

CONSUMERS' FOOD CHOICE AND QUALITY PERCEPTION

Karen Brunsø
Thomas Ahle Fjord
Klaus G. Grunert

The Aarhus School of Business

Working paper no 77
ISSN 0907 2101
June 2002

INTRODUCTION	5
QUALITY PERCEPTION AND THE TOTAL FOOD QUALITY MODEL	5
Four types of food quality	6
Approaches to analysing subjective quality	7
The Total Food Quality Model	8
Tools in connection with the Total Food Quality Model	10
QUALITY DIMENSIONS AND CONSUMER SEGMENTS	11
Quality dimensions	11
Consumer segments	13
TASTE: THE HEDONIC DIMENSION	16
Formation of quality expectations: An example of beef	16
Quality expectations and quality experience: An example of pork	18
Discussion	20
HEALTH: THE INVISIBLE DIMENSION	21
Consumers' perception of health in food products	22
Functional foods – the healthy food	26
GMOs in food as a health risk	27
Discussion	29
CONVENIENCE: THE EFFORT DIMENSION	30
The importance of convenience in consumer food quality perception and choice	30
PROCESS: ORGANIC PRODUCTION AND OTHER ASPECTS OF MANUFACTURING	33
Purchase motives for organic products	34
Expectations and experiences with an organic product	36
Consumer segments and organic consumption	37
Discussion	38

CONSUMERS' PRICE PERCEPTION AND WILLINGNESS TO PAY	39
Two approaches to analysing price effects	39
The cue perception process: Price cognition	40
The price integration process: Willingness to pay	41
BRANDS AND GENERIC MARKS IN THE QUALITY PERCEPTION PROCESS	44
Consumer involvement, experience, and the use of extrinsic cues	46
Trust and the use of extrinsic cues	49
Segment-specific consumer reactions to brand and generic marks	50
Discussion	51
GENERAL DISCUSSION	51
REFERENCES	54

INTRODUCTION

There is a long tradition of research into consumers' food choice and quality perception. In the last few years, however, these topics have received even more attention due to the intense debate about such issues as ethical considerations in relation to food production and quality, food scandals and the resulting food scares among consumers, genetic modification of foods, and animal welfare (or, rather, non-welfare), which has made questions regarding food quality and consumers' supposedly rational or irrational food choices even more urgent. Increased interest in health and quality stands in stark contrast to a perceived unwillingness to pay the higher prices this implies, and scepticism about industrial food production stands in contrast to busy lifestyles and a resulting demand for convenience. However, while the topics of food quality perception and choice have certainly become more complex, research has also provided new insights into them.

The aim of this paper is to give an overview of research carried out on consumers' food quality perception and choice at the MAPP Centre during the last 10 years, and is part of a major research project at Fødevareøkonomisk Institut (FØI). In this project, the paper will serve as input on quality perception from a consumer point of view. The results presented in the paper will give insights into how consumers perceive food quality and why they choose the food products they do, and may thus help in understanding the complicated concept of food quality. Although the starting point of the paper is in research carried out at the MAPP Centre, it will also include results from other sources where needed for a more thorough discussion of a specific topic. The criteria for including additional material are relevance to the topic in question and the extent to which the topic has been researched at MAPP. As a general framework for analysing consumer quality perception and choice of food products, MAPP has developed the Total Food Quality Model, which will be used to structure this overview. We start by presenting the Total Food Quality Model and an overview of the research methods involved. We then describe the various elements of the model in more detail, based on four major quality dimensions – health, taste, process characteristics, convenience.

