, e.g. nutrition behaviour of special population groups, will be investigated in *supplementary modules*.



NVS-Team

Engaging the hard-to-reach: an evaluation of participatory methods for research with secondary school students

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Background & Objectives

The findings presented here focus upon research with young people, but are part of a wider study evaluating a range of participatory methods as a means to access the views of hard-to-reach consumer groups for inclusive participation in policy making. The research forms part of the UK government's Food Standards Agency's wider social research programme.

Specific objectives:

- To develop participatory methods to involve young people in the food policy making process
- To field test these methods in relation to school food policy
- To evaluate these methods in relation to their overall effectiveness and potential for use by the FSA

Participants & Setting

- Young people were identified as hard-to-reach because they are usually excluded from official consultation processes
- 300 young people aged 12-16 were engaged in consultation
- They were recruited at secondary schools in low income areas of London with high levels of students from minority ethnic communities, special educational needs and in receipt of free school meals

Study design

Young people were engaged in a two-stage consultation process on school food policy:

- Stage 1: classroom-based participatory appraisal type activities to access the range of young people's views
- Stage 2: small group work with volunteers outside the classroom using deliberative methods to focus more deeply on issues identified in Stage 1 with a view to the development of student authored whole school food policy documents and student-led school nutrition action groups
- Process from Stage 1 to Stage 2

Brainstorming→Prioritisation→Stakeholder identification→Planning for action→Implementation

Consultation methods: stage 1

Mapping students' experience of food in school - what do they like, dislike and want to change about food in school?



Consultation methods: stage 1

Poster for display in school cafeteria and library



Consultation methods: stage 2

Members of a school nutrition action group planning for change



Results

Stage 1 methods: Students were engaged by the participatory methods and rated them highly, in contrast to negative opinions expressed about more traditional methods such as questionnaires. Students varied with regard to which of the methods most engaged them but enjoyed the variety and overall friendly approach. Whole classroom work was resource intensive and it was difficult to reconcile participatory methods with control of the classroom.

Stage 2 methods: Small group work using deliberative methods was very highly rated by students. Groups worked effectively and delivered student authored whole school food policy documents and led in one school to the creation of a student-led nutrition action group.

Results

Whole school food policy: a plan of action for changes in the dining hall and to the curriculum

Policy:
Whole School Food Policy
Northbrook CE School

Taurton Road
Lee, Lewisham
SE12 8PD
020 8852 3191

<http://www.northbrook.lewisham.sch.uk>



Policy summary/objectives
To ensure that all aspects of food and nutrition in school promote the health and well being of pupils, staff and visitors to our school.

DOCUMENT PROCESS

Author	To change this to author name, see instructions	
Checked by	NAME:	DATE
Presented to staff	NAME:	DATE
Approved by governors	NAME:	DATE
Date for review (2 year cycle)	NAME:	DATE
Post holder responsible for review	NAME:	DATE
Date reviewed	NAME:	DATE
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Results

School nutrition action group: a student-led group that works with teachers, caterers and other officials to make changes



Conclusions

- Despite some cynicism, overall levels of interest were high
- Students valued the participatory processes and want more regular opportunities to give their views using these methods
- Small groups are more effective than the classroom at engaging young people and encouraging policy deliberations
- Schools are effective sites for consultation, but issues need to be linked to the curriculum
- There should be some broader benefits to schools from participation
- Cash incentives are not necessary for students, but informal incentives such as references and school credit for work are important
- Implementation of desired changes needs the commitment of other relevant stakeholders, such as local health officials and head teachers
- Accessing and involving the hard-to-reach takes commitment and resources if it is to be sustainable
- Closing the circle – it is important to report back to participants

The impact of food diversity on diet quality Better prediction of diet quality by capturing all aspects of diversity

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BACKGROUND

It is assumed that a high diversity of food in the diet generally has a positive impact on health related diet quality. Therefore nutritionists are interested in the assessment of food diversity. However, a standard concept for the measurement of food diversity was lacking until now. Counting different food items is frequently applied to measure food diversity in nutrition science. In recent years nutritionists recognized the failure of simple counting measures, because they neglect important aspects of diversity. These aspects are distribution and heterogeneity. Krebs-Smith et al. (1987) already emphasized that the impact of heterogeneity of nutrients in foods is crucial for the relationship between food diversity and diet quality.

OBJECTIVES OF OUR STUDY

The purpose of this work is to better understand the relationship between food diversity and diet quality. A new food diversity indicator is created, which takes into account all aspects of diversity: number, distribution and heterogeneity. This indicator is used to analyze the impact of food diversity and its different aspects on diet quality. Figure 1 shows three examples of random food choices and helps to understand why it is important to be aware of all aspects of diversity. One can ask which circle shows the most diverse food choices.




Aspects of diversity:	NUMBER	DISTRIBUTION	HETEROGENEITY
	5	unequal	2 different food groups (dairy, grain) Assumption 1: Diet quality low
	5	equal	2 different food groups (dairy, grain) Assumption 2: Diet quality better
	5	equal	5 different food groups (meat, grain, dairy, fruit, vegetable) Assumption 3: Diet quality best

Figure 1

Circle 1 represents a diet including five different foods, consumed in unequal amounts. Using simple counting methods, the diversity index is five and it would increase if more different foods are added. However, the distribution of foods is not equal: the segments of circle 1 reflect that the person consumes four units of milk, three units of bread and one unit of pasta, yoghurt and cheese, respectively. In addition the heterogeneity of the chosen foods is low.

That is because the foods derive from two different food groups (dairy and grain), represented by different shading. We assume that the diet quality of this food composition is low. Circle 2 counts five different foods as well, but the distribution of the chosen foods is different: this consumer chooses all foods in similar amounts, the foods are equally distributed. As in circle 1 heterogeneity is low, because the foods derive from only two different food groups. Nevertheless, it may be assumed that the diet quality of the food composition in circle 2 is better than that of circle 1. Finally, circle 3 reveals the largest diversity. It is composed of five different foods and the foods are equally distributed. These foods are from five different food groups. Therefore this diet has a higher heterogeneity and consequently circle 3 shows a more diverse food composition. This circle is assumed to have the highest diet quality.

METHODS

We use food composition data of the 4030 participants of the German Nutrition Survey of 1998. These persons were comprehensively interviewed about their diet of the past four weeks using a modified dietary history (DISHES – Diet Interview Software for Health Examination Studies, Mensink et al., 2001). With these data we construct a new food diversity indicator which includes number, distribution as well as heterogeneity of foods. Initially we construct a combined number-and-distribution-based indicator. Using multiple regression analyses we examine the impact of food diversity and its different aspects on diet quality. To measure diet quality we make use of both: (1) a deficient index consisting of 25 nutrients (Thiele et al., 2004) and (2) single nutrient indicators that indicate individual nutrient supply.

FIRST RESULTS

Regression Findings	R ² adjusted Significance level 1% for all values		
	Diet quality (1)	Retinol equivalent (2)	Vitamin K (3)
A: counting measure (number)	0,571	0,231	0,369
B: number-and-distribution-based measure	0,574	0,252	0,396
$\Delta R^2 A \rightarrow B$	≈0,5%	≈9%	≈7%

Table 1

Regression results indicate that the number-and-distribution-based measure explains the relationship between food diversity and diet quality slightly better than a counting measure. This enhancement is best seen when single nutrient indicators are analysed: E.g. to explain retinol equivalent and vitamin K intake the number-and-distribution-based measure is more appropriate as counting measures. The explained variance (R^2) of the number-and-distribution-based indicator is 9% higher for retinol equivalent and 7% higher for vitamin K than the R^2 of the counting measure.

CONCLUSION

Diversity measures that take into account number and distribution are more adequate to quantify the impact of food diversity on diet quality than counting measures.

OUTLOOK

It is intended to further improve the number-and-distribution based measure. In addition, we expect a better prediction of diet quality after inclusion of the heterogeneity aspect of diversity. We assume that diversity measures which take into account all aspects of diversity (number, distribution, heterogeneity) are better indicators for food variety and correlate better with diet quality.

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EXPENDITURES FOR TOBACCOS AS A PROXY FOR HEALTH CONSCIOUSNESS IN THE ANALYSIS OF FOOD CHOICES BASED ON HOUSEHOLD BUDGET SURVEYS

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Problem

A great variety of determinants is involved in the process of food choice, among which psycho-social ones are considered as very important. However, many dietary surveys do not include adequate data for corresponding analyses.

Household budget surveys (HBS), for instance, provide information on food acquisition of households, but hardly include any psycho-socially relevant data like consumers' knowledge, motives or attitudes. Nevertheless, HBS data are appealing for the analysis of food choices due to their generally huge sample sizes and their inter-nationally as well as inter-temporally comparable properties.

Objective & Hypothesis

In order to increase the value of surveys like HBS for the analysis of food choices, available proxies for directly unavailable psycho-social determinants are to be identified.

It is exemplarily hypothesized that expenditures for tobaccos, usually given in HBS data, are negatively correlated with health consciousness and could therefore serve as a corresponding proxy.

Model & Methodology

The Sandwich Theory of Nutritional Behaviour (SATHENUBE), regards food choices as results of decision processes affected by biological, anthropological, psychological, socio-cultural, economic and home economics related determinants framed by the individual situation (Fig. 1).

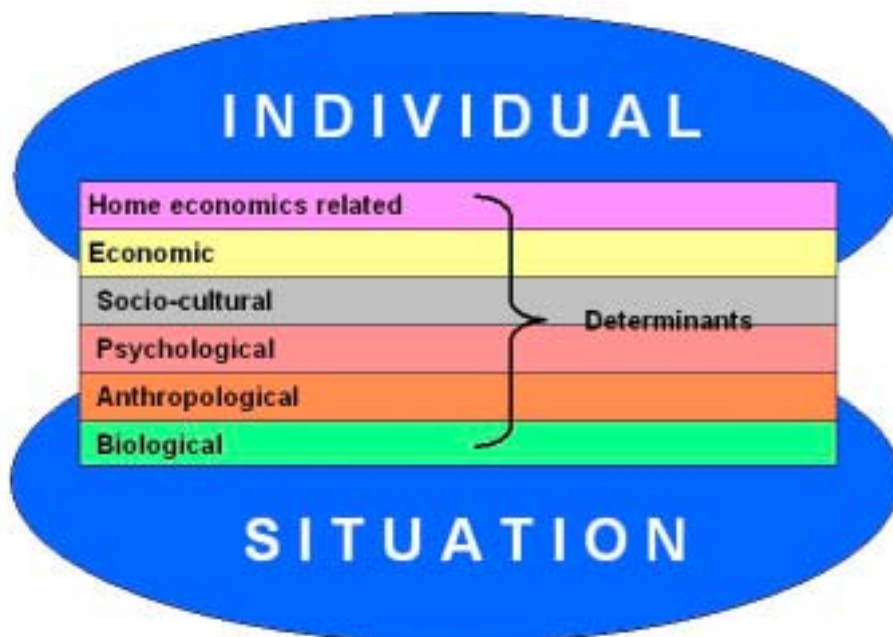


Figure 1: Process of food choices according to the Sandwich Theory of Nutritional Behaviour (SATHENUBE)

Based on the SATHENUBE, a regression model was developed relating households' food

acquisition of 105 different food items to their expenditures for tobaccos. The analyses were adjusted for age, gender, energy requirement, employment and education of the household members as well as for income and location of the households and the month of data assessment.

Data

Exemplarily, the 1998 German HBS was analysed. It provides data on the food acquisition of 12680 households based on 1-month diaries.

Results

In most cases, the expenditures for tobaccos are significantly inversely related to healthy food choices (Fig. 2).

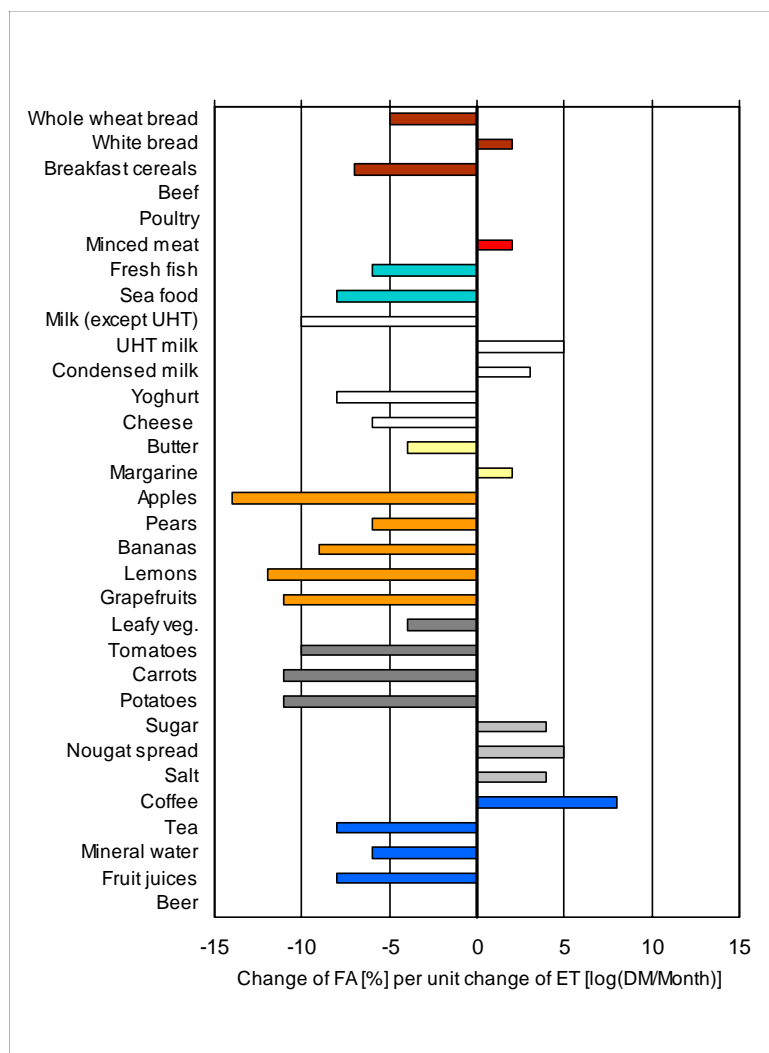


Figure 2: Adjusted* association of expenditures for tobaccos and the acquisition of selected foods (* c.f. section 3)

Conclusion

The expenditures for tobaccos appear to be a valid proxy for health consciousness and thus could help to investigate psycho-social determinants of food choices in datasets that do not directly include corresponding variables.

What methods are meaningful to determine the influencing factors of the „menu“ of older people?

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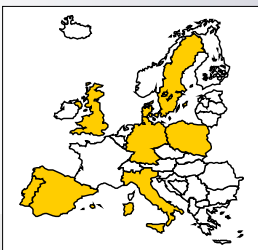
Methods

In the Senior Food-QOL study primarily qualitative methods are applied. In each country in the space of time from summer 2003 until autumn 2004 a total of 216 qualitative interviews are made with women and men, who are at least 65 years of age.

In the research area “procuring foods and preparing meals” a mix of different methods was used to determine in which way the “menu” of older people is influenced by living conditions, health status, economic situation, support systems and different constraints. For this purpose a group of 40 participants were observed on a shopping tour and interviewed concerning their food selection. A second, problem-centred interview took part in the home concentrating on the meal preparation process and determining conditions. Further methods used in this part are questionnaires.

The analysis will be made on two layers to identify typical patterns of behaviour and to answer the questions “how is food procurement of seniors like?” and “how do seniors prepare their meals?”.

Out of the results general strategies and proposals for seniors, social services, industry and trade are to be derived.



Background

Older people living in their own homes represent an inhomogeneous and increasingly important population group. Whilst many studies have shown that inadequate nutritional intakes are more common in older people, few have tried to identify the barriers to effective procurement and preparation of food.

Within the scope of the Senior Food-QOL study¹ data on relationship between food intake, nutritional well being, health and quality of life among older people is collected in 8 European countries. In the research area “procuring foods and preparing meals” the interaction between shopping, food selection, economic constraints and meal preparation skills in older people will be determined.

Conclusion

Concerning Germany the methods have generally gone well by the elderly. The questions out of the interview guide referred to every day life of the seniors.

The combination of the different methods was meaningful, because our subject matter was considered by different perspectives. Furthermore the statements of the interviewees could be verified. For the shopping event the interviewers had to be well-trained, because an observation and an interview were made at the same time (discreet behaviour, instruments had to be mastered).

The interview at home delivered good insights in the food-related behaviour of the elderly. In the interview at home as well as in the shopping interview the influence of the interviewers have to be taken into account for data analysis.

An observation of the participants during meal preparation would deliver additional insights concerning problems and would ensure the data out of the interview. But this might be an additional burden for the seniors and would therefore constrain their compliance.

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Factors which influence food choice and food habits of Romanian young people

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Introduction

The nutritional status of individuals, which influence in a major way their current and future state of health, is the result of balance between their nutritional needs and supply of nutrients available to them. Diets and their nutritional content, changed dramatically during the 20th Century as a result of agricultural and industrial progress, commercialisation of the food and changing lifestyles for different groups of the population. In the same time, there has been development of diseases where diet and physical inactivity are among the principal risk factors (Mitchell, 1997; Societe Francaise, 2000).

In adolescence, the health impact of nutrition is vital. During the rapid growth spurts adolescence have increased energy and nutrient needs. Unfortunately, many of them choose relatively cheap sources of energy, such as large amounts of fat and sugar, potentially leading to micronutrient deficiency, obesity and dental caries (Societe Francaise, 2000).

The food habits of adolescents are important not only in ensuring an adequate diet to support growth and development, but also in developing lifelong patterns for maintaining of health. People affected by eating disorders and inappropriate eating patterns develop them often at this stage of their lives (Baranowski et al., 1999; Birch, 1999; Societe Francaise, 2000).

Hence, by influencing young people food-choice, we can improve their health and quality of life. But what makes young people choose their food? The factors influencing their choice are many and can vary from country to country. This is why, the objective of our study was the assessment of factors, which influence food choice and food habits of Romanian young people, in order to better understand how they can be helped to have a healthy nutrition.

Methodology

The data were obtained from a cross-sectional study conducted in 2003/2004 in 2 counties (Cluj and Hunedoara) situated in Nord-West part of Romania. In each county the study was performed in the capital of the county and in one rural area. In each town there were chosen 2 high schools and 2 secondary schools. In the rural areas there were only one secondary school and one high school in each area and the study was performed in these secondary and high schools. From each secondary and high schools participating in the study were chosen at random 1-2 classes for each educational level. The study sample consisted of 803 students aged 11-19 years old (496 from urban areas and 307 from rural areas).

Self-administered questionnaires were distributed and collected by the research team. Completion of the questionnaire took approximately 50 minutes and was carried out in the classroom. Teachers were present in the classroom during the data collection, but they stayed in the front of the class and they did not take part in the questionnaires' collection in order to assure confidentiality. Consent to participate was obtained from the direction of the schools, since this is the standard procedure in Romania.

The questionnaire focussed on lifestyle of adolescents and included a section with questions about their food habits and different environmental and individual factors which influence their food choice and food habits.

Results

Individual factors

Table 1 shows that more than 80% of the subjects considered that healthy food means a diet rich in vegetable and fruits, without to be noticed a statistically significant difference between subjects from urban and rural zones or between secondary and high school students. In opinion of around one of two subjects eating healthy food means avoiding sweets and eating food prepared in hygienic condition. Fewer subjects mentioned avoiding fat and avoiding fried food as components of a healthy diet; statistically significant students from high school agreed more with this issue than secondary school students.

Table1: What means healthy food in subjects' opinion

Knowledge	Urban		Rural	
	Secondary school (N=261) %	High-school (N=235) %	Secondary school (N=128) %	High-school (N=179) %
Diet rich in fruits and vegetables	81.9	76.3	81.7	83.1
Avoiding fat	35.6	43.0	27.5	45.5
Avoiding fried food	22.1	41.5	17.6	29.9
Avoiding sweets	45.6	43.0	38.9	40.3
Food prepared in hygienic condition	56.4	54.8	52.7	66.2

Around two of three subjects declared that they tried to eat healthy food quite often and took in consideration frequently this issue when they bought a food product (Fig. 1). Instead of this, as shown in Figure 2, 3, and 4 less than 50% pay a real attention on the quantity of fat from the food or are concerned about the quantity of sugar and salt from the products they consume. It seems that the secondary school students perceive themselves more preoccupied of the quantity of salt and sugar from their food than the high-school students.

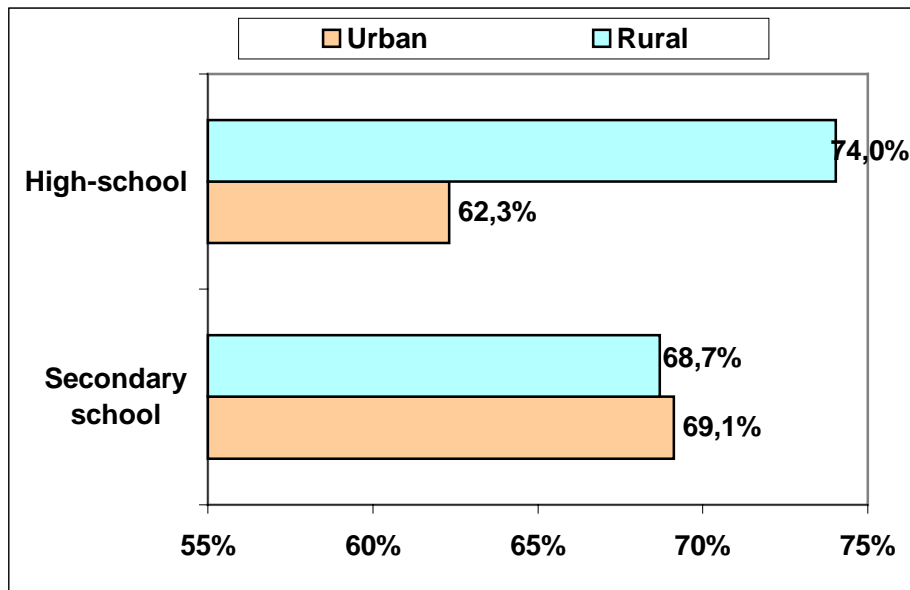


Figure 1: Subjects who said that they try to choose healthy food

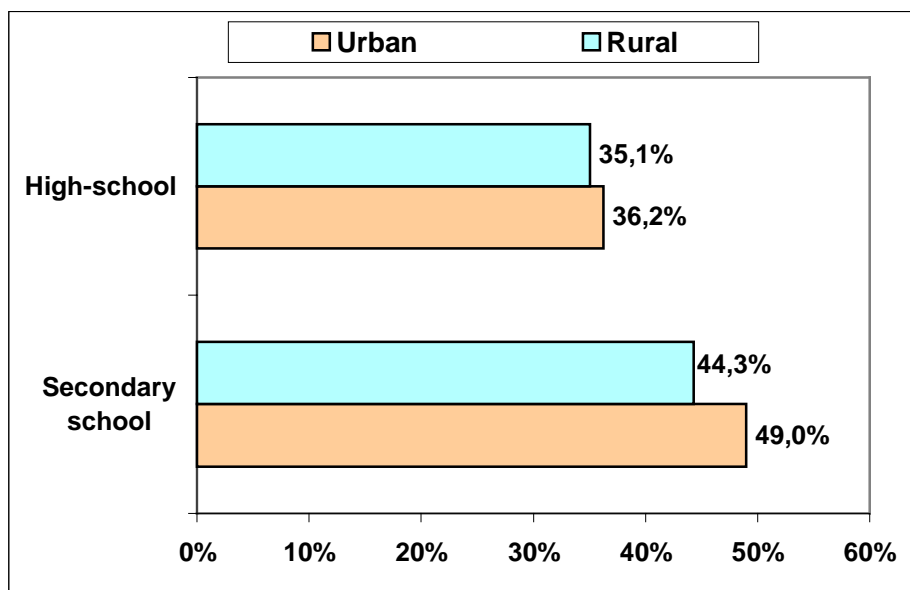


Figure 2: Subjects who pay attention to the quantity of fat

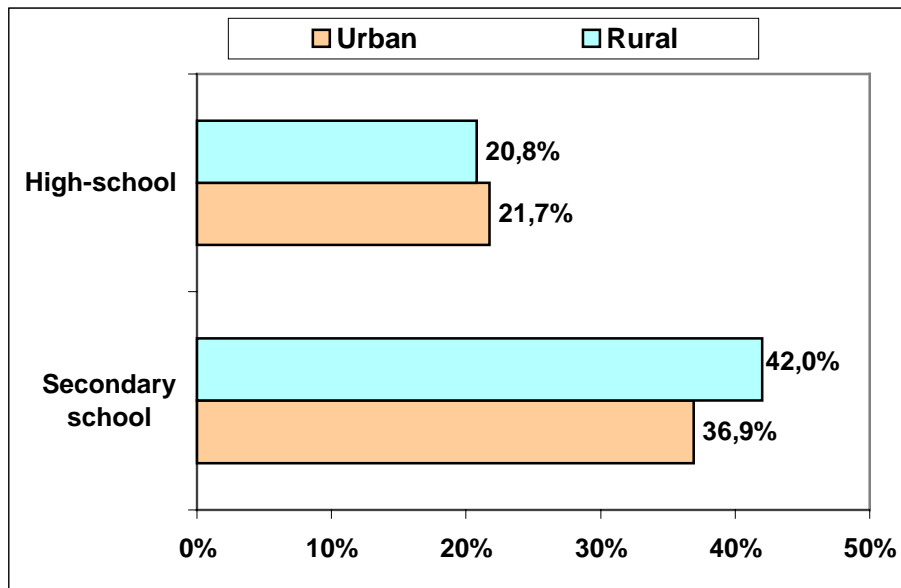


Figure 3: Subjects who pay attention to the quantity of sugar

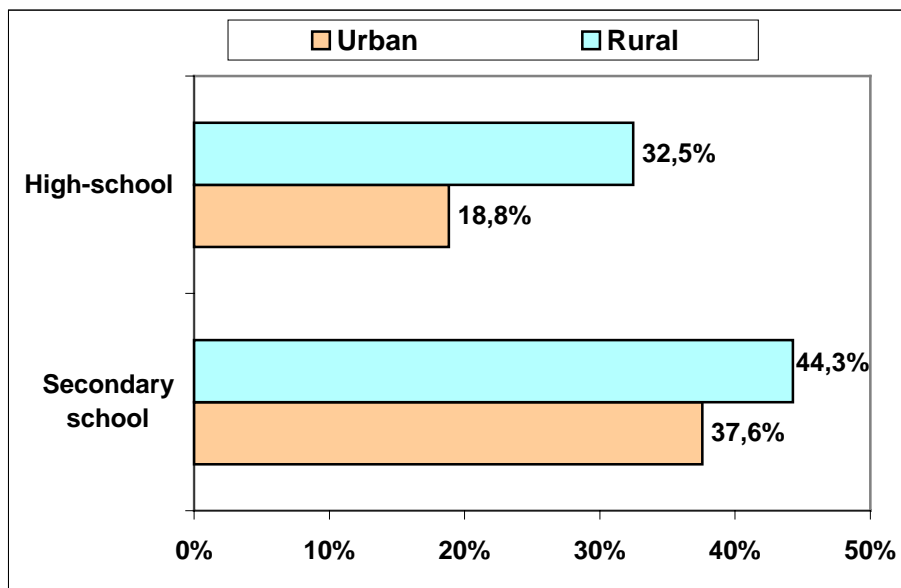


Figure 4: Subjects who pay attention to the quantity of salt

In fact, many students don't have appropriate knowledge regarding food, nutrition and health, but 90.9% declared that they would like to know more, health professionals representing for them the most trusted source of information about nutrition.