QUALITY PERCEPTION AND THE TOTAL FOOD QUALITY MODEL

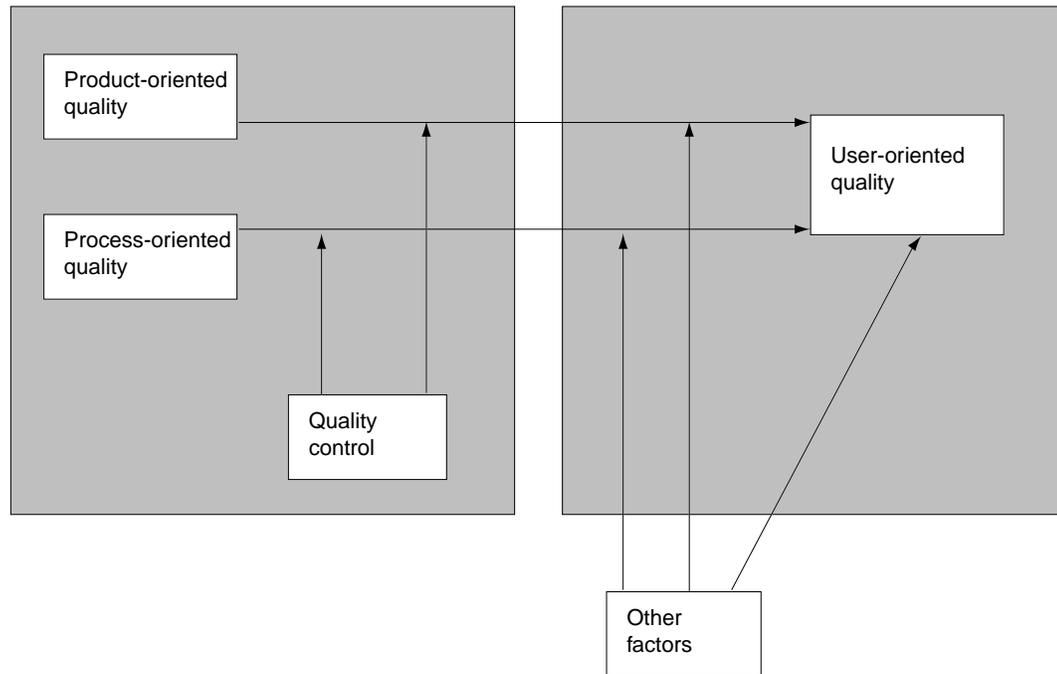
The concept of food quality has received a lot of attention in recent years and has also been the topic of a Special Issue of *Food Quality and Preference* (volume 6, 1995), which gives a good overview of the many different ways of approaching the concept. While many attempts have been made to clarify and define the concept (Bremner, 2000), there is still no general agreement on what the term food quality covers, and how it can be measured (Acebrón & Dopico, 2000; Lawless, 1995). At the conceptual level, many of the proposed definitions include the end-user or consumer as the final judge of food quality, but at the operational level the adoption of a consumer point of view has been less clear (Cardello, 1995; Ismail, Haffar, Baalbaki & Henry, 2001).

In the following, we will distinguish between four different types of food quality (Grunert, Larsen, Madsen & Baadsgaard, 1995). We will focus in particular on the distinction between objective and subjective quality, which is important when discussing the perception of food quality from a consumer point of view. We then review a number of major approaches to analysing subjective food quality, and end this section by presenting the Total Food Quality Model, which integrates these various approaches.

Four types of food quality

We propose to distinguish between four types of food quality, as illustrated in Figure 1.

Figure 1. Types of quality



Product-oriented quality covers all the aspects of the physical product that together give a precise description of the specific food product. Examples of product quality may be fat percentage and muscle size of meat, cell content in milk, starch content in potatoes, and alcohol strength of beer.

Process-oriented quality covers the way the food product has been produced, eg without pesticides, without growth inhibition, by organic production, according to regulations about animal welfare, etc. Descriptions based on these aspects provide information about the procedure used to make the product, and these aspects may not necessarily have any effect on the product's physical properties.

The third quality type is *quality control*, which we define as the standards a product has to meet in order to be approved for a specific quality class, eg the standard for the weight of eggs for various size classifications, the EUROP classification of meat, etc. Quality certification schemes like ISO 9000 deal mainly with quality control. Quality control thus deals with the adherence to specific standards for product and process-oriented quality, irrespective of at which level these have been defined. We can say that product-oriented quality and process-oriented quality deal with the level of quality, whereas quality control deals with the dispersion of quality around a predetermined level.

Finally, *user-oriented quality* is subjective quality perception from a user point of view; a user can be the end-user or an intermediate user in the food chain, eg, a retailer.

Product-oriented quality, process-oriented quality and quality control can also be said to constitute objective quality, since they can be ascertained by measuring and documenting aspects of the product and the production process, and several such measurements of the same product or production process will be identical within the limits of measurement error. User-oriented quality can be said to constitute subjective quality, since it can be measured only at the end-user, and can differ for the same product between users.

The four types are interrelated. Specifically, user-oriented quality is affected by all three types of objective quality. However, these inter-relationships are by no means clear (Steenkamp & van Trijp, 1991), and user-oriented quality can also be influenced by factors that are not characteristics of the product itself, such as the purchase situation, type of retail outlet, price, brand, etc. Much of the discussion on quality in the food industry is concerned with product and process-oriented quality and quality control, while the consumer evaluates and pays for subjectively perceived quality. The amount a consumer is willing to pay for a product depends on this subjectively perceived quality, which is related to, but not the same as, objective quality. Improvements in objective quality, which have no effect on consumers' perceived quality will have no commercial effect, and hence no positive effect on the producer's competitive situation.

Approaches to analysing subjective quality

While there have been numerous approaches to analysing subjective quality in the social sciences, a major distinction can be made between multidimensional and hierarchical approaches.

Most approaches assume that quality perception is multidimensional, ie quality is perceived by combining a number of quality dimensions or characteristics of the product. Economic theory on product quality makes a major distinction between search, experience and credence characteristics (Darby & Karni, 1973; Nelson, 1970, 1974). *Search* characteristics, such as the size of eggs or the colour of meat, can be ascertained before the purchase. In contrast, *experience* characteristics, eg taste, are characteristics that can only be established after experiencing the product. Unlike the first two characteristics, however, it is not possible for the consumer to find out whether the product actually possesses *credence* characteristics, neither before nor after the purchase. Examples are whether a vegetable has been produced according to organic principles or whether a pound of coffee has been produced according to Max Havelaar regulations. These characteristics are not visible and cannot be validated by the consumer even after trying the product (Andersen, 1994). Credence characteristics are thus a matter of credibility and trust, and today credence characteristics are becoming more and more important for consumers.

In the psychological approaches to explaining subjective quality, which are prevalent in the marketing literature, the multidimensional nature of subjective quality is usually handled by invoking so-called multi-attribute attitude models (Ajzen & Fishbein, 1980; Cohen, Fishbein & Ahtola, 1972; Fishbein & Ajzen, 1975; Lutz & Bettman, 1977), where the overall evaluation of an object is explained in terms of its perceived characteristics, the evaluation of those characteristics, and an integration rule. To some extent, the distinction between search, experience and credence characteristics has been incorporated into multi-attribute models by the distinction between intrinsic and extrinsic product attributes (Olson & Jacoby, 1972). Intrinsic attributes refer to attributes of the physical product, whereas extrinsic attributes refer to everything else (examples of extrinsic attributes are brand name, price, store, etc.). Multi-attribute models have been used in hundreds of studies on consumer behaviour in the marketing field (for an overview see, eg, Sheppard, Hartwick & Warshaw, 1988), but they provide only limited insight into the quality perception process. Possible relationships between attributes are not taken into account – for example, that

one attribute, such as health, can be inferred from others, eg fat content – and, most importantly, the question of why certain product characteristics contribute positively to the overall product evaluation while others do not, has not remained answered.

These questions are dealt with in the hierarchical approaches to analysing subjective quality, where the means-end chain model is the most well developed framework (Gutman, 1982, 1991; Olson & Reynolds, 1983; Valette-Florence, 1997). This model implies that consumers' subjective product perception is established by associations between *product attributes* and more abstract, more central cognitive categories such as *values*, which can motivate behaviour and create interest for product attributes. A product attribute is not relevant in and by itself, but only to the extent that the consumer expects the attribute to lead to one or more desirable or undesirable consequences. In turn, the relevance and desirability of these consequences are determined by the consumer's own personal values. The consumer is motivated to choose a product if it gives desirable consequences, thereby contributing to the attainment of personal values (Grunert, 1995).

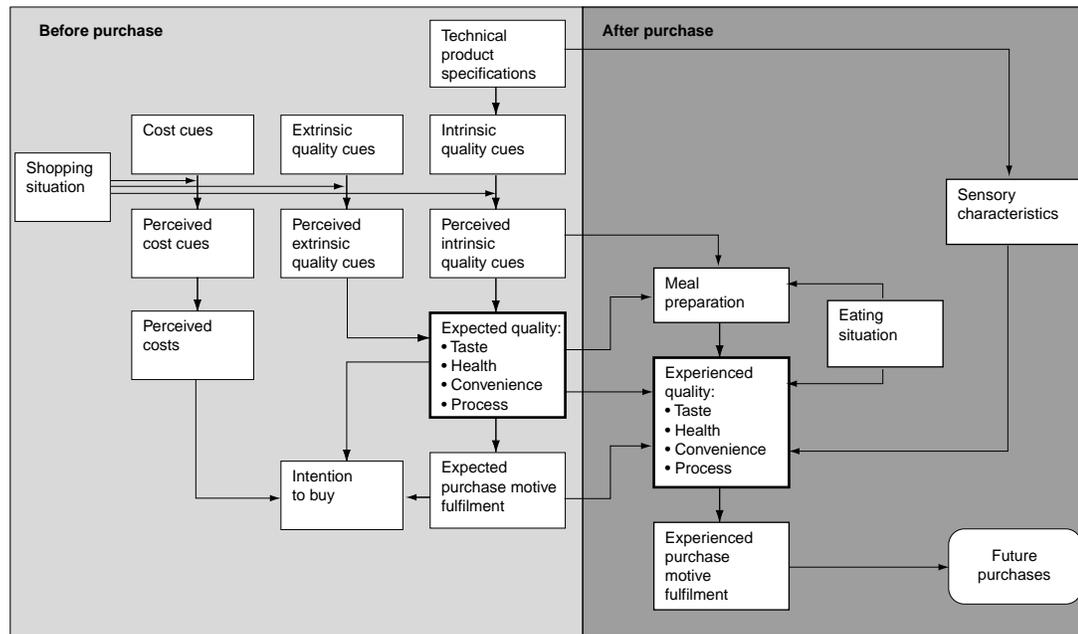
Means-end chains are the links, which a consumer establishes between product perceptions and abstract motives or values. They show how a product characteristic/attribute (eg 'light') is linked to consequences of consumption (eg 'being slim'), which may lead to the attainment of important life values (eg 'higher self-esteem'). Another example: a consumer inspects the colour of a piece of meat (a product characteristic) because s/he believes it to be related to the taste of the meat when prepared (expected quality), and the taste will lead to enjoyment while eating (abstract purchase motive). The basic means-end model has later been extended into more complex models of subjective quality and value perception (eg, Zeithaml, 1988).