Cultural background

As shown in Table 2, the cultural factors have an important influence on food choice and eating patterns of young people, the traditional dietary patterns of this region of Romania being present among study subjects. Many students prefer to eat pork and chicken meat, while the fish meat is very rarely consumed. The students eat frequently white bread, but not integral bread and cereals. They consume quite often potatoes, sweets and soft drinks, while one third of them reported eating fruits and vegetables less than 3 times/week. 4.2% of

students from urban areas and 6.7% of students from rural areas declared they do not eat meat and meat products.

Table 2: Food consumption of study subjects

Food	< 1/week %		1-2/week %		3-6/week %		Daily %		More times /day %	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Pork meat	27.0	31.4	40.9	31.4	24.5	22.7	5.0	7.2	2.5	7.2
Beef meat	59.3	69.9	30.3	20.4	8.8	4.4	1.1	3.4	0.5	1.9
Chicken	22.9	34.8	44.1	37.2	27.7	18.8	3.1	4.8	2.2	4.3
Fish	77.1	64.7	16.9	21.7	4.7	7.7	0.7	2.4	0.5	3.4
Meat products (salami, sausages)	20.9	19.8	22.7	17.9	34.1	30.9	11.9	15.5	10.5	15.9
White bread	7.2	11.1	5.9	6.3	9.5	8.7	11.7	15.0	65.8	58.9
Integral bread	67.9	76.8	9.4	11.6	9.5	2.9	4.3	2.4	8.8	6.3
Cereals	63.6	62.0	19.8	16.6	8.8	13.2	3.6	3.4	4.1	4.9
Potatoes	8.6	15.5	26.3	24.2	48.1	35.7	8.8	6.8	8.1	17.9
Vegetables	13.9	22.7	26.7	23.2	39.3	31.9	10.1	8.7	10.1	13.5
Fruits	8.8	18.4	19.5	9.2	34.6	28.6	15.0	17.3	22.2	26.5
Sweets	10.6	16.4	22.0	20.8	35.9	19.3	12.6	17.4	18.9	26.1
Soft drinks	15.3	16.1	21.8	6.5	33.9	24.2	10.8	23.7	18.2	29.6

Familial environment is also important in influencing food habits of secondary and high school students. In both urban and rural areas more than 90% of the secondary school students as well as high-school students eat breakfast, lunch as well as dinner at home. In the same time, the parents represent for 84.5% of them the main source of information regarding food and nutrition. On the other hand, 31% of them said that when they eat at home they prepare their meals quite often by themselves. One fifth of students declared they eat in fast-food restaurants more than two times a week; no statistically significant differences were noted between secondary and high school students regarding this pattern, but it seems that it is more popular in urban zones than in rural zones.

Socio-economical factors

The socio-economical factors are also very important. The Figure 5 shows that around two third of the subjects declared that the price is an important issue, which they take in consideration when they choose a food product. In the same time, Figure 6 shows that there were subjects who declared that there were moments in the last month when their family had no enough money for food.

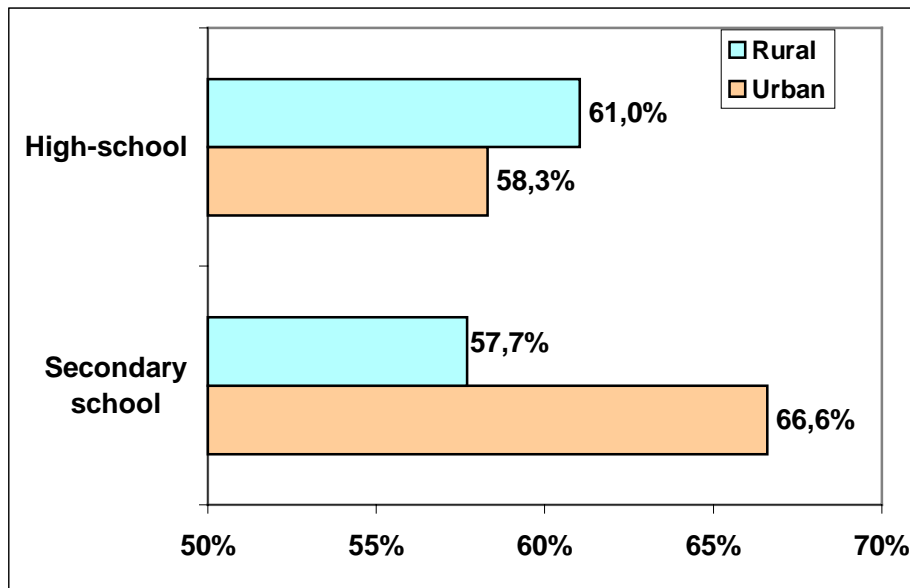


Figure 5: Subjects who take often in consideration the price when choosing a food product

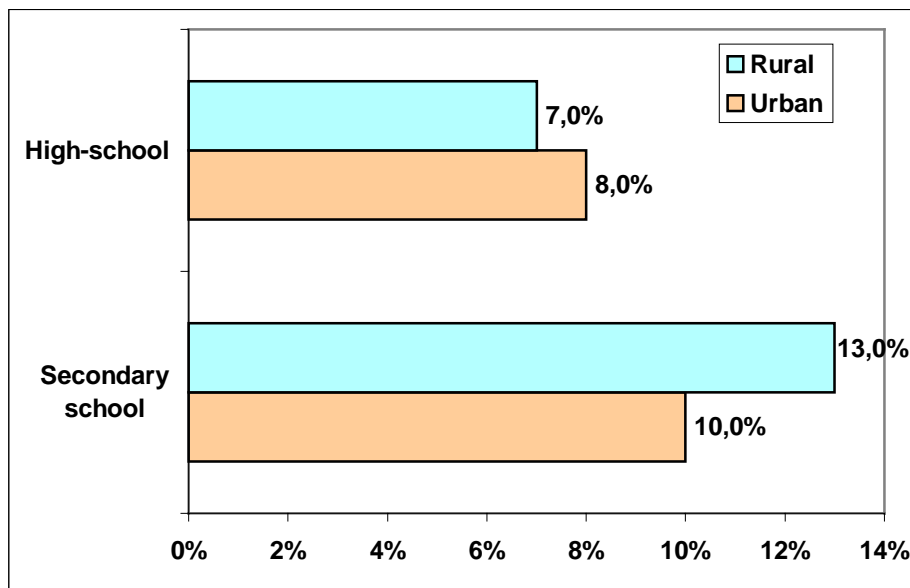


Figure 6: Subjects who had financial problems regarding getting food

Food characteristics

Food choice of students depends also by food availability. There were students, especially from rural areas that declared that they got their food from their own family/relatives production and this situation were more frequent encountered for meat and eggs (Fig.7).

Other factors recognised by the young people as influencing often their food choice were the taste and the food advertising (Fig. 8 and 9).

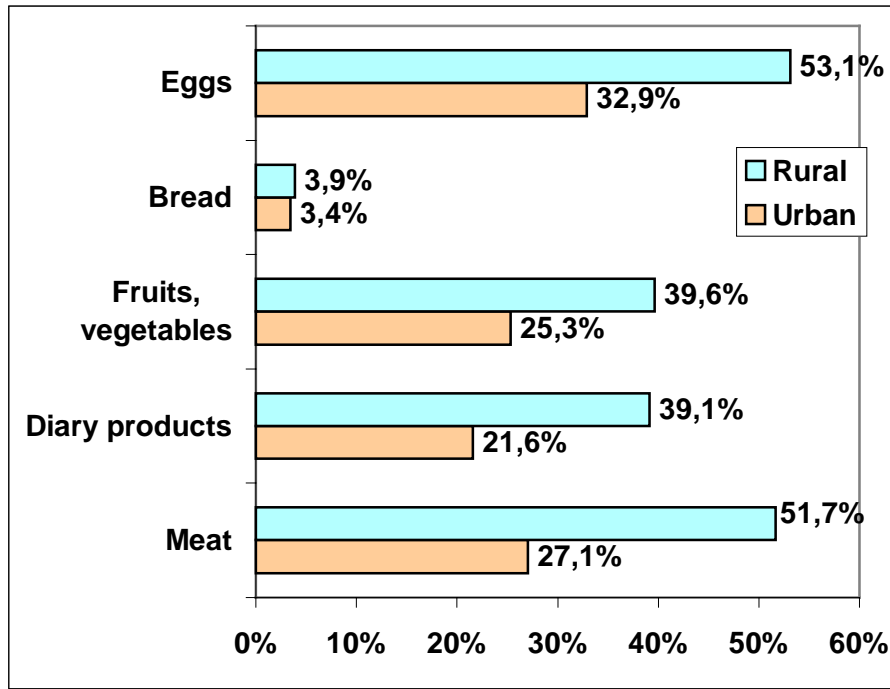


Figure 7: Food availability-getting the food from their family/relatives production

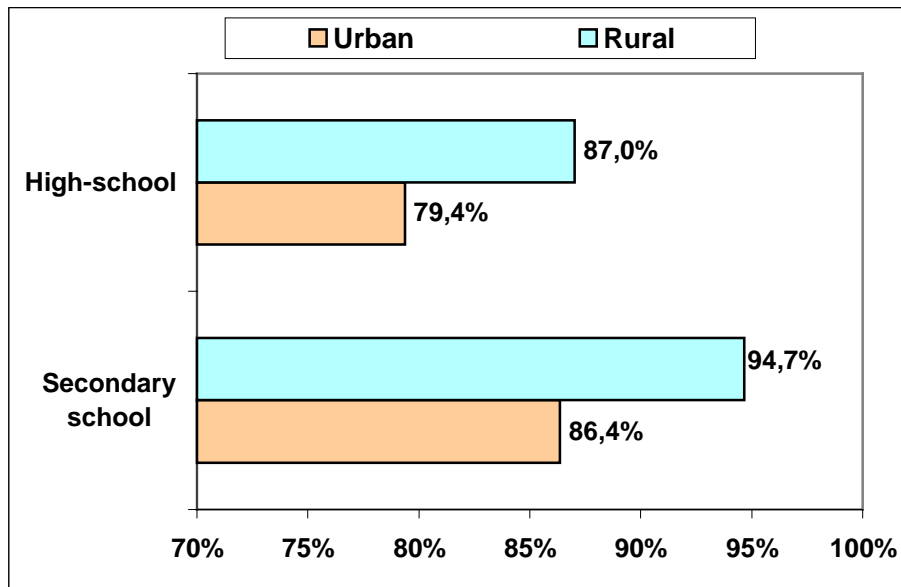


Figure 8: Subjects who take often in consideration the taste when choosing a food product

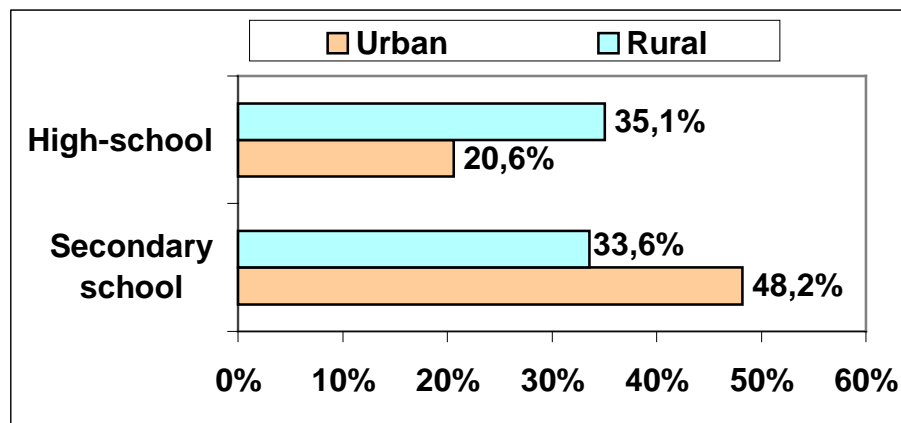


Figure 9: Subjects who take often in consideration the advertisement when choosing a food product

Discussions

The results show that the food choice and food habits of Romanian adolescents are influenced by an array of interwoven factors.

The knowledge and attitudes of adolescents regarding food influence their behaviour, even if the level of knowledge is not always correlated with healthy eating patterns (Mitchell, 1997; Murillo et al., 1999). Many students don't have appropriate nutrition knowledge, but they declared that they would like to know more. This suggests that appropriate nutrition education programmes delivered in schools or out of schools (ex. health settings, through mass-media) could be useful in promotion of healthy food choice.

On the other hand, the food that is consumed to supply the nutrient needs is as different as the environments in which people live. The food choice and food habits of adolescents are a reflection of those of the population in general, being influenced by their cultural background. The preference for meat (but not fish meat), white bread and potatoes, which characterise the region of Romania where the study was performed, was encountered also among the study subjects.

The Romanian adolescents eat at home still very often and this offer to the family the possibility of mediating an adolescent' food behaviour in two essential ways. The first, and most obvious, is the direct influence of the family as the main provider of food. The second, which shapes lifetime food choice and eating habits is the influence exerted through the transmission of food attitudes, preferences and patterns. The majority of students declared that their parents represent the main source of information regarding food and nutrition, but it seems that in many cases the control of adolescents diet starts to move out from their parent's hands into their own. One third of adolescents prepare quite often their food by themselves when they eat at home, while eating out in fast-food restaurants starts to be popular among Romanian adolescents also.

The increased nutrition needs of adolescents translate into demand for a greater quantity of food. This can stress family budget and those with limited financial resources may find they are restricted in the amount of food they can afford or the food choices they can make. Price and income are clearly important influences over food. Several studies suggest that people on lower incomes have a more monotonous diet, a higher intake of energy- dense food rich in fat and/or sugar, which can be cheaper sources of calories and a lower intake of fruit and vegetables (Mitchell, 1997; Societe Francaise, 2000).

Different food characteristics such as taste as well as food availability are also important factors. In the same time, adolescents are provided with different types of commercial information about food. A lot of food advertising is targeted at children and adolescents and,

unfortunately the food advertised are not always of optimum nutritional quality (Consumer International, 1996; Mitchell, 1997).

A complex strategy, which addresses a wide range of levels and issues is needed in order to help Romanian young people to have a good nutrition as an important part of a healthy lifestyle. Further studies should investigate in more details the factors which influence food choice and identify what means could be appropriate for different categories of adolescents in order to promote healthy nutrition among them.

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Food provisioning in family households – Triangulation of quantitative and qualitative research methods

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Introduction

Eating and drinking is an important part of families' everyday life that satisfies social, communicative and biological needs. Despite the social relevance of joint family meals with home-prepared food, hectic work- and home- schedules have worked against eating at home. Food consumption outside the home has gained importance during the last decade. Nevertheless meals consumed at home were and are still the predominant consumption pattern of family households. Despite the allocation of time for meal preparation and food consumption not much is known about the difficulties families - especially women - are faced with organising and facilitating a daily food provisioning that meets household member's beliefs, wishes and demands.

In this context food provisioning is defined as a process that consists of various activities such as information, food shopping, building up stocks, food preparation, meal-serving, eating, cleanup and management of all these activities within the context of family's everyday life.

Objectives

The central aim of the present research project is the description, analysis and interpretation of food provisioning patterns in family households with mothers in labour workforce. To investigate families' everyday life food routines a **triangulation** of quantitative and qualitative methods is applied.

Method approach

Table 1: Method approach

	quantitative study	qualitative study
objectives	representative overview of time use patterns for food consumption and meal preparation in family households. The results are used for generating hypotheses for further qualitative analysis	comprehensive insight into the mode of food routines in family households by the analysis of attitudes, opinions, motives and/or the level of satisfaction regarding the way food provisioning activities are managed and shared data base
data base	Time-Budget-Survey 2001/02 of the German Statistical Office with 5400 households and more than 16.000 participants. Sample of 1708 mothers selected after age of children, degree of employment and social status; corresponding fathers (n=1493)	In-depth interviews with 48 mothers of family households selected after age of children, degree of employment and social status and a subset of 24 fathers
data analysis	statistical analysis of time budget data (scientific-use-file) with SPSS	transcription of the interviews, semantic content analysis

Implementation of method triangulation

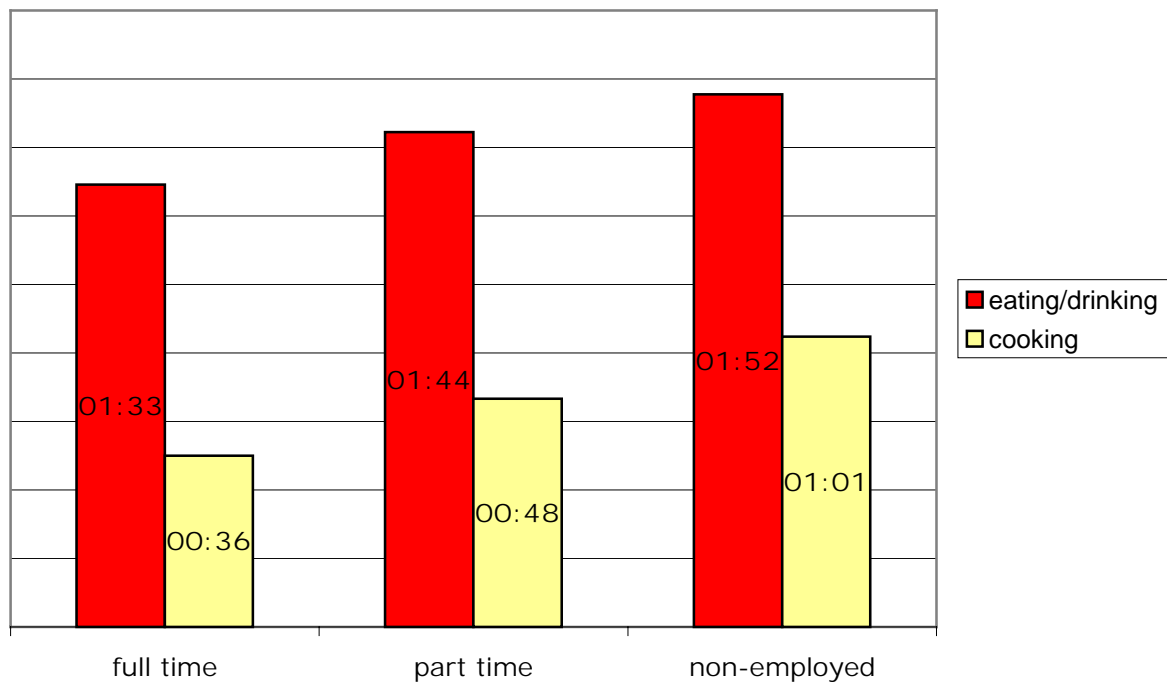


Figure 1: Time use of mothers with different degree of employment for daily eating/drinking and cooking (h:min)

Hypotheses

1. The amount of time spent on daily eating and drinking is affected by the mother's degree of employment.
2. Central motives of mothers concerning everyday life food routines are on the one hand a high sense of responsibility towards her family and on the other hand their claim for taste and enjoyment. Therefore non-employed mothers take more time for daily eating/drinking and cooking.
3. Mothers in work force develop different strategies for coping with daily cooking.

Guided interview

- How do you arrange everyday life food routines with your employment?
- Please describe which importance do you attach to daily eating and drinking?
- Which strategies have you developed for coping with daily cooking?

Relevance of the research methods

Triangulation of quantitative and qualitative methods offers numerous advantages in order to investigate the food provisioning routine of family households with employed mothers. First analysing time use patterns for everyday life food routines with the quantitative time budget data allows to generate research questions for the subsequent in-depth interviews. Secondly the qualitative survey will add up results of the quantitative analysis (detailed time use patterns of food provisioning) by providing an insight in steering motives and barriers of the design of food provisioning within the course of all-day events. It is aspired to assess

different behavioural strategies in the context of family's mode of living to develop a typology of specific family household food provisioning styles.

The project results should be useful and assignable for further research questions within the field of social scientific nutrition research. They should also help to design counselling services that meet the demands of family's all-day routines.

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Socio-economic status disparities in fresh vegetables consumption: Change and stability between 1983 and 1998

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Background

The level of consumption of fresh vegetables in Germany is one of the lowest in Europe quite below the quantity of 250 g/person/day, whose intake is the recommended by DGE ("Deutsche Gesellschaft für Ernährung"). Because consumption of vegetables is effective in sustaining health, German public health agencies started specific campaigns, which are aimed at rising the level of vegetables (and fruit) consumption (e.g. the "Five a day" campaign).

In general and in behalf of efficient public campaigns it might be misleading to stick to with a population homogeneity of vegetables consumption. Sociological research on food consumption generally argues, that many aspects of nutrition behaviour are differentiated by socio-economic status differences. But it is not known if and to what extent social structural factors also produce disparities in fresh vegetables consumption. One could expect that groups with higher socio-economic status consume more fresh vegetables than lower status groups. Higher status groups have more financial resources to afford more quantities and qualities of fresh vegetables than lower status groups. But it is argued that independent of this economic resources effect, there are also socio-cultural resources linked with social status, like higher educational achievements, profound understanding and orientation towards health sustainable food and nutrition behavior. So it is important for the understanding of disparity processes to know, to what part socio-economic status differentials of vegetables consumption are due to economic and/or to cultural resources.

While it is needed to understand the formation of socio-economic disparities precisely, several significant social developments have evolved in the last thirty years, which meanwhile might have blurred socio-economic differentiation of vegetables consumption. There was a general spread in health consciousness starting in the mid 90s, net income wealth increased significantly over a long period of time since the Sixties, as well as educational attainment and leisure time budgets increased, freeing people from traditional life style patterns. So, taking these developments together, one could state, that socio-economically based differences in vegetables consumption meanwhile have diminished, which means that higher and lower socio-economic status groups would show up more and more similar fresh vegetables consumption patterns.

In sum we are faced with two questions: a) is there a genuine social status effect independent of a net income effect on the quantity of fresh vegetables consumption, b) how these socio-economic status disparities (income and/or social status effects) did evolve in the context of societal changes since the 1980s and did they have diminished or did they have got more pronounced?

Data

To give an empirical answer to these questions, we used scientific files of the German official statistics data program on income and expenditures, the EVS ("Einkommens- und Verbrauchsstichprobe"), which every five years collects diary data on income and expenditures of private households. The EVS is based on a stratified quota sample of about 0,2 percent of all private households. People participate in these surveys, which are done every five year, on voluntarily basis.

For this analysis it was possible to use data from 1983, 1993 and 1998. Specifically we analyzed the data of a supplementary subsample of those households, which run a one month diary on expenditures on food and beverages (survey on nutrition, beverages and tobacco). To make the data comparable across time, we had to restrict the samples to households, which resided in West Germany and whose household head had German citizenship. For 1983 the sample consisted of 21 968 households, for 1993 the sample data size was 12 638 households and for 1998 the effective sample data size was 9 825 households. NGT data of the 2003 survey are not available at present, data from surveys before 1983 are still to be prepared for analysis.

In all EVS surveys purchased food items were coded by the same classification, so it was possible to analyze consistently over time the following same fresh vegetables: green salads, cauliflower, cabbage, tomatoes, cucumber, carrots, onions and garlic. But data on purchased quantities of all of these fresh vegetables were only available for 1983 and 1993. In 1998 quantities were coded only for tomatoes, cucumber and carrots. Instead, expenditure values were available for all of these categories of fresh vegetables in all surveys.

Method

Our focus is to separate household net income and social status effects on fresh vegetables consumption, controlled for age and household size co-variation, and to look for their changes in time. So we estimated several multivariate regression models separately for each survey sample. First, we modeled the overall quantity of fresh vegetables as defined above, and separately the quantity of only the specific subgroup of fresh vegetables of tomatoes, cucumbers and carrots. Then we analyzed the same models also for expenditures on all fresh vegetables and for expenditures on the above defined specific group of vegetables.

The predictors in these models were for all of the survey years the same. As indicator for available household income we used the yearly household net income. Social status of the household was indicated by the occupational and earning status of the household head, whereby we could differentiate for blue collar workers, white collar workers, civil servants, self-employed and professionals and farmers. For those, who were not employed at time of survey, we used information on their earning status like payments by unemployment insurance, by governmental aid, by private support, by pensioners and/or retired insurances. In the model we estimated the partial effect of these status variables by controlling for the age of household head, the marriage status of household head, the overall household size and the number of children in the household.

Results

In this presentation we concentrate on the net effects of household net income and net differences between blue collar and white collar worker households.

In Table 1 we can observe small, but significant financial and social status effects on the quantity of fresh vegetables: more fresh vegetables are purchased in households with higher yearly income, as well as in white collar households. These disparities were observable in 1983 and seem to have increased in 1993. But because the differences are small and because we have no data for 1998 it might be not adequate to call this pattern a trend, towards more economic and social disparities. Looking on the purchased quantities of the subgroup of vegetables (tomatoes, cucumber and carrots) we can find smaller but still significant disparities by net income and occupational status (Tab. 2), and also an even more subtle change between 1983 and 1993 towards increased socio-economic disparities. But remarkably, in 1998 these disparities are not observable.

Table 1: Purchased quantity of fresh vegetables (g/person/day) – net differences between white and blue collar and between household net income groups *

	1983	1993
White vs. blue collar class difference	5**	9**
household net income difference (per 1000 DM net household income)	0.9**	1.3**

* linear regressions equation: social status, net household income, age of household head, family status of household head, household size, number of children

** significance $p < 0.05$

Source: Einkommens- und Verbrauchsstichprobe 1983, 1993.

Table 2: Purchased quantity of tomatoes, cucumbers, carrots (g/person/day) – net differences between white and blue collar and between household net income groups *

	1983	1993	1998
White vs. blue collar class difference	2**	4**	not significant
Household net income difference (per 1000 DM net household income)	0.5**	0.6**	not significant

* linear regressions equation: social status, net household income, age of household head, family status of household head, household size, number of children

** significance $p < 0.05$

Source: Einkommens- und Verbrauchsstichprobe 1983, 1993, 1998.

So, one could think of a specific type of change of social disparities of fresh vegetables consumptions: before 1998 there was a process of increasing social disparities with higher status groups consuming more fresh vegetables than lower status groups. This trend was interrupted in 1998 by an alignment of lower and upper social groups in relation to the quantities of purchased fresh vegetables.

This pattern of change can also be found in specific vegetables expenditure differences between blue collar and white collar households, but not for household net income differences which were stable in 1983, 1993 and 1998 (Tab. 3). Estimating the same expenditure model for the overall group of vegetables, again we can observe a very slight trend towards increasing income effects, which we see as stability of income effects (Tab. 4). Social status expenditure disparities did increase between 1983 and 1993, but were not significant in 1998 any more.

Table 3: Expenditures for tomatoes, cucumbers, carrots (Pf/person/day) – net differences between white and blue collar and between household net income groups *

	1983	1993	1998
White vs. blue collar class difference	2**	2**	not significant
Household net income difference (per 1000 DM net household income)	0.5**	0.3**	0.3**

* linear regressions equation: social status, net household income, age of household head, family status of household head, household size, number of children

** significance $p < 0.05$

Source: Einkommens- und Verbrauchsstichprobe 1983, 1993, 1998.

Table 4: Expenditures for fresh vegetables (Pf/person/day) – net differences between white and blue collar and between household net income groups *

	1983	1993	1998
White vs. blue collar class difference	2**	4**	not significant
Household net income difference (per 1000 DM net household income)	0.8**	0.9**	1.3**

* linear regressions equation: social status, net household income, age of household head, family status of household head, household size, number of children

** significance $p < 0.05$

Source: Einkommens- und Verbrauchsstichprobe 1983, 1993, 1998.

These results can be summed up as follows: there seemed to be a time period until 1998 with small, but significant social status disparities of fresh vegetables consumption. Then in 1998 (it might be also started before 1998) these social disparities diminished and got nonsignificant. But nevertheless, in this time period economic differentiation of fresh vegetables consumption was effective.

So while social status inequalities diminished, financial status inequalities remained stable or tended to increase.

Conclusions

We have found, that socio-economic status is effective in vegetables purchasing. Households with a higher socio-economic status position purchase less amounts of fresh vegetables and spend less money for these food. Even for more or less highly prevalent vegetables like tomatoes, cucumber and carrots, these socio-economic status differentials can be observed. We also found that the structural position of a household influences its vegetables consumption pattern via its availability of money resources as well as its social status. This means, that nutrition behaviour inequalities are not only governed by economic resources, but also by resources, which are genuinely correlated with the social status. Blue collar households

consume less fresh vegetables than white collar households. In our model, we also took into account the age of the household head, the number of children and other persons in the household. This occupational status effect might be due to higher educational attainment and/or more active orientation towards health relevant nutrition behaviour (nutrition life style) in upper social status groups. For a time comparing analysis, data on these intervening variables were not available, but more recent data from the 1998 and 2003 household expenditure survey will provide information for more detailed analyses.

In the context of the time period considered in these analyses we observed stability of social and economic differentiation of vegetables consumption before 1998. In 1998, while the income effect remained significant, we could not find any significant vegetables consumption differences between blue collar and white collar households.

There are two possible interpretations: If we rely on the validity of a phase of increasing differences between blue and white collar consumption, we might take this as hint to a diffusion process of health related life styles: first upper classes adopt new health relevant nutrition behavior and distinction to lower classes increase, then by a kind of trickle down process this consumption pattern is adopted with a lag also by lower status groups and the status differences in relation to vegetables consumption diminishes.

Alternatively one might consider the fact, that in Germany in the beginning of 1998 there was the start of the "Five a day" campaign, which provided, distributed and promoted awareness and information on the health benefits of vegetables consumption. The reduced differences between social classes might be an effect of this campaign, whose first year of activities overlapped with the data collection year of the expenditure survey of 1998.

It would be very interesting to look on vegetables consumptions patterns later in time. Was there a lasting effect of the campaign, or did the upper classes again mobilized their economic and cultural resources for further distinction? Finally, it seems interesting, that although the campaign seemed to have some success in changing food habits, the overall level remained significant below the recommended level of vegetables intakes. For identifying the effective barriers one needs further analyses with more adequate indicators of food habit regimes.

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Trust in Food in Finland – Consumer Views on Food Safety

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Background

In recent years we have experienced several food scares. Also such topics as functional foods, gm-foods, and increasing information of healthy eating arouse concern among consumers. Therefore, consumer trust in food and the whole food system is a current discussion topic in Europe.

The study examines consumer trust in food safety, with a focus on different foods and the various actors in the food system (Piironen et al., 2004). The study was conducted in co-operation with the EU funded project 'Consumer Trust in Food. A European Study of the Social and Institutional Conditions for the Production of Trust' (2002–2004), which covered six European countries (Denmark, Germany, Great Britain, Italy, Norway and Portugal).

Data and methods

The data (N = 1 207) were collected in June 2003 by means of computer-assisted telephone interviews (CATI), similarly to the EU-project. The data consisted of a representative sample of the Finnish population as to gender, age and place of residence. The response rate was 23%. The data were mainly analysed by cross tabulation and χ^2 -test.

Trusting Finns

Finnish consumers can be divided into two groups according to their trust in food safety. Some Finns trust in large degree; others trust partially. The results indicate that the consumer group in Finland that would not trust in food safety is extremely small (Fig. 1).

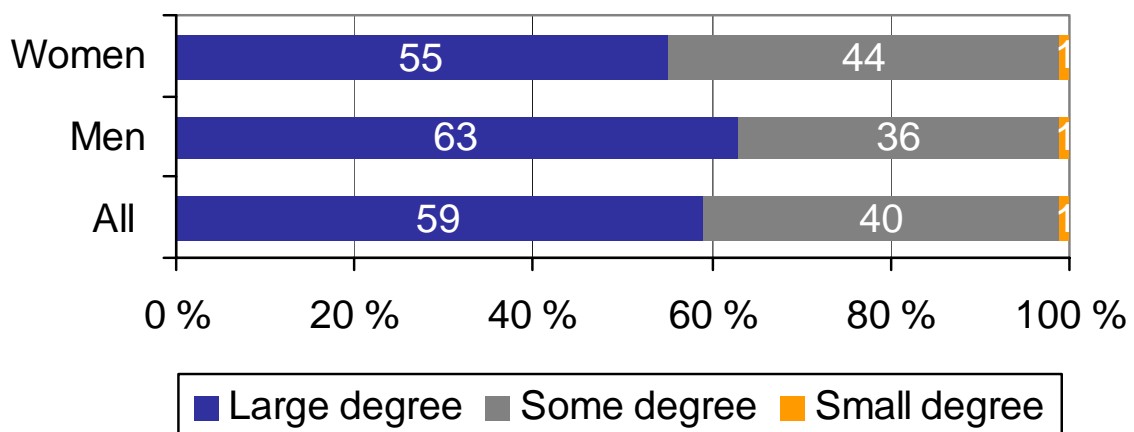


Figure 1: To what degree are you confident that the foods bought for your household are unharmed?

It seems that the views on the safety of different foods are affected by factors like raw materials, production method, processing, healthiness, 'naturalness' and familiarity. The factors are not emphasised similarly in different foods. Consumers find e.g. fresh tomatoes safer than canned ones and especially safer than GM tomatoes, which are produced with a new and unfamiliar technology. On the other hand, low fat products are considered to be rather safe despite of the relatively new production technology (Fig. 2).

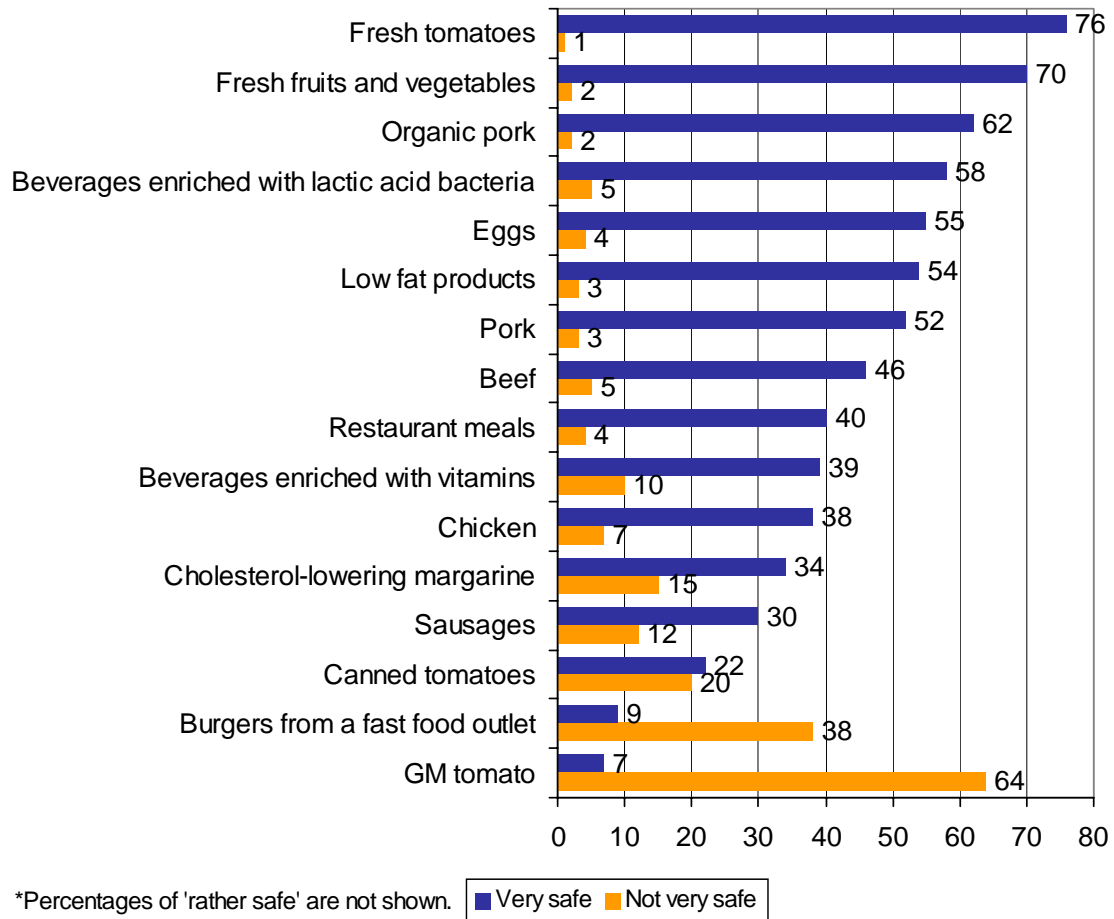


Figure 2: Do you think that the following types of food are very safe, rather safe or not very safe to eat?*

Trust in foods is related to gender and age. Women are more sceptical than men and middle-aged and older people are more sceptical than younger people.

Whom do the Finns trust?

In a case of food scandal, non-market actors would be more trusted than market actors (Fig. 3).

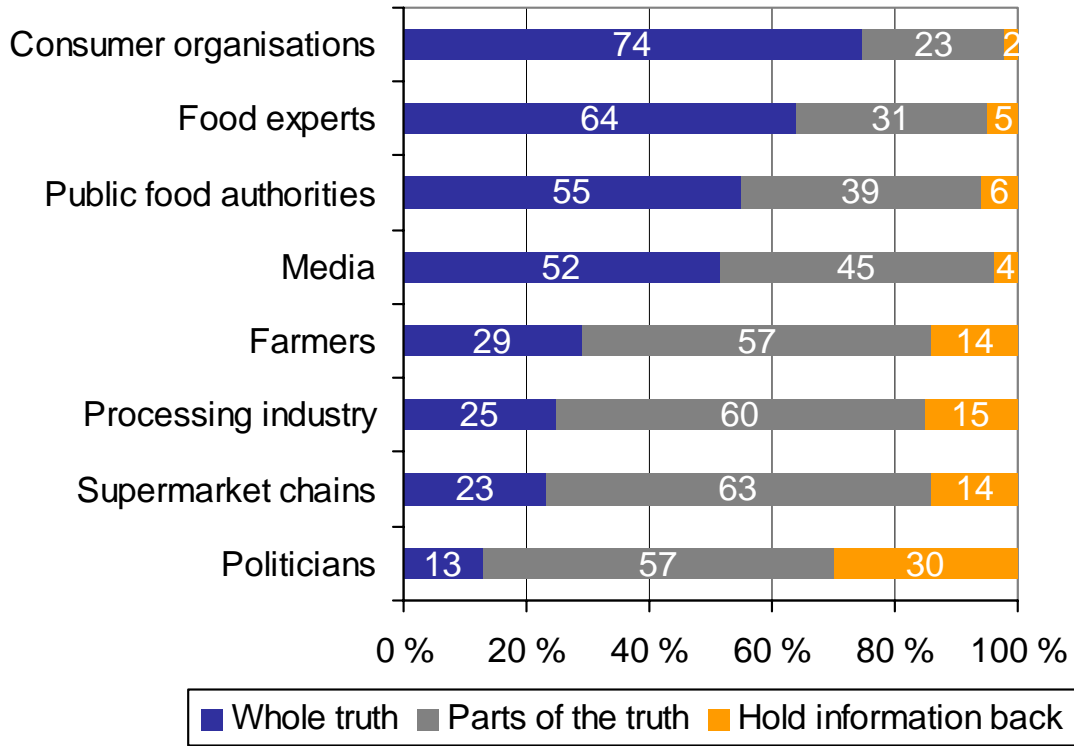


Figure 3: Imagining that there is a food scandal concerning chicken production in Finland. Would the following persons or institutions tell the truth about it?

Of the non-market actors, especially food scientists and consumer organizations are considered to be very important by Finnish consumers (Fig. 4)

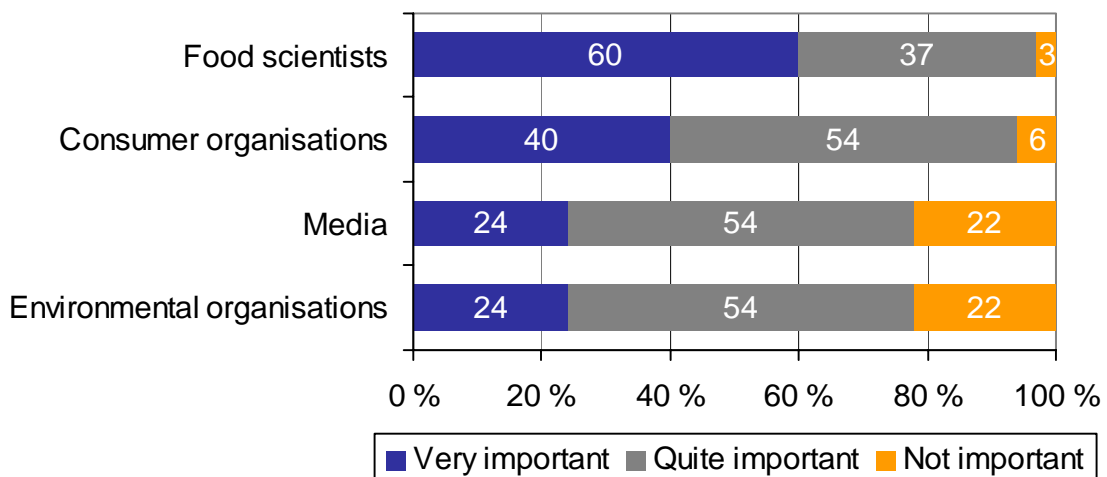


Figure 4: How important are the following institutions in monitoring the safety and quality of food?

Finns and other Europeans

Finns are relatively trusting as compared with other European consumers (Poppe & Kjærnes, 2003). Finns have more trust in the truthfulness of the information provided by different actors in the event of food scandals and see many foods as safer than consumers in the other study countries on average. Especially market actors are considered to be more trustworthy in Finland than in other countries. Thus, as far as trust is concerned, Europe is divided into a trusting north and a sceptical south.

Conclusions

Trust appears to accumulate: there seems to be a correlation between trust in the safety of foods produced in different ways and from different raw materials, trust in the quality of the food chain, and trust in other people. Yet, consumer trust in different actors and products varies, and trust also varies according to the situation.

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Concerning “Trust in food” see also:

Unni Kjærnes, Corinna Willhöft and Thorsten Lenz: Consumer trust in food - how to assess the different roles of consumers? An approach based on a comparative study, p. 68

J.C. Wiersum, B.B. Bock: Trust in Food and the need for more information.

The relationship between food attitude, trust in food safety and consumption behaviour, p. 202

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Nutrition and ambience, the state of the art: influence factors during a meal

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Abstract:

Real eating situations with people eating real foods are rarely objective of studies. To reduce complexity, current research methods are mainly based on laboratory settings. Thus foods rather than meals are studied.

Since research of ambient influence factors has to pay attention to almost infinite complex interactions, the development of new research methods with multifactor studies is needed. Therefore, this essay tries to give an overview of what has been researched so far and where more research is necessary. It seems to be impossible to understand human food choice in laboratory settings by excluding as many environmental factors as possible.

Key words: food choice; meals; evaluation; perception; eating occasion; eating location

Introduction:

Where we eat, what we eat, the characteristics of the environment in which we eat and with whom we eat, all that is likely to be more important in food choice, than the sensory properties of foods. Just imagine all the innumerable situations that is to say where taste plays only a minor role. Studying the factors influencing our food choice and perception in real ambience eating situations is a complex task with a strong multidisciplinary character. Scientists of different fields such as nutrition science, psychology, biology, agriculture, home economics, marketing, sociology and sensory science are trying to understand the real world eating behavior. Today, different food choice models reflect the complexity of understanding human food choice behavior (Conner, 1993; Furst et al., 1996; Nestlé et al., 1998). This could be seen as a result of almost 50 years of research. To study environmental factors and their influence on food choice is not new and it dates back to 1945 when researchers found differences in acceptability of foods served in an air plane or at the ground (Green & Butts, 1945). Today, the study of Green and Butts can be regarded as the starting point of a new branch in consumer science. However it should be noted that originally all research in this area was carried out by military institutions and not as one might think in civil institutions. Up to the 1990's there was only a very limited number of studies carried out researching food choice and the influencing situational variables (Perynam & Gutman, 1958; Sandell, 1968; Stunkard & Kaplan, 1977; Coll et al., 1979; Belk, 1975; Rozin & Tuorila, 1993). This might be due to the complex interactions and study designs in this research area. It was not until the late 1990's that further studies were focused on the various effects related to food choice and the perception and evaluation of food. The modern food choice research still plays an important role in military research and the military continues to utilize and develop new methods and theories. But today, this kind of research is also established at universities (Cardello, 1996; Conner, 1993; Furst et al., 1996; Meiselman & Schutz, 2003; Nestlé et al., 1998; Pettinger et al., 2004).

According to Edwards et al. (2003) the appreciation of food is influenced by three classes of variables: those variables related to the food itself, those related to the individual and those related to the eating location. So far nutrition research for the most part, is focused on the first class of variables. Food is mostly researched at its nutritional values, such as vitamins, fatty acids, sugars, amino acids etc. and its health benefits (Zunft et al., 1997). In the past, most studies that had been carried out were centered on questions trying to explain the reasons for obesity and other nutritional anomalies with the help of nutrient supply and

different eating situations (Stunkard & Kaplan, 1977; Coll et al., 1979; Rolls, 1979). Regarding obesity and other diseases researchers have made attempts to determine variables which may play a role in developing those diseases (Nicklas et al., 2001; Bellisle, 2003). So far, only a few studies have been carried out in real eating situations, with the focus on factors influencing the perception and evaluation of food.

World-wide, the research of food choice behavior still receives relatively little attention and in Europe this field of research is still in its infancy. With the current standard of knowledge, it seems to be generally accepted that factors such as social status, religion, personal beliefs, attitudes, sensory properties and others play an important role in understanding human nutrition, but still little is supported with studies. Today many scientists, rather than regard food choice solely as an instrument to maintain health, have recognized the importance of food choice in view of healthy nutrition and much more besides. One could go as far as to say, that understanding food choice is one of the major keys to provide new methods of resolution for many nutritional diseases. In addition, the research of the perception and the evaluation of food in a real ambience is an instrument of social classification in our every day life. Furthermore, it could be used as a tool for successful marketing and it as well provides facts for new approaches in nutritional education (Story et al., 2002; Lake, Rugg-Gunn et al., 2004). Differentiations in other research areas are also rather conceivable, i.e. improved dietary references.

The early work in understanding food selection was focused on sensory properties such as texture, taste, odour and the overall acceptability of food items.

When food choice, as mentioned before had become a scientific focus in the late 1990's, scientists not longer concentrated solely on the food itself. They developed new models in which the environment as well as social factors moved into focus. Since those years, more and more articles have come up, suggesting that factors such as social setting, temporal aspects and the environment in which a meal takes place or a food item is consumed, are instrumental in guiding food choice (Bell & Meiselman, 1995).

But food choice research could not be fully understood without a more detailed look on meals. Based on Douglas (1974), meals are highly structured events which are a marker of social relations. She formed the concept of what became known as a "proper meal". But what then is the understanding of a proper meal? The question could not be answered by the tripartite model of Douglas (1974). In fact it is a matter of the individual's subjective sensation. Meals are determined by implicit rules, social interactions, the environment and the occasion. We still know relatively little of what individuals perceive to be a characteristic meal and how these factors are interrelated. The question of how they influence the perception and evaluation of a meal also remains to be answered (Marshall, 1993, 2000; Meiselman et al., 2003). For example Europeans consider a proper meal to consist (depending on the country or region) of a starter or a salad (optional), a main course, a dessert (optional) and a beverage. If one of these parts is missed, lunch is often not regarded as being a proper meal. Today, the theory of a tripartite structure of a proper meal is extended by broader concepts including lunch and snacks as meal types (Marshall & Bell, 2003). According to this, all situations related to the ingestion of food can be regarded as meals. Nevertheless the situations at which a meal takes place will be limited.