The distinction between search, experience and credence characteristics, the multi-attribute approach, and the means-end chain model, are important elements in understanding subjective quality perception, and have been major inputs to the Total Food Quality Model for analysing the quality perception process for food products, which is presented below.

The Total Food Quality Model

The Total Food Quality Model (Total Food Quality Model), originally proposed by Grunert, Larsen, Madsen and Baadsgaard (1995), integrates the multi-attribute and the hierarchical approaches to quality perception. In addition, it integrates two other major elements of consumer behaviour theory, namely the explanation of intention to purchase, as a trade-off between give and get components (which appears in the literature in many guises, mainly as extensions of the multi-attribute framework, as in the Theory of Reasoned Action and the Theory of Planned Behavior), and the explanation of consumer satisfaction, as the discrepancy between expected and experienced quality (Gardial, Clemons, Woodruff, Schumann & Burns, 1994; Oliver, 1980, 1993; Woodruff & Gardial, 1996). The model is shown in figure 2. It should be noted that a number of similar models have been proposed in the literature (Andersen, 1994; Poulsen, Juhl, Kristensen, Bech & Engelund, 1996; Steenkamp & van Trijp, 1996).

Figure 2. The Total Food Quality Model



First of all, the Total Food Quality Model distinguishes between ‘before’ and ‘after’ purchase evaluations. As already mentioned, many characteristics of a food product cannot be ascertained before purchase, ie most food products have only search characteristics to a limited degree. In order to make a choice, the consumer will develop expectations about quality – but it is only after consumption that experienced quality can be determined (and even this is limited in the case of credence characteristics). The distinction between before and after purchase thus forms the basis of the Total Food Quality Model.

In the “before purchase” part, the model shows how quality expectations are formed based on the quality cues available. Cues are pieces of information used to form quality expectations (Steenkamp, 1990). The intrinsic quality cues cover the physical characteristics of the product and are related to the product’s technical specifications, which also include its physiological characteristics, ie characteristics which can be measured objectively. The extrinsic quality cues represent all other characteristics of the product, such as brand name, price, distribution, outlet, packaging, etc. The way consumers use quality cues to infer expected quality can be quite intricate and, at first sight, sometimes appear to be quite irrational. For example, consumers use the colour of meat to infer tenderness, the consistency of yoghurt to infer taste, and packaging in bottles (compared with cartons) to infer wholesomeness. Of all the cues consumers are exposed to, only those which are perceived will have an influence on expected quality. The cues consumers are exposed to and those they perceive, are affected by the shopping situation: the amount of information in the shop, whether purchases are planned or spontaneous, the pressure of time while shopping, etc.

According to the Total Food Quality Model, quality is not an aim in itself, but is desired because it helps satisfy purchase motives or values. The model therefore includes motive or value fulfilment, ie how food

products contribute to the achievement of desired consequences and values. Extrinsic cues such as a label and its information may, for example, generate expectations about exceptionally high eating quality – giving the consumer a feeling of luxury and of pleasure in life. The values sought by consumers will, in turn, have an impact on which quality dimensions are sought and how different cues are perceived and evaluated. The sequence from cues, through quality, to purchase motives forms a hierarchy of increasingly abstract cognitive categories. In this way, the Total Food Quality Model integrates the means-end model of consumer behaviour.