The growing importance of studying ambient factors during a meal and to learn more about their influence on the evaluation and perception of food, could be demonstrated by founding the Italian University of Gastronomic Science in Pollenzo and Colorno in January 2003 and by anchoring **Culinary Arts and Meal Science CAMS** as a new course of studies at the University of Örebro in Sweden. Both universities are centred on disciplines in gastronomy where the ambience during a meal plays an important role (Gustafsson, 2004; www.unisg.it, 2003).

The present article focuses on some important factors influencing humans during a meal. All factors presented in this paper have been matter of at least two studies. The specific

objectives of this paper are to provide information which can be used as a basis for planning future studies in food choice, nutrition behavior and the research of the evaluation of food. The authors do not want to present all articles published on a specific factor, nor do they claim completeness in what factors have been researched so far. In fact, they try to provide devices for what is possible and has been done so far.

Focus on real ambience studies:

The impact of ambience in non-laboratory settings, with its methodological and theoretical basis, is an interesting scientific challenge. Only since the 1990's, food research has begun with a more systematically approach which was carried out in non-laboratory settings. Bell et al. (1994), were one of the first who came up with a real (non laboratory) ambience study. They demonstrated that the perceived ethnicity of a food could be changed without manipulating the food-item itself. By adding an Italian theme to a Grill Room restaurant, they found changes in food choice behavior, the acceptability of food and the perceived ethnicity of the food served in the restaurant.

Previously a study, carried out by Klesges et al. (1984), observed the number of calories consumed by adults in 14 different restaurants. Two categories were used to distinguish within the restaurant types. Some of the restaurants were described as formal dining restaurants and the others belonged to the fast food category. The social setting, the type of restaurant environment, sex and relative weight, were taken as test variables. It could be shown that more calories were consumed in fast food restaurants compared to formal dining restaurants. Furthermore, the importance of sex in the different eating situations could be demonstrated. Both groups, male and female, ate more in a non-alone eating situation. In groups of the same sex, both sexes ate less, compared to mixed sex groups.

Another study carried out in a real ambience showed interesting results by a direct comparison of the acceptability of the same food. The main findings in the experiment were the consistently higher ratings of the restaurant food compared to food served in a lower category, though the same food was served in all locations. Lower categories in that case are for example refectories, cafeterias or a food science laboratory. There were no differences in the ratings for beverages. Since beverages are pre-prepared products, people seem not to expect them to differ among location (Meiselman et al., 2000).

The finding, that the location has a significant influence on both, the appreciation of a particular food, as well as on overall acceptability of a meal, was demonstrated by a study carried out by Edwards and colleagues (2003). They investigated the acceptability of identically prepared food in ten different locations (for example an army training camp, a residential home for elderly, an university staff refectory and a "white-tablecloth" restaurants). A significant effect of location on food acceptance could be demonstrated. Another interesting finding is that of an age effect. The lowest ratings came along with institutions that cater the younger population (18-35), with more moderate ratings for institutions that cater an older group. Over all age groups the highest ratings came along with the white table cloth category.

Surprisingly the study did not show any gender differences, but a significant effect between the age groups. The younger the participants the lower food acceptability was, whereas the highest ratings were among the 45 -65 years age group. This is in accordance with the age effect of the institutional rating. That there is no gender effect is in contrast to the findings of other studies which found indications of significant gender differences (Zylan, 1996; Edwards, 2000). Another group of people was served the same meal in two different locations. Ratings of the food served in these two locations did not differ. This finding was true for the lower catering categories but not for the restaurant types (Edwards et al., 2003).

Even in the highly standardized field of sensory science the context is an important factor. The ratings of wine are consistently higher in situations where conversations are allowed (except conversations about wine) and food is served. Furthermore expert ratings of the

same wine seem to be influenced by the classification on the label. That finding was independent of the highly standardized sensory test environment (Hersleth et al., 2003; Brochet & Morrot, 1999).

But what does this mean to sensory scientists and the consumer researchers? This question cannot be answered in a satisfactory way. Only that much, the results of the studies show that we need to learn a lot more and that we possibly need to develop new methods of research which are more oriented to the consumer and the product's success on the market. The next step would be a transfer of the results in new methods of sensory science. The important thing here is to pay attention to several aspects which every scientist of this field always does wrong.

Another aspect not only important to real ambience studies is that of the questions asked at the experiment. Simple questions lead to simple answers. That, for instance, is what you often want to achieve in studies. But is that what you really want in consumer research? To find out about the reasons why consumers eat a certain food can not be answered in a satisfactory way by asking why they eat. When asking consumers why they eat, they often answer in a very dissatisfactory simple way – they like the taste - and this is all you get as an answer in most cases (Marshall, 1995; Köster, 2001). Consumer food choices are not solely affected by measurable “hard-facts”. It seems more likely that they are mostly influenced by inner cues and the expectations of the consumer. The problem of asking the right questions is discussed in detail at Köster (2003). He refers to some often made fallacies in consumer research and other disciplines. This article is a helpful tool in planning studies in consumer science.

The previously mentioned studies are only examples of what have been carried out in a real ambience so far. Other studies are not mentioned in the text (de Castro et al. 1986; de Castro, 1999; de Castro, 2000; Mathey et al., 2001; Rozin, 2003). It should be noted that de Castro often worked with food diaries as a rich source of information which can easily be used to study real world eating behavior (de Castro, 1999).

Focus on influence factors

Going from a broader view to a more detailed sight of the things. As mentioned before, human food choice, the perception and the evaluation of food, is mediated by a complex net of different factors including, for example the consumer's expectations towards a food item, sensory specific satiety, perceived risks that are associated with the ingestion of a food, and the level of uncertainty about the product's identity and its sensory specific characteristics (Bell & Marshall, 2003). Another research area that has recently been developed is that of involvement (Rozin et al., 1999; Olson, 2001; Bell & Marshall, 2003).

Focusing on ambient factors influencing real life eating situations, i.e. a meal, they can be divided in explicit (conscious) factors, perceptible with the higher senses such as vision and audition, and implicit factors (non conscious), perceptible with the lower senses such as smell, taste and touch (Köster, 2003). Except in sensory science, the research of environmental studies very much concentrates on explicit factors. This might be due to the fact that those factors can easily be described when people are asked to do so. In addition, a third class of factors is important, which does not necessarily belong to one of the previously mentioned variables. These factors could be abstracted as indirect personal effects, for example norms, beliefs, knowledge, attitudes and others. In short, factors which in the literature are often described as inner cues or social factors (Messer, 1984; Rozin, 1996; Rozin, 1999). In an approach of Bell & Meiselman (1995) the variables are divided in factors antecedent to food choice and those present to food choice.

In the following section, ambient factors are put in quotation to provide a better overview. The discussed variables are verified by studies. It is very likely that there are much more influence factors with varying importance, and it is not the intention of the authors to put record on all.

Social factors: Social facilitation and commensality

When eating in company with others, people tend to eat more. This phenomenon seems to occur independently of the type of meal (breakfast, lunch, dinner or snacks), the time (week days or weekend days) and the place where the meal takes place (at home, in a restaurant or elsewhere). Even the occasion at which the meal takes place seems to be secondary (de Castro et al., 1986; de Castro, 1990; Clendenen et al., 1994; de Castro, 2000; Sobal & Nelson, 2003; Weber et al., 2004). Many scientists consider this to be due to social facilitation, which is defined as the enhancement of certain behavior to the sheer presence of others (Zajonc, 1965). By expanding social facilitation with the factor meal duration, it gets more clearly, that the more people are present at a meal the more time is spent eating and drinking together. Surprisingly, with more other people present, the subjects were not hungrier and food did not taste better (Feunekes et al., 1995). The effect of social facilitation seems to occur regardless of the circumstances, but the limited number of studies regarding social facilitation has to be kept in mind.

A significant positive correlation between group size (number of people at a table) and meal duration could recently be demonstrated in a study of Bell & Pliner (2003). Although it is generally assumed that food intake is controlled above all by physical variables, the social environment seems to be of similar importance. That considerable effect of social facilitation was the result of several other studies (Klesges et al., 1984; Bellisle et al., 1999; Patel & Schlundt, 2001; Kristensen et al., 2002). Aside from the mentioned aspects, commensal eating fulfils the function of sociability, comradeship and stress management (Sobal & Nelson, 2003).

In addition, it is interesting that not all group eating situations lead to the previously described effect of eating more. It is important to keep in mind that the presence of others affects the amount eaten in every possible way. For example, people having a meal with others who they believe do consistently eat less, leads to a consumption significantly below the level that would usually be eaten. The contrary situation is with unrestraint eaters. In that case one would eat more than he would do without the person he knows to be an unrestraint eater. (Herman et al., 2003). Another good example for that is the study of Mori et al. (1987) in which could be demonstrated that women ate less in the presence of men for the reason of their femininity.

With a more theoretical approach of an expert workshop Booth et al. (2001) collected what they thought to be important environmental and social influence factors at a meal. With their data they developed different models which contained the assessment of the importance of the factors they found to influence eating behavior.

Inner cues

As previously mentioned, human eating behavior is very much controlled by subconscious factors. Asking participants of a study to describe those factors always results in an incapability of the participants to find the right words or even to identify the right factors. An experiment of Rozin et al. (1998) showed, what happens when the amount consumed is made salient by presenting the wrappings of the food. A suppression of food intake of all participants was the result. It seems very likely that humans keep some sort of record of what has been consumed. This does not mean that one does remember exactly and consciously what was eaten; it is a subconscious perception and evaluation. Furthermore, meal termination seems to be the result of what we have learned from our parents or other social norms prevalent in all parts of our society, combined with more physiological functions such as satiety. Meal termination is to be seen as a part of our inner legislation (Cheung et al., 1980; Zylan, 1996).

Environmental factors

While it is obvious that ambience is made up of and affected by numerous factors and their nearly infinite combinations, some are considerably more controllable than others. Music is an easy to control ambient factor with an unlimited application area and its effects on human behavior are unquestioned. It can be found everywhere in our daily life and it is generally assumed that it affects human behavior in many different ways. The effects of music on human eating behavior could be of interest to psychologists, gastronomes, consumer researchers and the marketing.

A study carried out by Ragneskog et al. (1996) showed the importance of music as an easily controllable factor. It was found that music significantly improved the nutrition behavior of patients. When music was being played during dinner, patients who had previously been unable to feed themselves were now able to help themselves. Furthermore, patients spent more time at dinner and thereby improved their nutritional status compared to the time before the study. But music affects human nutrition in much more situations. Background music in a restaurant increased the consumption of alcoholic drinks, but not food (Milliman, 1986). One should notice that these findings are highly dependent on the kind of music, its volume, the age of the guests and other factors. Analog is the finding of McCarron & Thiery (1989), who found an increased soft drink consumption by playing loud music. Due to the small sample size used in this study, the results are to be interpreted as a hint.

Other findings showed that playing classical music in restaurants led to a higher spending of the customers on both, drinks and food. The findings only seem to be true for music of moderate complexity and unobtrusiveness (North & Hargreaves, 1996; North et al., 2003).

Time is another important factor in food choice and during a meal. Everything in our life is dependent on time. How we perceive and evaluate a meal is highly dependent on time (daytime, month, year and others), and it is unquestioned that various forms of time exist. As music, the linear time can easily be controlled, for example the time of day at which a study takes place. But it is very likely that a real ambience experiment leads to different results, even if the study is carried out at the same time. Studies which had time aspects as a main objective researched seasonal rhythms in human nutrition (de Castro, 1991), the time of day at which a meal takes place (Birch et al., 1984) and the mealtime behavior of families (Boutelle, 2001).

Further influence factors

This paragraph is about factors which should not be left unmentioned. Those are socio-economic factors, the education level and the social environment. Even though they are not a part of the paper, they should be kept in mind because of their possible influence on the evaluation and perception of a meal. Since the first studies which researched food choice, the discussion about the various influence factors and their importance started. Numerous research projects illustrate the interests that scientists in the field of food choice behavior have.

Studies researched certain aspects of food choice; such as the following: the role of appearance and the expectation of liking of a food product (Hurling & Shephard, 2003), the aspect of convenience of at home evening meals (Jaeger & Meiselman, 2004), the quality the consumer wants (Köster, 2001), longitudinal dietary changes (Lakeet et al., 2004), temperature (Baron & Bell, 1976), alcohol and ambience (Lindman et al., 1987), the role of odours in retail environments (Schifferstein & Blok, 2002), texture, flavor and odour aspects (Levy & Köster, 1999; Mojet & Köster, 2002), restaurant facades (Cherulnik, 1991), ethnic ambience in Asian restaurants in Germany (Buettner, 2003), food choices in different ethnic groups (Devine et al., 1999), social and biocultural determinants of food choice (Kronld & Coleman, 1986), the impact of moods on eating behavior (Patel & Schlund, 2001), perceived risks associated with food ingestion (Rozin et al., 1994; Sparks & Shephard, 1994) and the portion size (Young & Nestlé, 2002; Rozin, 2003; Kral et al., 2004).

Not all aspects are equally important and some seem to be of interest to only a limited area in science. But all are part of the ambience which most probably determines the perception and evaluation of a meal.

Conclusion:

What can we infer from all the factors we know to influence the perception and evaluation of a meal? First, and this is most arguable, all factors are not hard facts as mathematical functions are. It is impossible to repeat a study under exactly the same circumstances, because many variables change by and by. This is mainly due to the different cultural context in which a repeated study most probably will take place. Second, time which has been discussed previously is an important influence factor, which is only controllable in its linear dimension. But is there any sense standardizing a study design as much as possible? Depending on what researchers want to find out, it could be answered with yes. For example, the industry in sensory science would probably not exist without a high grade of standardization, and scientific studies would not be comparable. Only an exact study design enables researchers to support or to disprove findings. What is needed is a juxtaposition of both directions. Highly standardized studies, those which try to exclude as many disturbing factors as possible, and those which try to make a portrayal of real life situations by influencing the situation as less as possible. Bringing together the results of both approaches is what is needed to develop new successful models, theories in understanding human nutrition behavior.

Another notable fact is that approaches to examine the role of eating location with the evaluation of a meal has so far only been conducted in the United States and the United Kingdom. All other countries, with a few exceptions, are a blank space in this field of research. It would be quite interesting to get some data from other countries all. And only with further studies, the picture of human nutrition could be broadened. Even though, with new study designs and new theories, it would never be possible to make some universally valid statements about the influence of location on the evaluation of a meal. This is because time is changing and with it various influence factors might also change. Furthermore, it is surprising that nutritionists seem not to have worked in this research area so far, except in sensory science. The driving force comes from other scientific disciplines. This is surprising just because nutritionists should have a fundamental interest in understanding all that is related to human nutrition.

In future studies some factors which have previously been considered to be important might lose their importance. To get more results, scientific disciplines ranging from biology to sociology, from psychology to marketing and from nutrition sciences to medicine, have to work together. In addition, the step of further studies needs to be taken to get data also from other countries, cultures and environments. Those data could serve as a basis for a better understanding of food choice.

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Nutrition surveys in the elderly – Do we obtain representative results?

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Background: Due to age- and/or health-related problems, nutritional surveys in the elderly might be biased by low and/or selective participation. Information concerning these aspects is scarce.

Objectives: (1) To describe participation rate and reasons for non-participation in a nutrition survey for elderly people in Germany and (2) to characterize participants in comparison to non-participants in order to estimate selective participation.

Design: Descriptive cross-sectional study.

Subjects and Methods: A random sample of 1200 elderly men and women stratified in three age groups (65-74, 75-84, 85+ years) was drawn from the municipal administration of Euskirchen. Subjects were informed and invited by letter. In a following telephone call inclusion criteria (living in a private household, no severe physical or mental impairment) were checked and appointments for in-home interviews made. Subjects not willing to participate were asked about the reason for refusal and to give some basic information by answering a short questionnaire (SQ).

Results: 21 % of the random sample were ineligible. Participation rates for eligible subjects was 38 %. Very-old elderly (85+ y.) showed the lowest participation rate (30 % vs. 37 % in 75-84 y. old and 45 % in 65-74 y. old). 57 % of the eligible subjects refused to participate – mainly because of "no interest" (74 %). Illness as reason for non-response was more than twice as prevalent in the oldest olds compared to the younger age groups (30 vs. 14 and 12 % respectively). About half of all refusers answered the SQ for non-participants. Participants show typical characteristics of this age group with respect to sex, marital status and living situation, however were older and better educated than the general elderly population. Compared to SQ-responders participants are more often male, higher educated (female) and show better subjective health and mobility (both sexes).

Conclusions: Very old elderly pose a challenge to (nutrition) research due to low participation rates. Participants and non-participants may differ in important basic characteristics affecting nutrition and nutritional status, such as health status and education. Thus, elderly study participants should be very well characterized – especially with respect to these aspects – to make clear for which subgroup the reported results are valid.

Engel and beyond – An analysis of private household's spending on food based on GSOEP-Data

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Engel's Law – well established in macroeconomics – describes the phenomenon that if the income of a family increases, the proportion of money the family spends on food decreases. But the demand for food does not only depend on family income. The theory of demand indicates that prizes of goods and consumer preferences are important parameters, too. However, marketing research shows that the prize only plays a minor role. Otherwise the amount of money spent on advertising could not be explained rationally. Therefore, the question is arising on which parameters the expenditures on food actually depend on.

Former studies revealed that the food costs do not depend exclusively on price and family income but also on socio-demographic factors and knowledge about nutrition. The unexplained variance of the money spent on food is claimed to be due to personal preferences. However, the studies do not provide any further description of the type of these preferences.

The present study aims to reveal which variables influence the preferences concerning food demand. Its focus is on attitudes and sentiments of individuals and households. The data basis for the study is the German Socio Economic Panel (GSOEP). It is an annual survey, representative for the Federal Republic of Germany, in which households and individuals answer questions about their socio-economic background, their housing and working conditions and their attitudes towards several topics. The GSOEP is the only survey, in which expenditures on food and a multitude of attitudes are enquired simultaneously. The attitudes are enquired in each year whereas the question about the expenditures on food was first asked in 1998 and repeated in 2000, 2001 and 2002.

The given data is treated by means of correlation and multiple regression analysis to determine potentially relevant variables. After that, a factor analysis is performed to reveal, on the one hand, if the observed variables can be reduced to "factors"¹. On the other hand, it eliminates the effects of multicollinearity, a phenomenon hardly avoidable in panel studies.

First results of the present study confirm the dependence of the total amount spent on food on family income, the number of family members and the number of children below the age of 16. Furthermore, a connection between food costs and the fear of job loss, the satisfaction with domestic work and child care, the consideration of financial burden and the satisfaction at work is found, too. However, the most unexpected correlation is the one between the expenditures on food and the relationship between individuals and their relatives.

The next steps are a factor analysis to confirm the results of the correlation calculation and to examine if the variables, which showed to be relevant, can be expressed by factors with higher accuracy. As most of the results are only related to the data set of 1998, the sets of 2000 to 2002 will have to be examined, too. Future research should take into account the expenditures on and the amount of food eaten from different food groups because the GSOEP neither differentiates food groups nor does it contain data about food consumption.

Some correlation coefficients	1998	2000	2001
no. of children		0.438	0.431
children >16 in household?	-0.346	-0.351	-0.332
no. of children under 16	0.225	0.199	0.21
no. of people in household	0.389	0.387	0.393
needy people in household	n.s.	n.s.*	0.029**
fear of job loss	0.147	0.166	0.169
consideration of financial burden	0.208	0.199	0.192
satisfaction with domestic work	-0.195	-0.124	-0.106
satisfaction with child care	0.217	0.225	0.169

all significant on 0.01 level

*not significant

** significance of null hypothesis < 0.15%

Influence of the relation with one's relatives						
2001						
Spearman-Rho			income as controll variable			
Relation with	Men	Women	Men	sign.*	Women	sign.
mother	0.108	n.s.	0.01	0.718	-	-
father	0.075	n.s.	0.022	0.525	-	-
ex-wife/- husband	n.s.	n.s.	-	-	-	-
wife/husband	-0.282	n.s.	-0.033	0.808	-	-
son(s)	-0.13	-0.153	-0.115	0	-0.67	0.098
daughter(s)	-0.107	-0.158	-0.048	0.142	-0.023	0.56
brother(s)	n.s.	n.s.	-	-	-	-
sister(s)	0.073	n.s.	0.032	0.233	-	-
grand-child(ren)	-0.111	n.s.	-0.109	0.006	-	-
grandparents	n.s.	-0.134	-	-	0.094	0.122
others	n.s.	n.s.	-	-	-	-

(alle Werte signifikant auf dem Niveau von 0.01)

* significance of the null hypothesis

Acknowledgements:

¹ One factor stands for a number of variables that are highly correlated.

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Trust in Food and the need for more information.

The relationship between food attitude, trust in food safety and consumption behaviour.

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Trust project

The Trust project is a EU-funded project¹, which covers five EU countries (Italy, Netherlands, UK, Germany, France) and involves eight different research teams, coming from different disciplines – psychology, sociology, marketing, consumer science and economics.

The project's objective is to explore the antecedents of trust in information sources and risk management along the food chain and the mechanisms that determine the social diffusion of trust.

Data are collected through a survey and focus group interviews in the participating countries.

Focus groups

This report is based on the analysis of four focus group interviews in the Netherlands. These focus groups were conducted to investigate the social and cultural dimensions of trust in the food sector.

The groups were composed on the basis of the significance food has for the participant. The first group (named 'care') consisted of parents of small children. The second group ('concern') was composed of members of socially critical organisations, customers of fair trade shops and people who buy in organic food stores, because of the environment and animal welfare. The third group ('pleasure') consisted of people who want to enjoy food and the last group ('indifference') regularly or exclusively buys at the cheaper supermarkets.

Results

When choosing food Dutch participants take especially freshness and taste, price and convenience, but also safety into account. They want to make sure that their own health is safe, but they also find animal welfare and environmental protection important. But only the respondents with a big personal interest in food and food production, the 'concern' and 'pleasure' group participants adapt their consumption behaviour to this.

Almost all groups feel relatively safe with regard to food and food contamination in the Netherlands. They feel protected by the many rules and by government control. Food scandals are seen as of a different order and caused by greedy (big) producers and retailers. 'Concern' group participants place most trust in the organic movement and its inspectorate. Further it is striking that the participants who mainly eat organic or vegetarian food, feel safe because of this choice. Because they adapted their behaviour a reasonable time ago, they feel armed against most food safety risks.

The respondents do not agree on the question whether food safety has increased or decreased compared to the past. 'Care' and 'indifference' group participants find food safer compared to the past, whereas the participants of the other groups think of food as less safe nowadays. Almost all respondents are opposed to genetically modified foods.

Most participants criticise the lack of objective and factual information about food safety. Moreover they would like to have continuous information and not only when there is a food crisis. The information, which is available now, is seen as coloured and not trustworthy, because it is expected that the source of the information might be acting out of self-interest. The participants of the 'care' and 'indifference' groups have most trust in independent and

scientific institutions; 'concern' and 'pleasure' group participants have more trust in small shopkeepers and producers of especially the organic sector.

When we compare the groups, a clear distinction can be made between the 'care and indifference' groups on the one hand and the 'concern and pleasure' groups on the other hand. The participants of each of these two combined categories react in a similar way with regard to the following aspects:

- the origin of a product
- the considerations with regard to animal welfare and the environment
- the increase or decrease of food safety
- the BSE crisis
- the responsibility of consumers with regard to food scandals
- the change in their eating and buying behaviour compared to the past
- their trust in independent institutions

Conclusion

In our view this division underlines, that people's attitude towards food and food safety is indeed of influence on where people buy their food. Both the 'concern' group as well as the 'pleasure' group participants buy most of their food either from an organic store or directly from an organic farmer. But most of the participants of the 'care' and 'indifference' group generally buy their food in supermarkets, because of the price and convenience.

It is difficult to determine if personal characteristics as gender, age and education play an important role of their own. They seem to be less important in comparison to food attitude, as reflected in consumption choices and consumption motives.

This has, however, still to be confirmed by further research.

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Poster Session

"Sustainable Nutrition and Consumers"

Kompakt - Sustainability Skills for SME's in the Nutrition and Food Sector

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The German National Development Partnership “kompakt – Sustainability Skills for SMEs” aims at the implementation of sustainable economic performance in small and medium-sized companies (SMEs) of the food sector. Project partners are business associations, research institutes and consultants. The National Development Partnership is constituted by eight partners and it is coordinated by the Wuppertal Institute. The common interests of the trans-national development partnership are:

- To identify company needs due to structural change in the food and nutrition sector
- To develop and implement strategic plans for SMEs (in the food and nutrition sector)
- To adapt and further develop management tools for SMEs
- To design mechanisms for training and capacity building
- To facilitate the transmission of knowledge in SMEs
- To discuss sustainability issues and constraints of SMEs
- To initiate a concept of “sustainability representatives” within the companies
- To evaluate actual changes in SMEs’ management

The project is funded by the European Social Fund (EQUAL); responsible for the funding in Germany is the Ministry of Economics and Labour (BMWA). The website (see below) is an information portal for a sustainable food sector, offering news and information about sustainability issues in the food sector, labels and initiatives, and the background of the project. Furthermore, the website includes an Initial Sustainability Check (INC) for enterprises and instruments for a sustainable development of companies. The project’s objectives can be summed up as:

- Increasing eco-efficiency and the sustainability performance of enterprises by optimizing processes and use of resources
- Strengthen the competitiveness of companies in the food sector
- Improving competences of employees by qualification
- Promoting cooperation between enterprises
- Improving organizational learning and communication processes
- Offering information and news for a sustainable food sector

Further information: www.eee-project.net or www.kompaktnet.de

Sustainability and Nutritional Behaviour

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Background & Objectives

Since the Conference in Rio de Janeiro in 1992 the concept of a sustainable development is well-known in science, politics and industry. The field of nutrition has a high potential for conservation of nature and natural resources, 20% of the utilised primary energy in Germany is needed for nutrition. Therefore guidelines and recommendations for a sustainable nutrition are published to change the consumption behaviour. A survey was conducted to investigate the appreciation, the expertise and the relevance for a sustainable nutritional acting and behaviour.

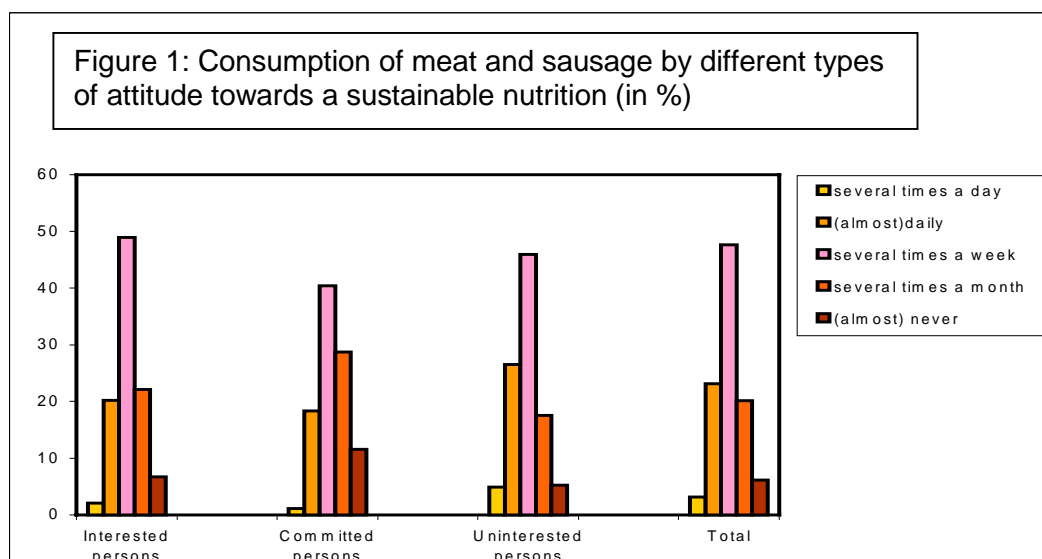
Methods

1004 representative telephone interviews – mainly closed questions – have been conducted in Germany in October/November 2003 with persons between 20-60 years.

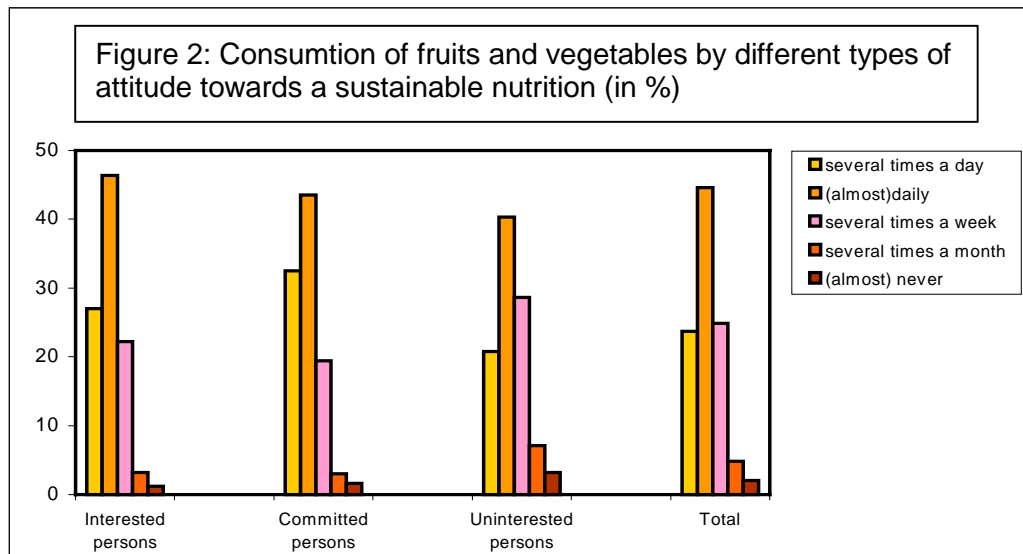
Results

According to their attitude towards a sustainable nutrition the respondents can be categorised into three groups. The “interested persons” represent 75% of the respondents, nearly 9% are “committed persons” and 16% “uninterested persons”. Their consumption patterns and shopping behaviour reflect their attitudes.

The frequency of consumption of meat and sausage is the lowest within the group of the committed, followed by the interested persons. To eat meat and sausage is most common within the group of the uninterested persons (Fig. 1).



The frequency of the consumption of fruits and vegetables indicates a converse picture. Committed persons have the highest percentage of eating fruits and vegetables several times a day (Fig. 2).



The analysis of the buying behaviour (Tab. 1) shows for all groups that “fresh” and “unprocessed” are the most important criteria with regard to the shopping of foods, whereas “convenience” is the most unimportant. Ethical aspects (especially animal welfare) and packaging have a higher weight for all respondents than ecological aspects like organic, local or seasonal foods. For the uninterested persons the price is the second important criteria, whereas for the interested persons the price is ranked on the 4th and for the committed persons on the 5th position.

Table 1: Buying behaviour by different types of attitude towards a sustainable nutrition

Important in purchasing:	Attitude towards a sustainable nutrition (means)			
	Interested persons	Committed persons	uninterested persons	total
fresh/unprocessed foods	1,7	1,4	2	1,7
ethical aspects	1,9	1,7	2,3	2
packaging	2	1,8	2,4	2,1
value for money	2,2	2,4	2,1	2,2
ecological aspects	2,4	2,1	2,8	2,4
convenience foods	3,8	4	3,7	3,8

(Rating: 1=very important -> 2=important -> 3=to some extent -> 4=less important -> 5=not at all important)

Conclusions

The study shows clear differences in shopping and consumption behaviour between the three groups of different attitude towards a sustainable nutrition. The really active people in the sense of a sustainable nutrition are a small group of almost 9%, but there is a high potential for training and education within the majority of the interested people.

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Design of sustainable food chains: measuring consumers' willingness-to-pay through the performance of experimental auctions.

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Today's EU animal production systems face a major challenge. On one hand, they must deal with society's demand for production strategies that are safer, more environmental-friendly and ensure better animal welfare. On the other hand, they have to address food suppliers' aspirations for economic sustainability, good public image and added value products. The study of consumers' perceptions and beliefs regarding different meat and fish production systems, as well as their incorporation in the design of ethically-improved foods and supply chains, is key in providing successful answers to this challenge. Moreover, the ability to quantify consumers' willingness-to-pay for new, ethically-improved foods is vital for the economic sustainability of the animal production sector, as well as for the generation of added-value products.

This abstract presents the outcome of a pilot study of Dutch consumers' willingness-to-pay for fresh fish originating from production systems with different levels of ethical attributes. Experimental auction markets^{1,2} constituted the methodology employed. This type of auctions simulates active market environments with the aim of estimating consumers' valuations of goods and uncovering the determinants of these valuations, namely the effect of different attribute levels. Consequently, it can assist producers in establishing the design and pricing strategy for new or modified goods (such as fish-based foods originating from production systems with higher levels of ethical attributes), and determining the potential profitability of producing and selling these products while they are still in a conceptual phase.

Fifteen Dutch citizens living in the province of Noord-Holland and being regular consumers of fresh fish were selected to participate in this study. Two ninety-minute research sessions were held in December 2003. Information regarding the participants and the perceived relevance of different ethical attributes of fish production systems was collected prior to the actual auctions. The ethical attributes were chosen based on results from collage and focus group studies conducted previously^{3,4}. The type of auction employed was the second-price, sealed bid auction.

The results obtained give some indication that Dutch consumers' might be willing to pay more for ethical benefits, namely those perceived to be associated with safety. Nevertheless, our findings also indicate that these consumers might not always be consistent in their valuations of the ethical attributes considered to be relevant, which often contradict their previously stated beliefs about fish production systems.

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CAN FOOD QUALITY IMPROVEMENT CONTRIBUTE TO A SUSTAINABLE FOOD SYSTEM?

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Introduction

INATEL is a nation-wide public agency, with more than 250,000 members, aiming to enhance the well-being, social and cultural enrichment of active and retired Portuguese workers in their leisure time. INATEL has 14 hotels spread all over the country, which serve more than 2.5 million meals/year, in average.

One of the goals of the Institution is food quality improvement of the meals served to the clients. Therefore, INATEL works in partnership with nutritionists of the Faculty of Nutrition and Food Sciences of Porto University, in order to improve food quality, management and nutrition education.

Each hotel has its own peculiarities, including gastronomic aspects, regarding the region where its located. The menus served to the clients are different in each hotel and promote regional recipes whenever it is possible. Some projects and strategies were developed in order to promote Portuguese Gastronomy, which was considered cultural patrimony through the Minister Council Resolution nr. 96/2000.

As nutritionists we wanted to improve food quality of the meals served in the hotels. The first step was to collect fortnightly menus and most of the recipes that used to be cooked and served. Some of the dishes were not very well balanced and needed some nutritional adjustments. Consequently, the recipes were slightly changed to make them more nutritionally balanced. At the same time, as we were following the cooking methods, we realized there were some procedures concerning food safety and hygiene that also needed to be improved. Implementing a food safety system and preparing healthy dishes allowed to improve food quality of the meals served in the hotels. Concerning all these aspects, INATEL wanted to promote food quality near the clients and at the same time the regional gastronomy, regarding the region where each hotel is located. Three projects and strategies were developed to reach this objective. Then, after the implementation of those projects, namely the "Cuisines' technical dossier", the "Chef suggests..." and "The soups of our regions", we noticed they were also contributing to a sustainable food system.

As in all countries, every individual is involved in the food system by the simple fact of eating, and the choices each one of us makes in the marketplace have wide implications regarding the structure of that system. Ecologically, the food system is a cycle of production/consumption/recycling. Concerning all these aspects and since the hotels have access to local food products, produced by local farmers, INATEL has the possibility of buying less expensive fresh products and, at the same time, to contribute to food production and consumption, enhancing the economic, environment and social health of a particular region.

Even so sustainable food system is a wide concept, it's important to use techniques less hazardous to the environment and avoiding any kind of pollution. On the other hand, it should value the region's resources, including the human ones, creating conditions to promote a sustainable economy in the region.

Objective

The objective of this paper is to describe the food strategies used to improve food quality within INATEL, showing how these strategies can also contribute to a sustainable food system.

Methodology

We evaluated INATEL's food quality by collecting various recipes from each hotel, which were then evaluated for nutritional composition, ingredients used and cooking techniques. At the same time, fortnightly menus were also collected and analysed regarding the content, including fish and meat varieties, vegetables and starch-rich foods as well as cooking techniques used. We noticed there were few standardized procedures especially concerning food acquisition and cooking procedures, which could endanger the management process and the nutritional adequacy of the meals served in the hotels. Simultaneously, we observed that INATEL's menus included regional gastronomy dishes, but the recipes used different cooking techniques from one hotel to another. Analysing the menus, we verified that they always included soup that are considered a quality dish in Portuguese gastronomy and presents an excellent quality/price relationship, by providing high quality nutrients for a small price.

Moreover, since INATEL has a monthly magazine, we thought that we might use it to promote the hotels' food quality, reaching the majority of the members in a non-expensive way. Therefore, three strategies were developed to promote food quality, which was our major objective, but the strategies were developed in such a way that we realized the contribution INATEL was giving to the regions where each hotel is located, just by using the local resources.

1. The "Cuisine's technical dossier" project
2. "The Chef suggests..." project
3. "The soups of our regions" project

1. The "Cuisine's technical dossier" project

It is directed to everyone concerned in the meal process. It can be used in menu development, products purchase and meal preparation. It includes a number of technical files, which systematize practices and procedures within the Institution, thus improving food products management. On the other hand, it also ensures a nutritionally well-balanced offer at all the hotels.

Files are plastic coated, of individual use and able to be filed in appropriate dossiers.

Development of the "Cuisine's technical dossier"

- Recipes were selected to be included in the dossier. At this stage, regional gastronomy was considered as well the most nutritionally balanced ones. Soup, meat, fish and desserts recipes were collected.
- Ingredient quantities and preparation techniques were collected, while observing the cooking procedures.
- Photos of the dishes were taken.
- Recipes were adjusted, in order to make them more nutritionally balanced.
- A Chef evaluated the technical files. All the recipes were tested, in order to check their feasibility and as a result, some of the recipes were withdrawn.

- Re-evaluation of technical files was conducted concerning nutritional aspects. Each recipe's nutritional composition was calculated.
- Average meal cost per portion was calculated, considering the products prices of the suppliers located nearby the hotels, in order to obtain the most accurate estimate of the average cost nationwide. Recipe costs were calculated by adding each ingredient average cost.
- Training sessions took place at two different hotels. The purpose was to explain how the technical files work and how the kitchen staff can use them.

Each technical file includes:

- Technical File Number for better consulting, filing and classifying.
- Dish name.
- A reference of the hotel where the recipe was collected.
- A photo of the ready-to-eat dish.
- Ingredient quantities for 100 meals. This is the average estimated number of meals served at the hotel, aside from being an easy figure to work with when it comes to increasing or decreasing the number of meals. Each file also presents the main ingredient quantities per portion. All ingredients represent gross quantities unless otherwise mentioned. Descriptions of the cooking techniques are also included.
- Nutritional composition per portion calculated using "Microdiet" software and Food Composition Tables. Figures result from the average nutritional composition of several ingredients per portion. Macronutrients (protein, carbohydrate and fat, in g), fibre (g) and energy (kcal), are presented.
- Average cost per portion
- A small information text referring nutritional aspects, gastronomic, regional or simply plain facts about the cooking method or the ingredients used.

2. The "Chef suggests..." project

It names the text published in INATEL's monthly magazine. It aims to promote the gastronomy of each hotel and increase the region's resource value. Readers can collect it, because it is a magazine pull-out. It is directed to all members, who have the chance to learn about the recipes and its nutritional composition. They also have the chance to learn a little about the region where the hotel is located. All units are promoted in a cyclic way, which takes place every month.



Figure 1: The “Chef suggests...” project

Development of the “Chef suggests...” project

- The hotel to be promoted is selected. This is based on logistic criteria.
- The selected hotel suggests several meat or fish dishes, and desserts. The nutritionists choose one recipe of each, considering the most nutritionally balanced.
- The nutritionists and a photographer collect all the necessary information at the hotel.
- Ingredient quantities (for 6 persons) and preparation techniques are collected, while observing cooking procedures of the two recipes.
- After cooked and arranged on plates presenting INATEL’s logo, each dish is photographed.
- The Chef who suggests the dishes is also photographed, to accompany the publication.
- The nutritional composition of the two recipes (main dish and dessert) are calculated per portion. The methodology is similar to that used in the technical files.
- At the top of each recipe, a small comment is made referring to nutritional aspects, gastronomic, regional or simply plain facts about the cooking method or the ingredients used.
- “The Chef suggests...” is sent to the editorial office.

3. “The soups of our regions” project

It aims to promote soup consumption at INATEL’s hotels. Portuguese soups are prepared with several vegetables, starch-rich foods, like potatoes, beans, chickpeas or pasta and a small portion of olive oil. Some of the soup recipes also include meat or fish. From boiling these ingredients results a slightly thicker soup, which is usually eaten at the beginning of the meal. For this project a specific logo was designed. Currently, this project includes two strategies: “The soups of our regions” brochure and the “INATEL’s soup book”.

3.1. “The soups of our regions” brochure

A brochure, with the project’s name, was created and directed to the members. It contains important nutritional information and it also explains all the advantages of a regular consumption of soup. It promotes quality soup consumption within INATEL, since the cooking techniques used preserve most of the nutritional quality of raw materials.



Figure 2 and 3: “The soups of our regions” brochure

Development of the “The soups of our regions” brochure

- The text to include in the brochure was written and in order to make it appealing for the client, the brochure was graphically arranged.
- Based on the chosen logo, a ‘tent-card’ was designed which has two compartments, one for the brochure’s disposal and the other to insert a card with the name of the soup suggested by the Chef.
- The nutritionists made the first ‘tent-cards’ and brochures for delivery to each hotel. A meeting took place with the kitchen, restaurant and reception managers, in order to give all the necessary information for the effectiveness of the project. Each hotel received two ‘tent-cards’, one for the reception and the other for the restaurant, to be placed near the soup pot.

3.2. The “INATEL’s soup book”

The “INATEL’s soup book” collects the most characteristic soup recipes of each hotel, in order to promote soup consumption.

Development of the “INATEL’s soup book”

- Each of the 14 hotels indicated the most original and characteristic soup served, bearing in mind the region’s gastronomy. It also indicated ingredient quantities for 6 persons and the preparation techniques.
- All the recipes collected were evaluated, making adjustments in order to make them more nutritionally balanced. Some had already passed this stage, since they were included either in the “Cuisines technical dossier” or selected for the “Chef suggests...” project.
- After cooked and arranged on plates presenting INATEL’s logo, each of the soups was photographed to go along with the recipe.

- The nutritional composition per portion of each soup was calculated using the methodology similar to the one used in the technical files.
- A preliminary text about soups in general, to be an introduction for the “INATEL’s soup book”, was developed.
- A small comment referring to nutritional, gastronomic, regional or historic aspects for each one of the 14 soups presented, was developed.



Figure 4: The “INATEL’s soup book”

Discussion and Conclusion

In order to achieve a sustainable social–economic development in rural areas, it is necessary that agriculture systems and other activities assure a sustainable economy. This can implicate deep changes not only in production, but also some technical and structural changes. Therefore, this will depend on investments made by economical and social agents, local and/or foreigner, promoting competition. The objective is to contribute to local enrichment, taking advantages by using local resources in a correct way.

Sustainable tourism is an open and flexible concept bearing in mind economic, social and cultural factors of a certain place. INATEL practices a kind of tourism that offers the result of natural and local resources such as architecture, festive events and gastronomy. Each hotel interacts with the region where its located and it uses local workers not only to the Food and Beverage sector, but also to work in every other hotel sectors, such as the reception and the cleaning section. This measure allows reducing the local unemployment rate.

All the three projects developed also include regional recipes, which were slightly changed in order to make them more nutritionally balanced. The objective was not to change the original taste and authenticity, having the local Chefs played an important role, since they had the knowledge concerning the traditional recipes. These nutritional adjustments contributed not only to food quality but also to a better management process, because it allowed cookers to standardize ingredient quantities and cooking procedures. Before the implementation of these strategies, different hotels used to spend different amounts of ingredients to prepare the same dish to the same number of people. Therefore, it contributed to a more effective cost control and also to waste reduction.

On the other hand, INATEL can also buy cheaper products because they can negotiate the products' prices directly with the farmer, regarding the large volume purchased. By this way INATEL is a financial investor, which contributes to a sustainable local economy. This aspect

also allows that farmers keep producing and also offer job opportunities to locals. Promoting food quality using strategies directed to the clients is a way of promoting and attracting more

people to visit the hotels and the region where they are located. Improving food quality using regional gastronomy, besides being a management process, which is very important to a institution like INATEL, can also be a way of improving local food system sustainability, contributing to a region development.

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Will climate change affect food security in Europe?

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Rationale

Although climate change related shifts in weather patterns and storm frequencies are well covered by the mass media, consumers have not yet perceived that the greenhouse effect may have adverse effects on agricultural production and procession as well as on nutrition. Generally, there will be a poleward shift in crop belts, and food production will be ruled out in many sub-tropical and tropical developing countries, in which malnutrition is already now a severe problem (IPCC 2001; FAO 2002). The hot and dry summer experienced in Central Europe in 2003 and the severe yield reductions in many regions may be interpreted as an alerting sign of adverse effects of future climatic conditions on crop production even in temperate regions, in which farmers are used to high levels of yield stability (EEA 2004). Without doubt hot and dry summers and changes in radiation and atmospheric composition (CO₂, O₃) will have impacts on European agriculture. Changes in yields expected within the next 50 years have been addressed using crop growth models on continental, regional and local levels by Downing et al. (2000), but modelled yields using historical data tended to be higher compared to the yields actually observed. While the atmospheric climate change factors (rises in temperature, carbon dioxide and air pollutants and changes in the radiation budget) affect yield and yield stability, crop quality may also be influenced by global change.

Effects of climate change on crop yields and crop quality

While during the 20th century central Europe has seen large yield increases, yields may be reduced in the 21st century in Germany and Southern Europe due to adverse climatic impacts. In Northern Europe yields will generally be positively affected. Examples for the increasing crop yields, rising levels of carbon dioxide and increased use of fertilisers during the 20th century are given in Figure 1. While yield increases of wheat showed a smooth and steady upward tendency, other crops (e.g. sugar beet) showed major collapses in some years due to unfavourable climate. Despite the parallel trend of yield and CO₂ increases, the latter has probably had only a marginal effect (ca. 5%) on past wheat yield increases (Lawlor & Mitchell, 2000). Plant breeding and better agricultural management (agrochemicals and cultivation techniques) accounted for presumably 40 and 60% of the envisaged yield increases, respectively.

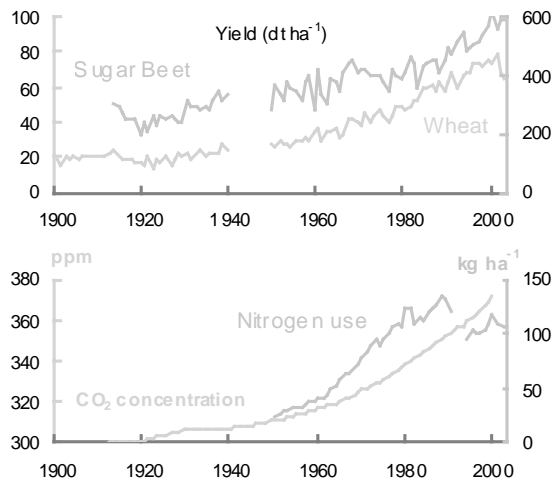


Figure 1: Development of crop yields (above), CO₂ concentrations and nitrogen use in Germany in the 20th century. Data after FAOSTAT and Statistisches Bundesamt.

Since the 1990s, however, there have not been significant yield increases in Germany any more, probably partly due to the re-structuring activities in German agriculture. At the same time temperatures have been rising worldwide. Data from SW-Germany (Baden-Württemberg) referring to the period from 1991 to 2003 alone, indicate negative effects of July temperatures on yields in cereals and potatoes of 5-8% per increase in 1°C (Fig. 2). It is interesting to note that despite the complex nature of yield formation, e.g. soil, climate and management, the simple parameter July temperature accounts for much of the yield variation. It remains unclear, however, whether yield quality was affected as well. Figure 3 hints at temperature effects on crop quality but confirms stronger dependence of crop quality on management and cultivar choice.

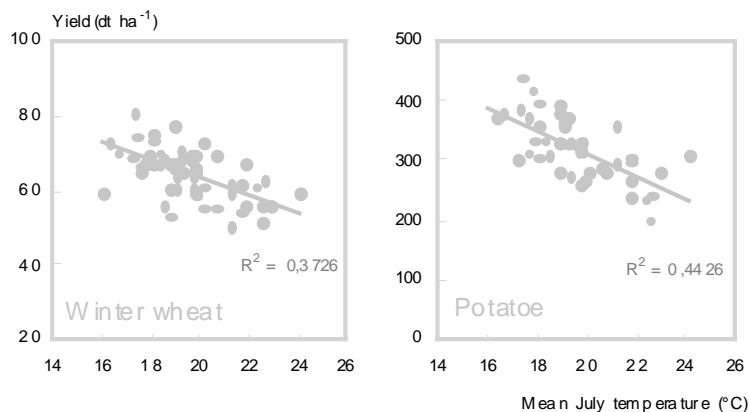


Figure 2: Relationship between crop yields and July temperatures in the 1990s for the districts Stuttgart, Karlsruhe and Konstanz. Harvest statistics after STALA BW and weather data after DWD.de.

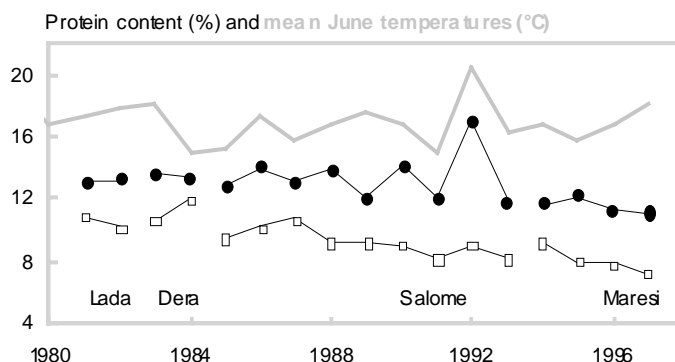


Figure 3: Inter-annual variation of protein contents in fertilised (●) and unfertilised (○) summer barley cultivars in Bad Lauchstädt and mean June temperatures. Crop quality data from Körschens et al., 1998.

While crop yields are currently the main concern in studying climate change effects on agriculture, research will have to be directed also at the effects of rising temperatures and CO₂ concentrations on crop quality. Apart from positive yield responses and depending on utilization and demand by consumers both, positive or negative effects on crop quality have been reported in the literature. These include:

- decrease of protein concentrations across all crops except in legumes
- decline in amino acid concentration and alterations in their composition
- increase in structural and non-structural carbohydrates
- changes in the levels of macro- and micronutrients
- alterations in vitamin concentrations

Conclusion

For the sake of consumer protection and in order to design political measures and practical mitigation strategies, the effects of climate change on food security should be identified as a priority in future agricultural and nutritional research. However, these problems are currently not well perceived in Germany partly due to the political will to cut back the surplus agricultural production in the EU. In other countries, including those which will mainly profit from climate change (e.g. US), research groups on the effects of climate change on agricultural yields and crop quality have long been established and mitigation strategies are being made available to support agricultural and nutritional policies.

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A Home-Economic Model for Analysing Sustainable Styles of Nutrition in Everyday Life

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Introduction

The intention of the present study is to describe and analyse, from an oecotrophological perspective, sustainable nutrition styles within the context of everyday life: a contribution to research into motivations and obstacle in the practice of sustainable nutrition styles.

A model for analysing sustainable nutrition styles from the household point of view is developed. This model is suitable not just for the comprehensive representation and discussion of the current state of research on motivations and obstacle. It's suitable also for structuring the empirical survey and describing nutrition styles in their everyday contexts.

The empirical survey focuses on the patterns of nutritional provision in family households with a high motivation to practice wholesome nutrition as a sustainable style of nutrition. The central question of the survey is, which are the common everyday obstacles against practicing wholesome nutrition.

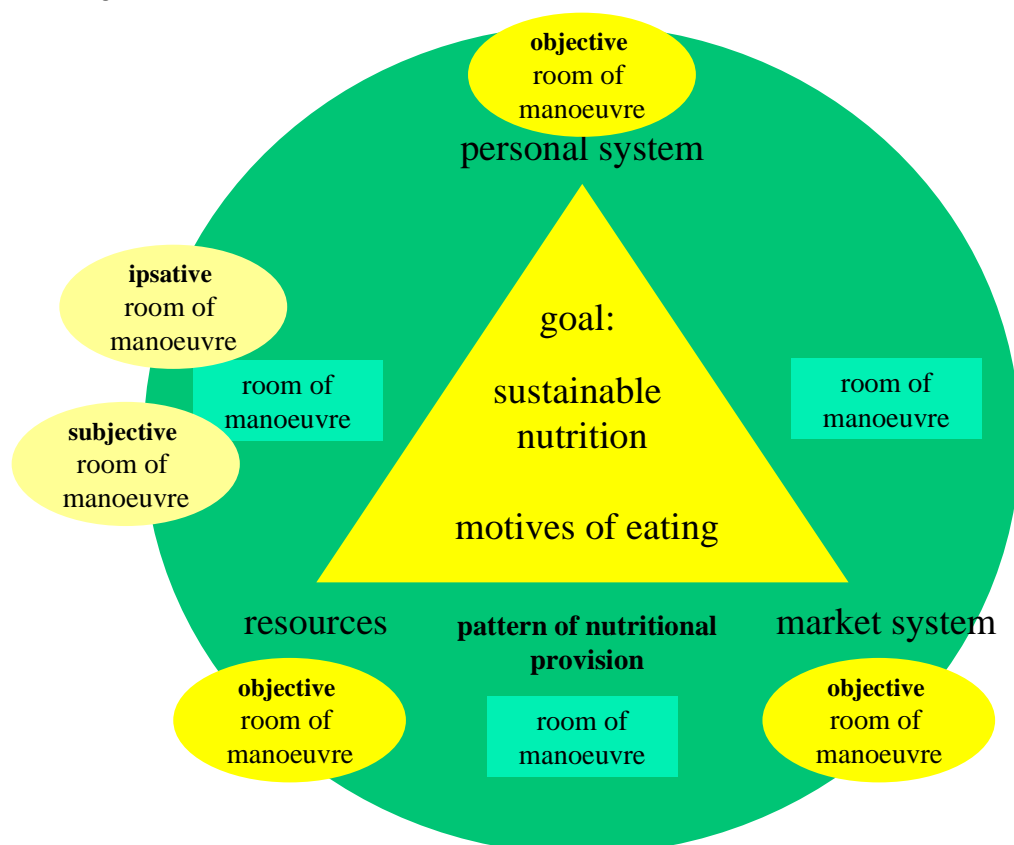


Figure 1: A model for analysing sustainable styles of nutrition: rooms of manoeuvre

Methods and Sample

The sample of the study consists of sixteen households, that have children between the ages newly born and nineteen.

Qualitative and quantitative methods were combined: household analysis, a diary concerning the family's meals and a qualitative interview.

With this combination of methods it was, on the one hand possible to represent the real action of shopping, food preparation and arrangements of meals. On the other hand it was possible to represent the conditions of the household system as well as the motivations and obstacles in regard to practicing a sustainable style of nutrition.

Ipsative theory of action by Frey and Foppa

The "ipsative" theory of action explains the awareness and the use of "Rooms of manoeuvre".

The objective room of manoeuvre is the room for alternative possibilities of action, that the households have. It contains all alternatives of action, the households have from an objective view of point. Examples for restrictions of the objective room of manoeuvre in sustainable nutrition are:

- the persons with their needs and wishes
- their money resources for food
- their time resources and skills for food preparation
- the supply of organic food

The ipsative room of manoeuvre contains those alternatives to the objective room, that the household can think of. An example of an objective possibility, that is not yet in the ipsative room of manoeuvre, is the possibility of buying fair trade coffee in a supermarket, but a possibility, that the household doesn't know yet.

In the subjective room are those alternative of the ipsative room of manoeuvre, whose the household would like to do. Let's take a look on the coffee-example. The household knows about the fair trade coffee offer in its supermarket, but it decides for a non fair trade coffee because it taste better.

Results

The study's results were structured according to the developed model (Fig. 2). They can be summarized in terms of meaning, household and content.

The results show sixteen samples of good practice of strategies of translating sustainable nutritional styles into the everyday life.

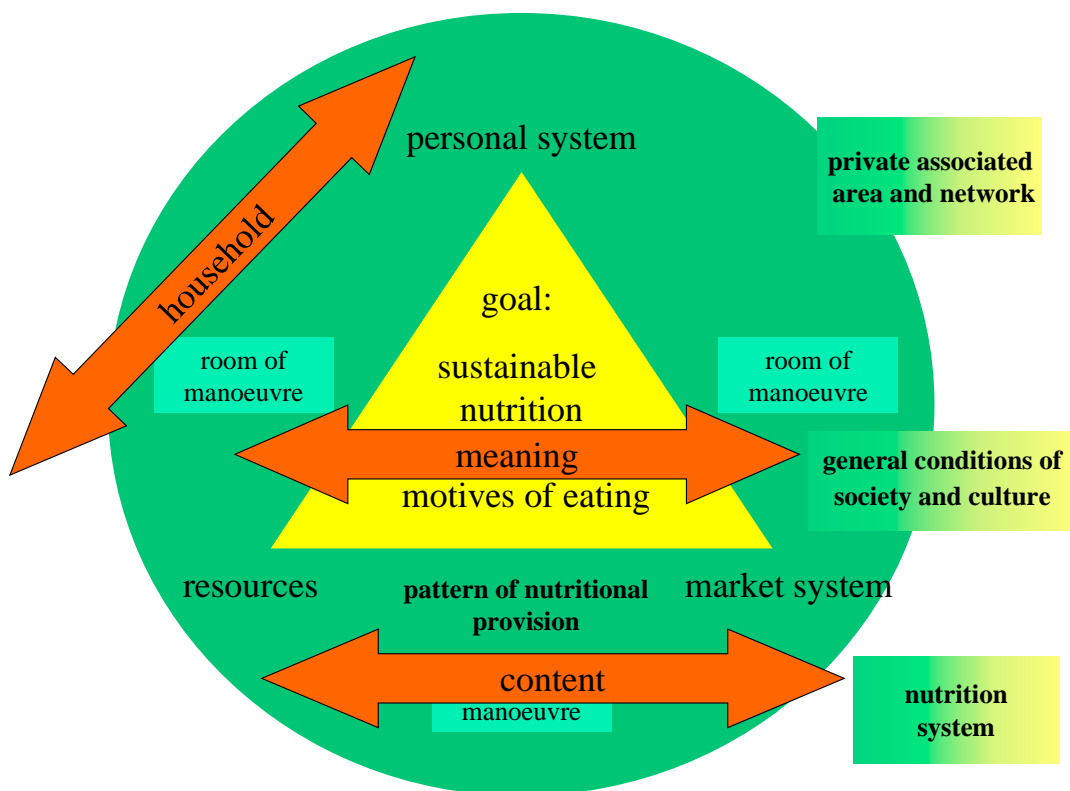


Figure 2: A model for analysing sustainable styles of nutrition: terms of meaning, household and content

Terms of Meaning

What are the guiding principles for nutrition in the households? Are there differences between the rational principles of wholesome nutrition and the individual motives of eating?

The households investigated chose wholesome nutrition as the guiding principle of their nutritional practice. From their point of view, nutrition is of high importance and contributes to the entire family's well-being. Here, the idea of well-being is not just restricted to health and physical enjoyment, but also implies such aspects as the quality of family life. Ecological awareness also is taken into consideration in regard to common meals.

For the households investigated, the guiding principle of wholesome nutrition is highly suitable for fulfilling the manifold functions, that those households ascribe to eating.

Terms of household

What are the main factors, on which the consistency of wholesome nutrition and the required expenditure depend ?

Here some examples of the main factors: Levels of demands concerning the practical realization: Those demands have considerably influences on the consistency of putting theory into practice.

Coordination within the household: The concept of wholesome nutrition should be supported by both partners for the consistent practice. The competences in regard to everyday activities: The costs of wholesome nutrition in terms of time and money is, on the whole, a matter of having an efficient household organization and efficient work organization.

A private associated network: A network, in which several people practice wholesome nutrition, is also an important factor for a high consistency.

The consistency of wholesome nutrition is dynamically adjusted as households and their conditions develop. This can lead to phases of more or less consistent practice.

Terms of content

How do the investigated households put the different principles of wholesome nutrition into practice?

Barriers against an ethical-ecological consumption: Even for the highly motivated households, cost barriers, like the higher costs of organic food, makes it difficult to follow the principles of ethical-ecological consumption. Other important difficulties are access barriers, such as a non-efficient supply of organic or fair trade food.

Barriers against a healthy nutrition: The main barrier against a consistent implementation of the principles of a healthy nutrition is the consideration of taste and pleasure. If households members don't like special products, e.g. whole grain products, they won't eat them, even though they are very healthy.

The questioned households do not practice wholesome nutrition in a dogmatic way, but in a patchwork style. That means, they follow the different principles with varying degrees of strictness.

- Recommendations for Promoting Sustainable Nutrition in Area of Education and Consulting
- Consideration of the multi-dimensional perspectives of nutrition in everyday life
- Consideration of the patchwork character of sustainable styles of nutrition
- Analysing the three kinds of rooms of manoeuvre: be aware of, use and widen those rooms
- Communication with models of good practice

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CONDOR: CONsumer Decision making on ORganic products

EU-Project CONDOR: QLK1-2002-02446 (duration: 01/2003 – 12/2005)

J. Stiebel, E. Claupein

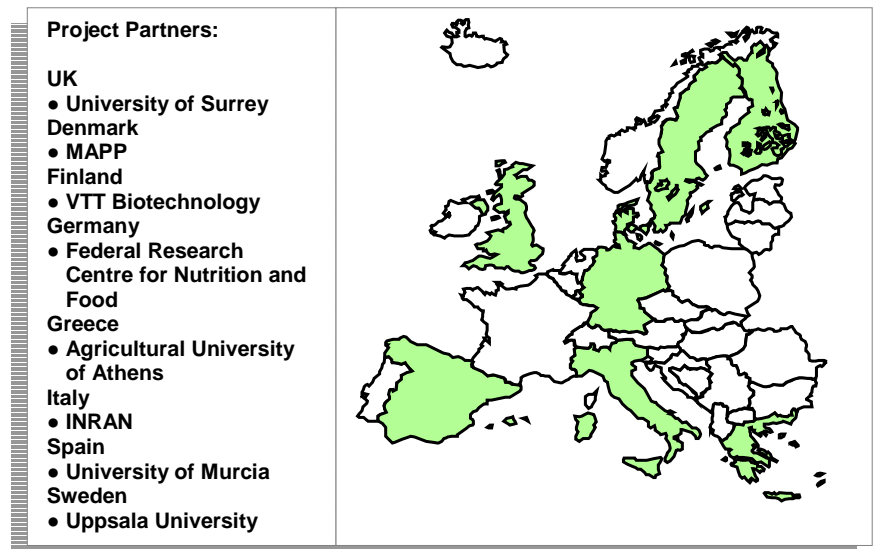
Federal Research Centre for Nutrition and Food, Karlsruhe, Germany

Objectives

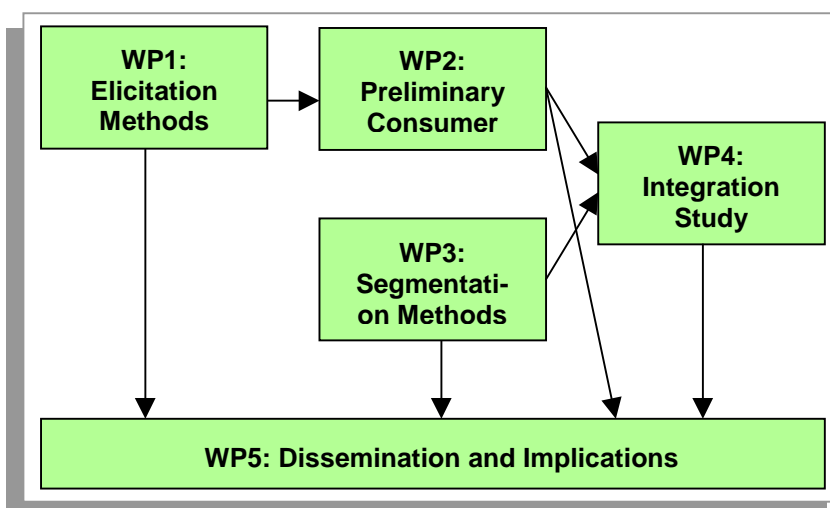
Although the market for organically produced foods features broad opportunities for EU-wide expansion, until now it remains relatively small. To increase it efficiently, an elementary understanding of all the processes comprised in consumer decision-making in terms of the choice between organic and non-organic foods is required, considering consumers' attitudes towards fresh produces and processed foods with organically produced components. Accordingly the main

objectives of the EU-project CONDOR, in which eight EU member states are united, which represent a geographic spread across Europe with greatly varying market penetration of organic foods, are:

- to provide a basic understanding of the processes involved in consumer decision-making on the purchase and consumption of processed and fresh organic foods;
- to model consumer choice of organic foods based on attitudes, values, affective and moral concerns over eight EU member states.



Methods

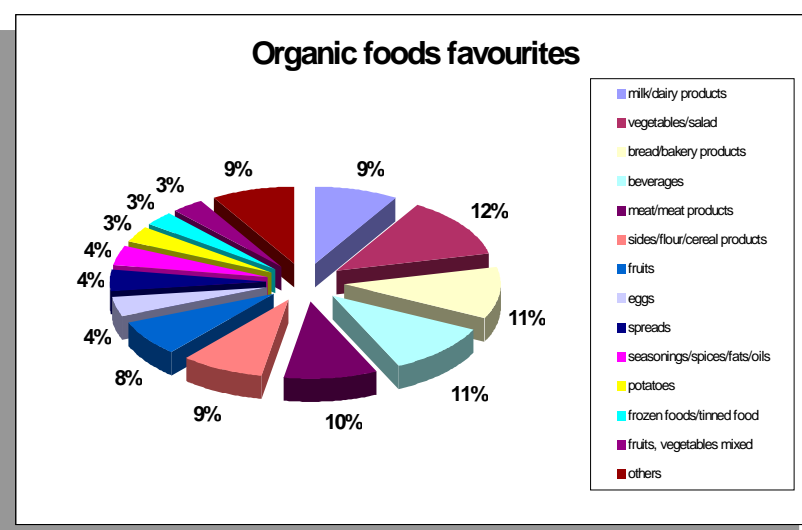


The project is divided into five interrelated and interdependent workpackages (WPs). A comparison of four elicitation methods took place in the UK, Finland and Italy (WP1) to find out the method that takes best into account the less rational influences on behaviour and elicits beliefs about fresh and processed foods. After the completion of WP1, the traditional method was chosen as the

basic method of WP2, complemented by an open-end emotion section, to detect the key affective and moral issues regarding the consumption of organic food by using structural interviews (n = 200 in the UK, Finland, Italy). The qualitative technique of laddering was used in WP3 to trace cross-national and country specific attributes-to-value chains by eliciting cognitive structures, food-related lifestyles (FRL) and different levels of experience with organic products (n = 100 face-to-face interviews in the UK, Denmark, Germany and Spain). Many works on FRL have already identified typical consumer segments across European countries. Currently those values that best discriminates between segments are identified and serve as an input for WP4, where qualitative (n = 50) and quantitative (n = 1000) interviews will be accomplished in each participating country, with the aim to arrive at a model of consumer decision-making in relation to organic foods. WP5 runs throughout the project and deals with the dissemination and publication of results.

First Results (WP3/Germany)

Consumers' demands on the quality of foods refer to four main dimensions: hedonism, health, process, and convenience. In the minds of many consumers, processed organic foods as well as the combination of organic produces and convenience cause a mental conflict with possible negative impact on the product acceptance – e.g. to be seen in the fact that the proportion of frozen and convenience foods in the



total demand of all organic products in Germany only amounts to 3% (see chart below)

¹ WP3 attends to this conflict by eliciting consumers' cognitive structures with regard to (organic) foods of different degrees of convenience, based on varying stages of processing (using pizza as a stimuli). The first review of the German data confirms the assumption of a mental contradiction, too, which is closely related to the discrepancy between consumers' evaluation of organic foods to be fresh, pure, and healthy, whereas convenience food is rated as processed, not fresh, less healthy or even unhealthy. Parallel to a general mistrust in the products' claim of being organic – though the foods are tagged with the official national "Bio"-seal – the degree of mistrust increases in case of organic convenience products, varying in accordance to the degree of convenience. The analysis also verifies the results of previous studies, that individual values – most of all happiness/pleasure, healthiness/longer life, security, independence/flexibility, inner balance/inner harmony and hedonism – are more crucial for buying foods, than social values such as responsibility for future generations, for nature and the environment, which is also true for organic foods.

¹ Goessler, Ralf (editor), Strukturen der Nachfrage nach ökologischen Nahrungsmitteln in Deutschland, Materialien zur Marktberichterstattung, vol. 53, Bonn 2004, p. 10.

Bio + Pro: New Target Groups in the Market of organic Foods [1]

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The German market for organic food products has expanded considerably over the last few years. Yet, so far the market share of organic food products still hovers around the three percent mark. However, consumer surveys have indicated a growing interest on the part of the consumers, which points to a significant potential for organic food products. Strategies to increase sales of organic food products will only be successful, if wishes and preferences of consumers are met appropriately. Since consumption of organic food is no longer a matter of idealistic eco-activists, it is necessary to develop a more profound understanding of different consumers' preferences.

Starting with the assumption that preferences for organic food products vary considerably among different consumer groups, the identification of target groups focuses particularly on lifestyles and attitudes, but also takes the social situation, life phase and household organisation into account.

Approach

The study is based on social-ecological lifestyle analysis, drawing on qualitative and quantitative methodologies. The survey focuses exclusively on organic food consumers. Within a representative sample of 2.920 adult purchasers of food in Germany 1.575 organic food users (54%) were identified and selected for further investigation of their attitudes, motives, preferences as well as their buying habits, preferred organic product groups and their shopping preferences related to organic food. Segmentation of target groups was carried out by analysis of attitude and motivation variables with multivariate methods.

Research Results

Women constitute the majority of organic food product consumers. Organic food is particularly popular among middle aged and older consumer groups, the 40-60 year olds. Figures are clearly lower for those under 30. Besides environmental and ethical considerations, health, wellness, food product safety issues (absence of genetic modified organisms and synthetic fertilizers etc.) or compassion for animals turned out to be strong motives for the preference of organic food. Yet, the representative survey made clear that a typical consumer of organic products does not exist. Rather, it was possible to identify five target groups among organic food product consumers:

Totally Convinced Consumers

For the Totally Convinced Consumers (»Ganzheitlich Überzeugte«) ethical considerations and epicurean enjoyment are the basis of sustainable eating habits which also include organic food products. Among this group, middle-aged families with older children, couples and empty nesters are predominant. Representing 25% of organic food consumers, the totally convinced consumers account for about 40% of the sales on the organic food market.

Successful and Demanding Consumers

The Successful and Demanding Consumers (»Arriviert Anspruchsvolle«) also represent a large market potential, which has not yet been fully tapped. Among this group, young and middle-aged women are clearly over-represented. The well-being of a child or children is a central motive for buying organic food products. This group sets particularly high value on

marketing and presentation of the product. With 13% of all organic food consumers, this group accounts for 23% of the sales.



Figure 1: Basis: 1575 Consumers of Organic Food Products

50+ Health Oriented Consumers

Due to their advanced age, the 50+ Health Oriented Consumers («50+ Gesundheitsorientierte») rely on organic food products for health reasons. These consumers appreciate qualified information and advice. Many of these consumers are frequent buyers, but often have only a low income. This group accounts for 17% of the consumers and an equal share of sales in the organic food market.

Cautious and Sceptical Consumers

The Cautious and Sceptical Consumers («Distanziert Skeptische») are the only group where men are the majority. This group contains primarily spontaneous and occasional buyers. Simple preparation (convenience) plays a crucial role. This group accounts for only 13% of organic food turnover. Due to its share of 20% among the organic food purchasers and its relatively high income, the group has a considerable potential.

Young and Undecided Consumers

The Young and Undecided Consumers («Junge Unentschiedene») are strongly price-oriented and buy organic food products only spontaneously and sporadically. They

considerably doubt the personal usefulness of organic food products. With a share of 20% of organic purchasers, the group only accounts for 5% of the sales.

Notes

[1] The study is a result of the research project »Analyse der qualitativen Struktur des Konsums von Bioprodukten (Bio+Pro)«. The project was carried out 2002-2003, supported by funds from the Federal Organic Farming Scheme (BÖL) on behalf of the German Federal Ministry of Consumer Protection, Food and Agriculture (BMVEL) (BÖL 514-43 60/02OE 330).

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Nutrition Styles in Everyday Life [1]

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The main goal of the research project »food change« is to foster a more healthy and sustainable way of nutrition. Therefore, the Institute for Social-Ecological Research (ISOE), analyses the way nutrition is embedded in the everyday life of the consumers. The study of different nutrition styles gives advice for the development of strategies towards a food change. The conceptual framework of nutrition styles draws on social-ecological consumption research that links the study of consumer's motivations to the study of environmental impacts of their behaviour, e.g. by the analysis of material flows.

Approach

The nutrition-style approach has been developed to study the interplay between food-related orientations and the way people manage their diet in everyday life. Based on this approach, an empirical survey with a dual-level, qualitative and quantitative methodology was carried out. The quantitative survey investigated the attitudes of a representative group of 2.039 adults towards nutrition and health as well as their behaviour. Furthermore, data on social situation, life context as well as detailed information on their occupation were collected. The attitudes on nutrition and health as well as some of the sociostructural characteristics were clustered and seven distinct nutritional styles were identified.

Nutrition styles

The results illustrate the diversity of current nutrition styles in Germany: ranging from uninterested fast-fooders to highly health-oriented nutrition styles. Thus, they provide a better understanding of cognitive, motivational and structural barriers that prevent a more sustainable diet in the context of everyday life. Moreover it helps to identify potentials and starting points that could support a »food change«.

Uninterested Fast-Fooder

The Uninterested Fast-Fooders (»Desinteressierte Fast-Fooder«) are indifferent to nutrition- and health-related issues. Regular eating habits as well as cooking are not part of their daily routine. The Uninterested Fast-Fooders like to eat out, especially in their leisure time in the company of their peer-group. This nutrition style is wide spread among younger singles and couples; men are over represented.

Cheap- and Meat-Eaters

For the Cheap- and Meat-Eaters (»Billig- und Fleisch-Esser«) food has to be inexpensive and its preparation simple and not time consuming. Convenience products are therefore highly appreciated. Meat is considered an ideal meal, as its preparation offers a wide range of easy and creative ways. The Cheap- and Meat-Eaters break with rigid nutrition routines and shared meals have lost their importance. This nutrition style can be found primarily among young and middle aged singles, couples and families.

Joyless Habitual-Cooks

The Joyless Habitual-Cooks (»Freudlose Gewöhnheitsköch/innen«) have very little awareness of nutrition issues. Deeply rooted nutrition routines structure their day and provide guidelines. Eating has the character of a duty, it is rarely connected with enjoyment and pleasure. This nutrition style is mostly found among retired singles and couples.

Ambitious Fitness-Oriented

The Ambitious Fitness-Oriented (»Ambitionierte Fitnessorientierte«) prefer high-quality food and follow a very disciplined diet, in order to increase their achievement potential and physical fitness. They balance job-related and private demands with a healthy diet. Therefore, high value and »healthy« products like organic food, but also functional food, play an important role. This nutrition style can primarily be found among couples and families in their child rearing phase, frequently among freelancers and self-employed and among households where both partners work.



Figure 1: Size of the Nutrition Style Segments

Stressed-out Daily Life-Managers

The Stressed-out Daily Life-Managers (»Gestresste Alltagsmanager/innen«) have a strong interest in questions of nutrition, especially in order to provide a balanced diet to their children. The double burden of career and family and the lack of support through other family members make it difficult to realize this demand: getting groceries and preparing them becomes a tedious task. This nutrition style is widely spread among women in the child-rearing phase.

Sophisticated Nutrition-Conscious

The Sophisticated Nutrition-Conscious (»Ernährungsbewusste Anspruchsvolle«) have a strong interest in nutrition issues and show great sensibility for the integral meaning of nutrition in connection with health. They pay great attention to quality, freshness, and the origin of the products. Organic food is considered a benefit to body and soul, synthetic

additives are strictly rejected. This nutrition style is neither bound to a specific phase of life nor to a specific age.

Conventional Health-Oriented

The Conventional Health-Oriented («Konventionelle Gesundheitsorientierte») highly value good food and have a strong interest in nutrition. Cooking, shopping and eating in a communicative atmosphere is highly appreciated. They prefer regional and seasonal products. Their desire to enjoy food collides with the wish to battle weight and health problems. This nutrition style is found among households in their after family phase.

Notes

[1] The research on nutrition styles is carried out in the context of the ongoing joint research project »Food Change: Strategies for Social-Ecological Transformations in the Field Environment-Food-Health«. This project is a joint venture in which the following institutes of the Environmental Research Network (ökoforum) are participating: Institute for Applied Ecology (ÖI) (coordination), the Institute for Social-Ecological Research (ISOE), the Institute for Ecological Economy Research (IÖW), the KATALYSE-Institute for Applied Environmental Research and the Austrian Institute for Applied Ecology (ÖÖI). The project is funded by the German Federal Ministry of Education and Research (BMBF) within the Social-Ecological Research-Programme.

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Implications of the continuing Out Of Home trend on sustainable nutrition

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Introduction

The concept of sustainability as applied to nutrition is currently emerging slowly. So far this is almost always under the guise of consumer food choices. These are usually related to food retailing as in the "Nachhaltiger Warenkorb" (Sustainable Shopping Basket). However, this takes no account of the continuing trend to eat Out Of Home. The overall trend in most countries is an increase in the role of eating outside of the home.

In the USA today 51 c of every Dollar spent on food is spent in a food service operation. Similarly 33 c of every Euro in the German food market is spent in the food service sector. A recent study by the CMA estimates that by 2010 the figure will have reached 40 c. While the business and institutional catering segment is stagnating, brand and system gastronomy is growing. This is especially so at the interface to retailing, leisure and transport. Characteristics of Quick Service Restaurants (QSR) will dominate developments.

Developments

Emanating from these growth segments are firstly a strong focus on standardisation of processes and products, linked to cost reduction drives. Secondly operations are increasingly centralised. This often has severe ramifications on all factors commonly discussed under sustainability. The classic view of sustainable dimensions e.g. as according to the Global Reporting Initiative (Tab. 1) certainly has its relevance for the foodservice industry. However, the import of and focus on individual aspects differs.

Table 1: Relevance of environmental, economic & social dimensions to foodservice

	Environmental Dimension	Economic Dimension	Social Dimension
Classic view of performance indicators	Impact on economic resources of stakeholders and on economic systems at local, national and global levels <ul style="list-style-type: none"> - employees' wages, pensions, benefits - debit/credit to suppliers/buyers - taxes, subsidies 	Impact of products and services on living and non-living natural systems <ul style="list-style-type: none"> - energy, material and water use - emissions, effluents, waste generation - use of hazardous materials - recycling, waste reduction, other programmes 	Impact on social systems within which is operated <ul style="list-style-type: none"> - labour practices - human rights - broader social issues
applied to foodservice sector	<ul style="list-style-type: none"> - employees' wages, pensions, benefits - debit/credit to suppliers/buyers [FAIR TRADE] - taxes, subsidies - profit, reinvestment 	[FOOD RESOURCES] <ul style="list-style-type: none"> - food source, production and processing [NON-FOOD RESOURCES] <ul style="list-style-type: none"> - energy, material and water use - emissions, effluents, waste generation - use of hazardous materials [PROPERTY AND INVENTORY] <ul style="list-style-type: none"> - recycling, waste reduction, other programmes 	<ul style="list-style-type: none"> - labour practices - human rights - broader social issues, social responsibility e. g. - culture repository - hospitality - artisanal skills

Considering the costs and use of resources in foodservice operations fully a third is allocated each to personnel and to food. Aspects pertaining to personnel are allocated to the Social Dimension. Aspects pertaining to food are allocated to the Environmental Dimension. Hence when considering food as a renewable resource in the foodservice sector a greater focus should be given to aspects including its production (crop cultivation, livestock husbandry, catch) and source (regional origin).

To date individual aspects such as fair trade, organic sourcing (especially in catering) or efficient non-food resource use (especially in hotel and tourism) have received individual attention. There are many aspects, especially in the social dimension (e.g. cultural repository, hospitality, artisanal skills, see Table 1) which have not received any attention within a debate on sustainability on foodservice.

Recommendations

In consideration of these developments a two-pronged approach is suggested: all stakeholder groups (Fig. 1) but especially consumers and foodservice operators need to be sensitised to the various aspects of a sustainable consideration more as a complete package

than as individual aspects. Secondly experts need to put nutrition in the Out Of Home sector into perspective when discussing sustainable nutrition.

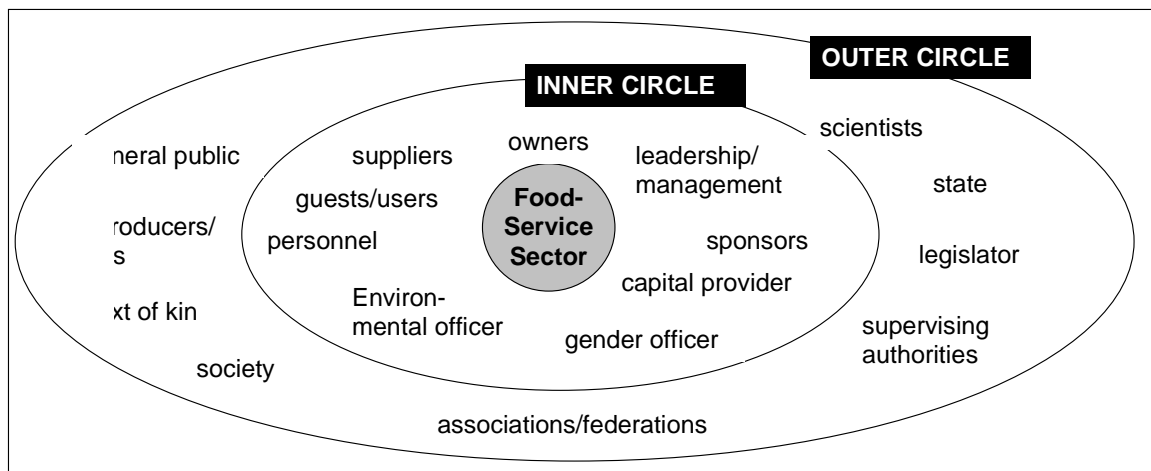


Figure 1: Inner and Outer Circle of Stakeholders for the FoodService Sector

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Poster Session

"Nutrition communication – changes and limits to reach dietary goals"

A comparative study of key concepts in consumer sciences and home economics in higher education in the United Kingdom and Slovenia in relation to the construction of well being

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Historically, in the UK and Slovenia, both Consumer Sciences and Home Economics at Higher Education level have been concerned with the well-being of individuals and their families. The relatively recent development of the subject field of Consumer Sciences in the UK calls into question a potential change of focus and a comparison has been undertaken between the UK and Slovenia to study where there are linkages with nutrition and food skills as well as health communications. Given the potential for links with consumer, nutrition and health education and promotion, this is an under researched area and has interest for future directions of subject teaching and consumer application.

In order to compare these matters between the UK and Slovenia, research has been undertaken to develop appropriate concept maps. Contents and elements of the subject field construction at Higher Education level in the UK and Slovenia in the last four years have been considered, using prospectus, handbook and academic data in terms of stated subject study areas. The research also looks as to how far well being is perceived as a significant area in both countries.

Initial analysis indicates that in the last four years there had been a period of relative stability in terms of course content and emphasis, but with an increasing focus on the consumer particularly as an individual, not necessarily in the context of a family. Certainly in the UK, well-being has had a greater or lesser emphasis, depending on the surrounding pressures in relation to course content and commercial and political pressures respectively and the ways in which it has been defined. The public health context is forming a greater emphasis also in Slovenia and similar pressures can be perceived.

Further details will be presented but there should be potential for Consumer Sciences in the UK with health promotion, consumer and citizenship education and personal, social and health education to be linked into the concept map at school level. In Slovenia the development of the subject area of Home Economics also has some challenges to rise to and future research will track this.

Pre-operating study: A reform of the nutrition and consumer education in schools

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Summary

The main objective of the project "A reform of the nutrition and consumer education in schools" is to provide support on different levels for the innovation and the enhancements of nutrition and consumer education in schools.

This should be done on the basis of current international developments, whilst also taking into account the educational policy of the different German states.

Background

Social changes are largely associated with alterations of habit and lifestyle. Allowing for these changes requires new and extended skills. Current dynamics of social change show that these skills can no longer be acquired through family interaction or random life experience. The spheres of nutrition and consumption show especially clearly, which changes are implicated by the scientific, technological, political, social and economic variations, which are experienced throughout everyday life.

New nutritional perceptions point to, among other things, the importance of:

- | an adequate nutrition for our health,
- | a sustainable nutrition for the relationship between human, social and natural environment,
- | a socially orientated nutrition (meals and eating culture) within the households of any given community,
- | food of good and wide ranging taste and appearance, attributing to life quality and sensual aesthetic development.

The development of the markets, the banks and the credit system as well as the "culture of consumption" require an informed and confident consumer, who is able to recognize and reflect upon his conditions, requirements and needs in an adequate way.

Viewing the problems, with which individuals and society are faced with, if basic competencies for lifestyle are missing, the following problems can occur:

- | nutritional problems like obesity and eating disorders, as well as consumption problems such as excessive debt problems in adolescents;
- | loss of competency in households in the area of general food knowledge, as well as knowledge of food preparation and cooking;
- | missing or insufficient „financial literacy“ concerning the credit system.

These deficits result in developments, which can cause a significant lowering of life quality for the individual as well as high economic (e. g. health) and social (e. g. family) costs for society. The nationwide analysis and evaluation of the nutrition education in schools (EiS-

project), has demonstrated that the resulting demands for education in the German states are inadequately met by existing curricula.

Institutionalisation and curricular definition of nutrition and consumer education on one side, and education, training and assignment of teachers, as well as didactical conceptions on the other, differ considerably in their quality and quantity. They often do not fulfil the standards necessary for the acquisition of a basic qualification. Positive developments in this area are not sufficiently publicised. Additionally, the lack of acknowledgement of school subjects mainly responsible for the teaching of these competencies (e. g. home-economics), means that adequate recognition of them is often a hard-fought struggle. As is the case in almost all school subjects, new didactical developments rarely and tentatively find their way into current school curriculum, thus preventing the necessary change of the subject's comprehension as well as confirming existing prejudices regarding these new developments.

The current educational discussion requires close revision of educational goals and standards, the curriculum, the educational materials and the training programs in the field of nutrition and consumer education. According to other subjects, it is important to follow international development in this area whilst also taking into account the federal structures of the different German states. Educational materials, teacher's manuals and training programs are available nationwide in large variety and in different scientific and didactical quality.

Overall the proposals are often overlooked, biased, not always technically correct and are also often difficult to find. Therefore we have started this collaborative project to work out feasible proposals for the reform of the nutrition and consumer education in schools together with institutions of selected German states. The results will be provided to the ministries of education, to curricular commissions and of course, to schools.

Working program and objectives

The main outcomes and objectives of the pre-operating study REVIS are:

- | to develop a core curriculum and educational standards for all levels of education in the field of nutrition and consumer education, which can be used for different courses of instruction, are internationally comparable and also take the federal structures into account,
- | to collect and systematically evaluate existing teaching materials and to develop model teaching and learning modules as well as supporting teaching materials,
- | to develop portfolios with training and assignment profiles of the personal performance and qualification of teachers,
- | to develop a central internet resource for teachers in the field of nutrition and consumer education (www.evb-online.de),
- | to develop and evaluate a "mobile kitchen" including teaching and guiding materials,
- | to evaluate the acceptance of the newly developed curriculum and of the model teaching and learning modules in a field study in two or three German states.

Financing of the pre-operating study

We appreciate the financial support of the Federal Ministry of Consumer Protection, Food and Agriculture.



Figure 1: The “Mobile Kitchen”

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Consumers' reasons for failing to accept diet recommendations

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Expert recommendations on nutrition are hardly accepted by consumers. To identify the reasons this study investigates the psychological structures of processing educational information. The results provide guidelines for establishing communication strategies that are better suited to change consumers' behaviour.

The results are based on in-depth group discussions with 30 participants and standardised interviews with 1026 German women. The interviews were about dietary patterns and information processing based on the case of folic acid. This vitamin was particularly chosen because of two reasons: (1) there is a need for improving folic acid supply in Germany and (2) the vitamin is not known by most of the consumers.

The results of the study can be summarised and generalised as follows:

Consumers are confronted with a vast amount of nutritional information and recommendations they perceive as ambiguous. To come along in their everyday life despite all the recommendations, they have to develop a diet they believe as being well-balanced and sufficient in nutrient supply. Especially nutritional education can put this balance into question because it causes dissonances between their subjective balance and the experts' advice. Many people use strategies that aim at reducing those dissonances without implementing the recommendations into their diet. Four characteristic strategies could be identified in the in-depth interviews:

- Relativise scientific information: Consumers relativise the risk of an undersupply and reduce the importance of the information.
- Denial of personal relevance: Consumers recognise the problem but they do not feel personally affected.
- Delegate responsiveness: Consumers delegate the responsibility for changing the diet to others i.e. doctors or wives.
- Deliberate intellectually: A detailed engagement in scientific information requires no emotional involvement, changing the diet does not seem necessary.

The standardised questionnaire shows that 55% of the interviewed women use only the strategy of deliberating intellectually. But the stated wish to obtain further information should not lead to the conclusion that consumers want to be informed by scientific information and that they are willing to change their diet. Considering the results of the in-depth interviews, requiring more information is often just the first step of dealing with the problem. Other strategies to reduce dissonances take place in a second step and those strategies determine whether information is accepted or not.

Especially consumers who use the other defence strategies are not motivated or able to evaluate scientific information and to change their diet. In contrast, aiming at their emotions by using attractive images provokes fewer dissonances and less defence.

Using a hybrid communication strategy seems adequate to reach as much consumers as possible: triggering consumers' interest by attractive images, showing simple ways of following recommendations and making further scientific information available for those who have a detailed nutrition interest. Even if consumers do not use additional information availability is crucial as it signalsises credibility.

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Promoting soup as a communication strategy towards health eating

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Introduction

Soup is the culinary preparation that results from the water boiling with an amount of different ingredients during a certain time, usually eaten with a spoon. Portuguese soups are a reflection of the Mediterranean culture, usually prepared with fresh vegetables, having potatoes, pasta or rice as a starchy basis, to which a small amount of olive oil is added.

INATEL is a nationwide public agency, which aims to enhance the well-being, social and cultural enrichment of active and retired Portuguese workers in their leisure time. INATEL has 14 hotels spread across the country, which serve about 2.5 million meals per year.

The art of making soups is part of the history of the meals served by INATEL, and its predecessor FNAT, in the 1950's. By allying tradition to the latest knowledge about the advantages of this extraordinary cooking technique, INATEL intends to preserve this food cultural patrimony. Therefore, this project is aimed to promote the intake of this healthy preparation, enhancing it as a central piece of the Portuguese gastronomy and culture.

In this paper, we will focus on soup promotion at INATEL, considering nutrition and management aspects, as a part of a wider intervention work.

Aims

To describe the communication process in order to promote soup consumption in INATEL, considering nutrition and management aspects.

Design/Methods

In order to promote soup consumption within INATEL a specific project was started in May 2002 called “As sopas da nossa Terra”, meaning “The soups of our regions”. For this project a specific logo was designed.

A Cost/benefit study of 12 soups commonly served by the units was made. The ingredient composition of the studied soups can be seen in Figure 1.



Figure 1: Ingredients of the 12 soups studied

Costs were evaluated in 3 different units, analysing sell and production costs and the number of soups served at each meal. Table 1 shows the costs of each studied soup, in values for the first trimester of 2003. Values presented are per portion (350 - 400 ml).

In Table 2 it is possible to see the results of the main nutrients and energy content of 2 portions of the studied soups, which is the daily usual intake when a person has full board in the unit. Knowing that soups are worth to promote in a nutritional and also cost perspectives, action was taken in order to reach the consumer. Therefore, different communication methodologies were used, based in the communication aims, such as to inform the consumers, to promote its taste, to disseminate, to demonstrate how soups can be cooked, to stimulate its consumption and to promote soup's image. The strategies used were:

- a) "The Chef Suggests...": is an initiative aiming to promote the hotels and their regional gastronomy. It consists of 2 pages in the INATEL's monthly magazine (about 170 000 copies/month) composed by regional recipes with ingredients, a photo, the dishes' nutritional composition and information texts about the menus.
- b) Cooking manual: aims to standardise ingredient quantities and cooking procedures throughout the different hotels. Recipes were collected from 13 hotels, together with the quantities per 100 people. Main nutrition values (macronutrients, fibre and energy) were evaluated. Information texts were produced for each recipe, namely regarding gastronomy aspects, region of origin, nutrition and characteristics of the main ingredients.
- c) Promotion material: a brochure was created, directed to INATEL members. It is written in a simple way, provides images and examples. It gives information about soups' richness in nutrients and its advantages. It is also mentioned soup is part of the Portuguese gastronomy for centuries and has the status of cultural Portuguese heritage.
- d) Soup's promotion in courses and seminars: aimed the increase in nutrition composition of soups and its benefits, together with a discussion about its myths. This subject was included in courses directed to food handlers, but also regarded in seminars for health professionals.

Results

All strategies used appeared to have been well accepted by the institution members. A small study (n=253) carried out in all units showed that about 74% of the sample usually reads "The Chef suggests", of which 26% had already tried at least one of the recipes.

78% of the respondents believe that soup's regular consumption is good for their health. 93% considers INATEL a soup promoter, 65% heard about the "Soups of our region" project, of which 63% consider very important to promote soup's consumption.

Conclusions

Portuguese traditional soups present clear advantages for health, at a low cost. As soups are easy to prepare and have a long tradition in Portugal, they do not consist in a difficult food preparation to implement and are already part of the Portuguese gastronomy, history and culture. However, the fact of soup being a basic food in Portuguese daily life, may seem for the public that is a low importance product or presents a lower nutritional content. It is, therefore, of great importance to communicate in order to promote this product (nutrition, cultural, historical... values). The communication strategies used appeared to be well accepted and useful. Moreover, it would be of great interest to develop this field of research and to study in greater detail how we can reach the population target in order to improve eating habits.





Evaluation of communication strategies

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INTRODUCTION

The State Initiative BeKi (from: Bewusste Kinderernährung)

- since 1980; renamed in 2003 - formerly: "Nutrition Education in Children"
- factual, validated, and independent information on child nutrition and nutrition education
- target groups: parents, teachers in day care facilities, school teachers, home economists and kitchen staff at day care facilities and schools, children up to grade 6

Measures of the State Initiative BeKi

Print Media

- compilations of literature which provide teachers a variety of materials to compose specific programs for the various age groups
- flyers and booklets about nutrition education and child nutrition at various age groups

Advanced training

- in-house advanced training for teachers and staff of schools and day care facilities (e.g. nutrition education, adequate nutrition for children, menu planning, food hygiene)



Qualified Multipliers: Experts for child nutrition (BeKi-experts)

- more than 250 female freelance experts for child nutrition
- professional training in the occupational fields of nutrition, home economics, pedagogics, and/or health services
- qualification by an introductory course which ends with a mandatory practical project
- permanent advanced training by a comprehensive program
- regional supervision, co-ordination and quality management by the regional Offices for Agriculture, Landscape and Soil Cultivation (ALLB)
- target group specific events on child nutrition in Baden-Württemberg in
 - infant groups
 - day care facilities for children
 - primary schools and secondary schools up to grade 6
 - educational institutions for adults
 - other projects and activities

METHOD OF EVALUATION

- comprehensive evaluation according to the RE-AIM Model for health promotion programs
- assessment of public health impact by individual and institutional reach, efficacy, adoption, implementation, and maintenance by
 - a written survey in 2204 primary schools (complete inventory count) (I)
 - a written survey in a random sample of 941 (12 %) day care facilities (II)
 - supplementing internal monitoring data of the Ministry
 - additional short surveys of 10 % of the non-participating institutions in I and II
- quantitative analysis using Excel and WinStat

RESULTS

Response: day care facilities: I 21,8 % II 95,2 % primary schools: I 15,6 % II 59,4 %

	Percentage of day care facilities... ¹			Percentage of primary schools... ¹		
	know	use	future use	know	use	future use
BeKi	≤ 50			60	76	
print media						
compilations of literature and materials	63	42	--	61	48	--
flyers and booklets	27	11	57	25	11	52
advanced training	27	≤ 5	36	21	5	35
experts for child nutrition	48			84		
parent meeting	--	32	48	--	23	42
BeKi-nutrition education	--	--	--	--	62	71

¹without consideration of non-participating institutions in II; e.g. use of flyers in day care facilities: 19 % x 0,218 (I) + 9 % x 0,782 (II) = ~11 %

- during the school year 2003/2004 the BeKi- experts carried out 5154 assignments, predominantly in primary schools
- the majority of school teachers who know the experts of child nutrition or the compilation use these offers
- in primary schools predominantly nutrition education is carried out, but rarely parents' evenings
- advanced training and booklets are little known and hardly used
- many teachers use BeKi-components without knowing that they belong to BeKi

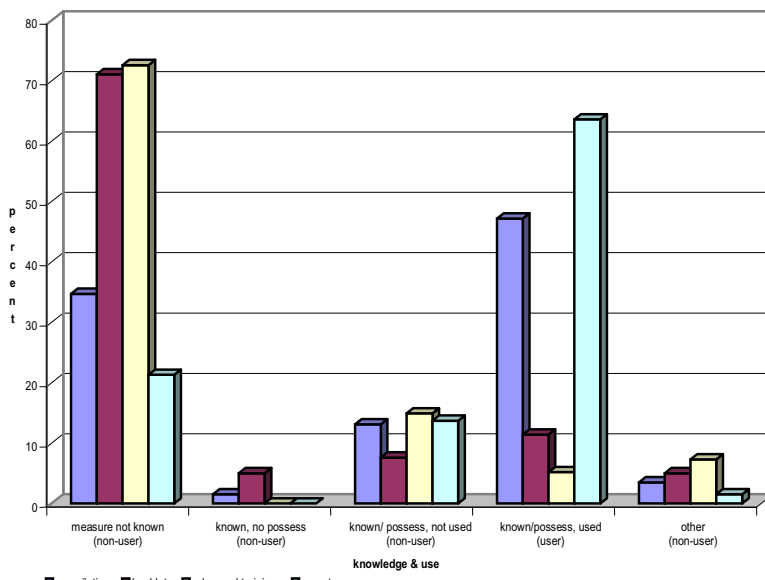
Effect of the BeKi-measures in primary schools

~ 50 % of the teachers noticed the following shorttime changes

- pupils eat healthier breaktime snacks
- pupils change their attitude towards a more balanced diet
- pupils buy less sweets at school
- some teachers
 - pupils dietary habits only depend on parents' house opinions
 - schools impact on child nutrition is overestimated
 - teachers must give a good example
 - continuity of nutrition education is important

CONCLUSIONS

- BeKi is creative, engaging, inexpensive and widely disseminated
- the various BeKi-communication strategies differ in reach and success
- therefore: communication and networking with educational institutions as well as public relations should be intensified
- teachers in day care facilities and school teachers should be motivated to work with the BeKi-materials on their own (empowerment)



252 Fig. 1: BeKi-measures used or not-used respectively by school teachers

How well can dietitians engage in complementary-alternative medicine discussions with clients in nutrition and dietary counselling - Need for concern?

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Many dietitians offer dietary counselling to clients who regularly use complementary-alternative medicine (CAM), or are about to try it. Most CAM treatments and remedies are not scientifically proven. Apparently, dietitians in Norway have lately experienced problems in debating non-scientific and highly sensationalized dietary messages presented in the media. Reasons to the dietitians' problems in discussing controversial issues like CAM, could be found in nutrition education and the teaching ideology that features a highly natural science-dominated study programme. Based on this concern a research project was started, addressing the following questions:

1. What are the dietitians' attitudes towards CAM?
2. What are the predictors of the dietitians' positive attitude towards CAM, and
3. How important are communication skills to the professional work of dietitians?

Professional dietitians were invited to participate through email addresses, and asked to respond to a web site questionnaire. The questionnaire included demographic questions and five-point Likert-scaled attitude statements (1 = "strongly negative" ; 5 = "strongly positive"). The statements were mainly dealing with dietitians' attitudes towards CAM and epistemologies, and their educational experiences with learning communication skills. 117 dietitians responded, which corresponded to a response rate of about 60 %. The majority of statements were applied to build 11 constructs. Between 0-62 % of the respondents were "positive" (the frequencies of "strongly positive" and "positive" answers were collapsed) towards the use of 15 common CAM treatments. Acupuncture, light therapy, herbal medicine, and zone therapy were the most desired. Many of the "positive" dietitians also wanted to learn more about these CAM-treatments. The majority of the explored dietitians expressed a willingness to incorporate teaching of CAM in nutritional education. However, 93 % of the respondents stated that nutritional knowledge had to be scientifically based. To explore predictors of the dietitians' positive attitude towards the 15 common CAM treatments (1st construct and the dependent variable) multiple regression analysis were applied. Nine constructs constituted the independents variables. The results showed that dietitians' willingness to: learn more about CAM (2nd construct); to advise clients in dietary counselling to use CAM as a supplement (3rd construct), to change the teaching ideology of nutritional education from reductionism to holism (5th construct), were the significant ($p < 0.05$) predictors of their positive attitude towards the use of the 15 CAM treatments. Almost all the respondents expressed communication skills to be of utter importance to dietitian professional work, although just 22 % of them "agreed" to the statement that teaching students for the acquirement of communication skills was emphasized during their nutritional education (35 % "disagreed", and 43 % were "undecided"). The results of this study suggest that: (1) internal discussion about the future role of CAM to nutritional education is probably necessary, (2) the teaching about different epistemologies to nutritional students might be emphasized, and (3) combined teaching for nutritional students' acquirement of communication and critical thinking skills are advisable.

Influences On Maltese Children’s Food Intake: Proposing a ‘Socio-Ecological Culture-Cuisine Food Model’

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Introduction

“It is sometimes wrongly assumed that just by providing people with information they will automatically be able to make healthy choices. While more knowledge, information and health education is important, the evidence shows that decisions to adopt health-enhancing behaviour- for example eating healthily...are often constrained by the broader physical, social, economic and cultural environments which influence the choices that individuals, groups and local communities make.” (WHO, 1999).

The complexity of influences on children’s food choices is undisputed. It is an area which has often been researched through analysis of different factors ranging, for example, from gender to family socio-economic status, from individual food preferences to peer modelling, and from maternal prescriptions to school food and nutrition education. However, models which offer an integrated systematic representation of how these different factors work in determining a child’s food intake are scarce.

Spurred by this lacuna and in acknowledgement of the WHO (1999) Health21 statement, research was conducted with Maltese 7-8-year-olds and their parents in order to identify and explore factors which influence the children’s food intake. Based on the most salient themes emerging from the results, a ‘Socio-Ecological Culture-Cuisine Food Model’ is being proposed in order to facilitate understanding of this phenomenon.

Developing The Model

In developing the model, reference was made primarily to the eco-systems theory as conceived by Bronfenbrenner (1989a; 1989b) and to different sociological theories of consumption as proposed by Bourdieu (1977; 1984; 1998), Mennell (1992), Murcott (1982) and Warde (1997). Consideration was also given to Social Cognitive Theory (Bandura, 1986; Reynolds et al., 1999), particularly because of the clear role of preferences, health value cognition and modelling in children’s food intake.

The model’s development was also influenced by Bronfenbrenner’s (1989a) ecological model of environmental influences on behaviour, McLeroy et al’s (1988) socio-ecological model for nutrition education evaluation and Story, Neumark-Sztainer and French’s (2002) composite theoretical framework for understanding adolescent eating behaviour. Elements of Satia-Abouta et al’s (2002) proposed model of dietary acculturation were also included, due to the culture-cuisine interest of the research.

Yet the specific components of the proposed ‘Socio-Ecological Culture-Cuisine Food Model’ are grounded in the results obtained from the different stages of the research as outlined in Table 1. Quantitative and qualitative methods were used with a sample of Maltese primary schoolchildren and their parents. Children were selected from different regions around the Maltese Islands and from different types of schools (fee-paying/non-fee-paying; large, small; single gender, mixed gender). An initial survey served to establish a database of the typical foods and drinks consumed by children in different settings. This database was then used to develop the research tool for a second large-scale survey which identified which were the most commonly consumed and preferred foods and drinks in different settings. Eventually, focus group interviews were held with a representative sample of children in order obtain

more in-depth information on children's perceptions and behaviours in relation to specific foods, such as fruits, vegetables, snacks and with regard to school food rules and TV-portrayal of food. Finally, telephone interviews were held with parents, primarily mothers, in order to explore criteria used by parents in selecting foods for their children, attitudes towards and recommendations regarding school food rules and their experiences of the influence of TV food portrayal on their children.

Table 1: The Different Stages Of The Research Which Provided The Data For Developing The Model

QUANTITATIVE DATA	QUALITATIVE DATA
<ul style="list-style-type: none"> ■ Children's survey (7-8-year-olds; N=163) AND ■ Children's survey (7-8-year-olds) (N=1088) AND ■ Parents' survey (N= 952) <p>Goal: Identification of children's eating habits and food preferences</p>	<ul style="list-style-type: none"> ■ Children's focus groups (7-8-year-olds; N=16 groups X 6 children) <p>Goal: Influences on food consumption</p> <ul style="list-style-type: none"> ■ Parents' interviews (N=30) <p>Goal: Influences on food provision for children</p>

Describing The Model

Given the multitude of variables which emerged as salient from the different stages of the research, a socio-ecological type model was deemed an appropriate framework for explaining the various influencing factors on the children's food choices and behaviours (Fig. 1). This allowed for the pictorial presentation of systems interactions where factors within the various sub-systems in each ecological level influence a child's food perceptions, requests and intake by interacting with each other and interacting across ecological levels. The model considers four different levels of the child's environment and their relationship with the child's food intake: the Intrapersonal, Interpersonal, Community and Macro levels. However, the model also incorporates the label 'Culture-Cuisine', as consideration has been given to the different factors which may influence the acculturation process in food preferences and behaviours.

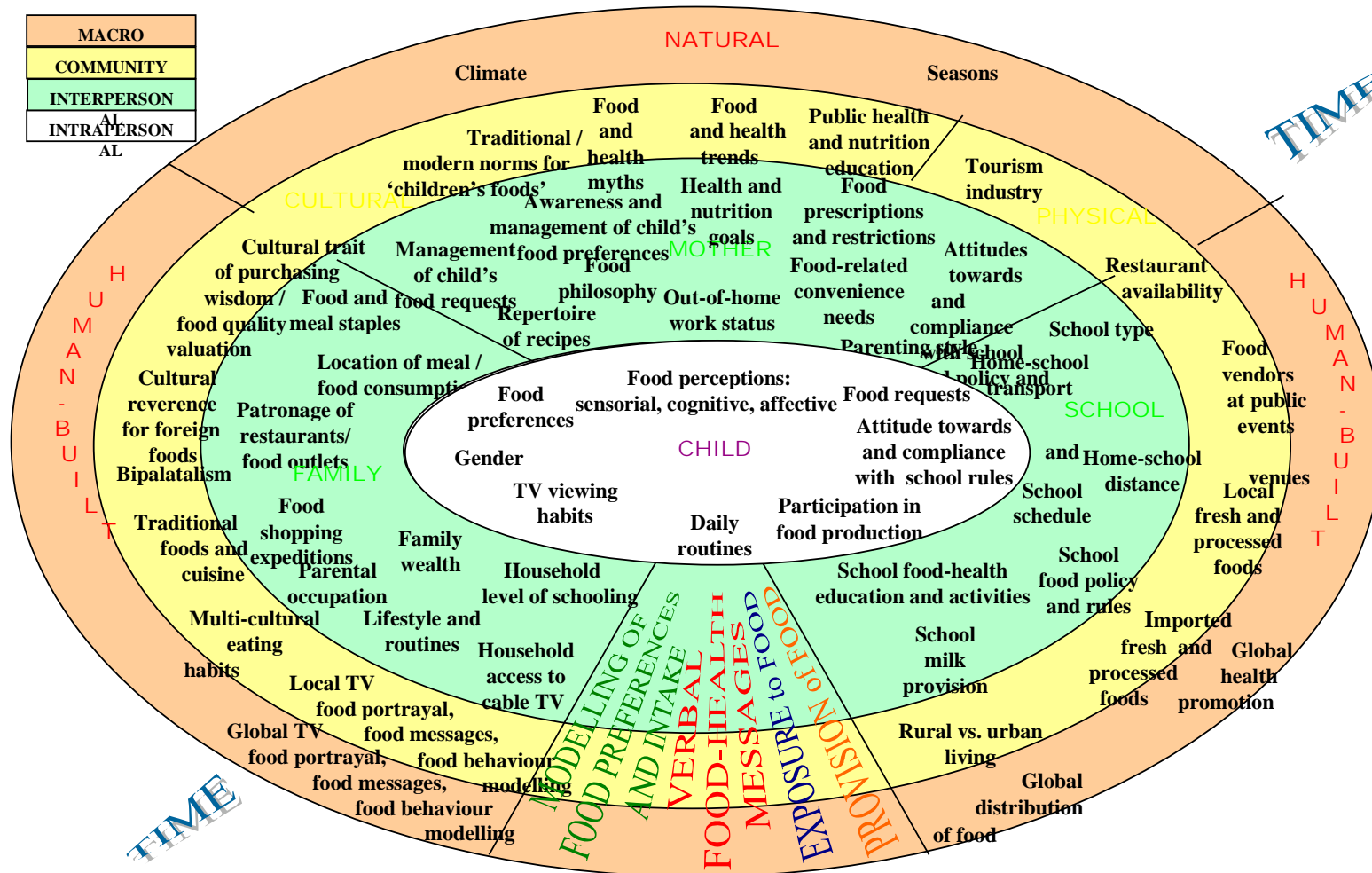


Figure 1: A 'Socio-Ecological Culture-Cuisine Food Model' of influences on children's food intake

At the Intrapersonal level, the child is at the centre of the model, where his or her various mental, emotional, behavioural or biological processes and/or characteristics directly influence food intake. Food perceptions are major players in generating preferences and/or requests and in determining intake. Perceptions can be sensorial, cognitive or affective. Flavour, texture and appearance are sensory-related attributes of foods which influence a food's appeal to children's senses. Health value (nutritional property and food safety), food quality and convenience properties are cognitive perceptions which influence a child's liking or valuation of a food. Enjoyment value of food, the treat value of food, association with pleasurable occasions, or value as a tool for communication with peers are positive affective perceptions which may motivate a child to make particular food choices.

At the Interpersonal level, the key players are the mother, members of the immediate and extended family and members of the school system. The model delineates these three different sub-systems at this level and the multitude of factors within each one which have a role in the child's food intake directly or indirectly. These factors may interact within the sub-system, or with the other sub-systems, or across levels to the inner or outer systems. For example, the mother's hedonic motivation in providing food for her children (as part of her food philosophy) may influence the extent of her food prescriptions and restrictions, as well as her general food-related parenting style (Fig. 2). This in turn will influence her provision of opportunities for the child to participate in food production activities and ultimately the child's self-provided food intake.

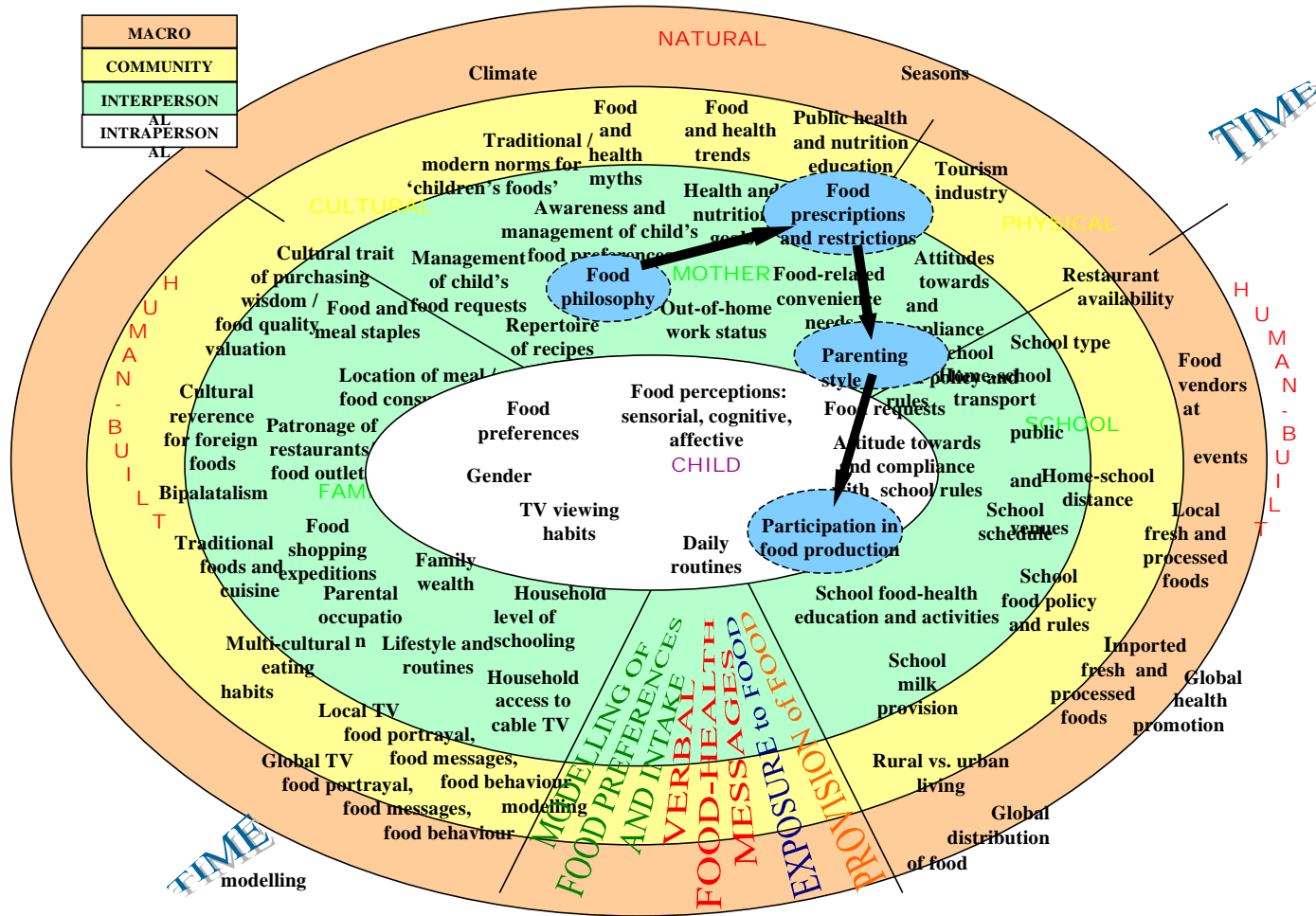


Figure 2: Use of the model to show interaction of different factors at the Interpersonal Level and across levels

At the Community level, two major sub-systems emerge: Physical and cultural food availability. Within the physical system, extent and variety of local and imported fresh and processed foods available on the market influence orientation of the nation's overall diet. Certain foods are more accessible to children as a result of events and venues they typically experience, as well as due to their region of residence. Increasing presence of international fast food chains and take-away outlets offers convenience in food provision and accessibility.

The cultural system is made up of factors related to cuisines, food norms, diet-related acculturation and consumption traits. It comprises community level trends, such as multi-cultural eating habits which embrace traditional foods and cuisine to different degrees and in different settings. The cultural system also comprises factors which could influence norms for children's food, such as local TV modeling of food choices and behaviours, food and health trends and public education on children's nutrition needs. It also comprises certain cultural traits related to monetary value of food and prestige value of foreign food, which could influence the quality and 'foreignness' of food selected by the children's food providers.

The tourism industry falls primarily within the physical system, but also has a role in the cultural system. On the one hand, it impacts on the quantity of catering establishments available and their location. On the other hand, it also exposes local families to foreign and traditional menus by influencing the variety of restaurants available - some of which cater for foreign tastes and some of which showcase traditional cuisine. As with the other levels, Community level sub-systems and factors influence each other, as well as factors in both the Interpersonal and Intrapersonal level.

The outermost ecological level is the Macro level. Here again two major sub-systems are functioning: Natural processes and human-built processes. Two natural processes which effect children's food intake are the climate and seasons. The former affects global food production and sustainability of the local tourism industry. These have an indirect influence on children's food intake via food availability. Seasons have a more direct influence on children's intake, in that certain foods are provided or presented in particular ways by the gatekeeper according to season. Children also have seasonal food preferences. The human-built sub-system mainly comprises global processes related to food availability, food awareness and food and health knowledge.

Both the natural and human-built processes affect a multitude of factors in the lower ecological levels, though they also interact with each other. For example, the global food marketing and advertising machine often utilises TV to transmit its messages (Fig. 3). Occasionally, these messages are counteracted by other messages within global health campaigns which in turn generate national public health campaigns. The various messages communicated influence mothers' health and nutrition goals and/or children's sensory, cognitive and affective perceptions, ultimately determining mother's food provision directly, or as a result of children's food requests.

The 'Socio-Ecological Culture-Cuisine Food Model' also shows that there are four key processes which traverse the four ecological levels to influence children's food intake. These are provision of food, exposure to food, modelling of food preferences and intake and verbal food-health messages. These processes can determine the quality of a child's diet from a variety, culture-cuisine and nutritional perspective. Different factors are present in the four ecological levels which contribute towards these processes. For example, modelling of food preferences and intake may take place in various ways: Global TV food modelling acts directly, or complements or reinforces local TV food modelling. In turn, family members (including mothers, siblings, grandparents and other adult or young relatives and/or classmates, teachers and school personnel) may model food choices or food behaviours. This modelling may be intentional or inadvertent and may result in health conducive or health detracting perceptions amongst children. Ultimately, children's food perceptions may impact on their food requests or intake either directly or indirectly via preferences.

One final component of the model is the reference to the chronosystem. Here Bronfenbrenner's (1989a) concept is extended to explain that time influences children's food intake in two main dimensions. Certain foods are typically eaten at certain times of day, on particular days of the week, within particular seasons. This is the physical dimension. On the other hand, norms exist for child-appropriate foods and children's food socialisation occurs over time. In addition, children and their food providers experience re-socialisation as changes occur in food availability, food exposure and food-health messages. Cuisine-related acculturation also occurs over time. It is a gradual process, the speed of which differs amongst social groups. These are all manifestations of the social dimension. Thus, the chronosystem pervades all ecological levels, functioning obtrusively in certain settings and less obtrusively in others.

Application Of The Model

The 'Socio-Ecological Culture-Cuisine Food Model' has been developed around the phenomenon of Maltese children's food ecology. However, it may also be useful for other researchers who are studying children's eating habits, especially in Mediterranean countries, or countries where there is a strong tendency for Westernisation of the diet. Different factors of the model could be studied individually in more depth, or collectively to trace pathways of influence on children's food intake.

The overall goal of the proposed model is to facilitate the explanation and management of influences on children's food intake, given the complexity of this phenomenon. It can be seen as having three main functions:

- to explore the saliency of factors and/or processes influencing children's food intake;
- to identify intervention points for improving children's food intake from a health and culture-cuisine perspective;
- to offer a framework for international comparative research on factors and/or processes influencing children's food intake, as well as the Westernisation of children's diets.

In conclusion, this study has shown how a multitude of systems interact within the food consumption process also with young school-aged children. Health promotion initiatives and nutrition education interventions need to target the various determinants of children's food intake functioning at the different ecological levels. Importance should be given to the children's own food perceptions, beliefs and valuations, as well as the different routes of influence of the mother, grandparents, the school and television.

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Successful Strategies in the Nutrition Policy of the State Baden-Wuerttemberg

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Introduction:

The health of the population is an important aim in the policy of the State Baden-Wuerttemberg. Therefore since many years, a health supporting nutrition is in the center of the state policy. Nutrition knowledge, nutrition behaviour and the nutritional situation of the population shall be improved. The strategy of the Baden-Wuerttemberg Ministry of Nutrition/ Food and Rural Area is to keep ready made-to-measure offers for the different target audiences in the population. To this the ministry developed various initiatives and programs. All programs include components like personal information of the target audiences through experts, training of multipliers (e.g. teachers), printed information and online-information.



36 Regional Offices for Agriculture, Landscape and Soil Cultivation (ALLB)



Nutrition Centers in Baden-Wuerttemberg



Landesinitiative BeKi – Bewusste Kinderernährung

(State Initiative BeKi - Conscious child nutrition)

Focus:

Nutrition education of children

- competence in nutrition
- knowledge about food
- fun and enjoyment with food and nutrition



Target Audiences:

Children from age of 6 months up to 12 years old, parents, kindergarten teachers, teachers
(school year 2003/04: 446 596 children in primary schools in Baden-Wuerttemberg)



Leading ideas:

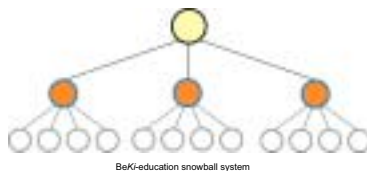
- validated information
- related to behaviour
- no advertisement, independent
- quality management

Coordination:

35 regional Offices of Agriculture, Landscape and Soil Cultivation (ALLB), 4 Nutrition Centers

Realization:

250 BeKi-Experts for child nutrition (snowball system)



Events and Reach:

Events during school year 2003/04: 5 154
Participants parents: about 17 000
pupils: about 83 000
others: about 30 000

Communication:

Events with parents, lessons in schools, activities and projects, conferences, in-house training for educators and teachers, lessons from 1st up to 6th grade, internet, brochures, ...

Cooperation Partners:

- Adult Colleges
- aid
- Consumer Institution Baden-Wuerttemberg
- DGE – German Nutrition Society, Section Baden-Wuerttemberg
- Federations with educational and health targets
- Food Federations
- Health and Education Administration
- MBW Marketing Society for Agricultural Products of Baden-Württemberg
- Research Institute of Child Nutrition, Dortmund
- University of Applied Sciences, Albstadt-Sigmaringen



Landesinitiative Blickpunkt Ernährung/ Brennpunkt Lebensmittel

(State Initiative Focus Nutrition/ Focus Food)



Focus:

Consumer information about nutrition and food, consumer protection concerning health aspects "From Farm to Fork"

Target Audiences:

Teachers, multipliers, school classes, consumers of all ages, the population of Baden-Wuerttemberg
(in 2003: 10 693 000 inhabitants)

Focus Nutrition themes:

- fruit 2002
- meat 2003
- milk 2004
- grain 2005
- vegetables 2006

Focus Food themes:

- BSE
- acrylamid
- nitrofen

Coordination:

35 regional Offices of Agriculture, Landscape and Soil Cultivation (ALLB), 4 Nutrition Centers

Realization:

ALLB, Nutrition Centers, Partners from agricultural production, trade, industry, education and administration



Events and Reach:

(in 2003)
Events: > 3 000 p. a.
Participants: about 700 000 p. a.

"In cooperation with local partners."

Lectures, seminars, workshops, events, school projects, in-house training for teachers, transparent production.



Communication:

Lectures, seminars, workshops, internet, brochures, flyers, ...

This conference was supported by:

German Federal Ministry of Consumer Protection, Food and Agriculture, Berlin
www.verbraucherministerium.de

AMC - Alfa Metalcraft Corporationshandelsgesellschaft mbH, Bingen
www.amc-deutschland.de

CMA – Centrale Marketing-Gesellschaft, Bonn
www.cma.de

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