Expected quality and expected fulfilment of the purchase motive constitute the positive consequences consumers expect from buying a food product and are offset against the negative consequences in the form of various (mostly monetary) costs. The trade-off determines the intention to buy.

After the purchase, the consumer will have a quality experience, which often deviates from expected quality, especially when it is based on quality cues with a low degree of predictive power, as mentioned above. The experienced quality is influenced by many factors. The product itself, especially its sensory characteristics (in an objective sense, as measured by a sensory panel), is obviously one determinant, but there are many others: the way the product has been prepared, situational factors such as time of day and type of meal, the consumer's mood, previous experience, etc. And the expectation itself may also be an important variable in determining the experienced quality of the product (Deliza & MacFie, 1996; Oliver, 1993; Schifferstein, 2001). The relationship between quality expectation and quality experience (eg before and after purchase) is commonly believed to determine product satisfaction, and consequently the probability of purchasing the product again.

Tools in connection with the Total Food Quality Model

Given the broad nature of the Total Food Quality Model, the entire range of social science methods can be applied when using it. Due to the cognitive orientation of the Total Food Quality Model, some form of interview technique is usually used as the main means of operationalising the various model constructs. In qualitative work, focus groups have been widely used to obtain a basic understanding of dimensions of quality, relevant quality cues, purchase motives, shopping situations, eating situations and ways of preparing meals. In quantitative work, questionnaire methods have been employed in both surveys and experiments to measure constructs, and structural equation modelling has been important in relating the constructs to each other. In the following we will describe three groups of tools – other than the mainstream tools mentioned – which have been especially important in dealing with the idiosyncratic aspects of the Total Food Quality Model. *Laddering* and *conjoint analysis* have been central in capturing the *vertical* dimension of the Total Food Quality Model, ie the relationship between cues, quality dimensions and purchase motives, while *before-after experiments* have been important in capturing the *horizontal* dimension, ie the interplay of expectations and experiences.

Laddering is a qualitative interview technique, which more or less has been coupled with the means-end approach to consumer behaviour (Grunert, Beckmann & Sørensen, 2001; Grunert & Grunert, 1995; Reynolds & Gutman, 1988). The aim of this tool is to uncover hierarchical relationships between concrete product attributes, the consequences of these attributes for the consumer, and the attainment of life values in the mind of the consumer. A laddering interview consists of two steps: First, relevant concrete product attributes must be identified. This can be done by means of direct questioning of consumers, triadic

sorting, or other methods used to identify the most important attributes to consumers (the pros and cons of five of the most common methods are discussed in Bech-Larsen & Nielsen, 1999). Next, after identifying the most salient attributes, respondents are asked which attributes they prefer. They are then asked “why do you prefer...?”, the answer being used as the basis for the next “why-do-you-prefer” question and so forth until the respondent is unable to answer. This technique attempts to trace lines of causal reasoning from the concrete to the abstract, pushing the respondent up a ‘ladder of abstraction’ in the process (hence the term *laddering*). The data are recorded as individual means-end chains, which are content-analysed and condensed into so-called *hierarchical value maps* showing the major links between attributes, consequences and values for a group of respondents.

Conjoint analysis is a widely used technique in consumer research, where respondents are presented with product descriptions generated according to a factorial design of product attributes (Brice, 1997; Carroll & Green, 1995; Green & Srinivasan, 1978, 1990; Louviere, 1994; Wittink, Vriens & Burhenne, 1994). Respondents evaluate the various product descriptions (by ranking or rating) or make a choice between them, and the responses are used to infer how the various attributes contribute to the overall evaluation, using a variety of statistical techniques ranging from traditional ordinary least squares to ordered logit models. In the context of the Total Food Quality Model, conjoint analysis provides a rigorous way of analysing the vertical relationships between cues and expected quality and/or purchase intent.

The distinction between quality evaluation processes before and after the purchase plays a major role in the Total Food Quality Model. Consumer research has traditionally been heavily biased towards analysing quality perception processes before the purchase, and when processes both before and after the purchase have been investigated, it has often been based on post hoc self-reports on both sets of processes in the same questionnaire instrument, with corresponding problems in terms of consistent answering, etc. We believe that experimental methods are indispensable to a rigorous investigation of the relationships between quality evaluation processes before and after purchase. Such an investigation should include the measurement of both expected quality based on exposure to the set of cues concerned and experienced quality as soon as possible after consumption of the product. When the investigation includes intrinsic cues, it is crucial that both the products which were available for visual inspection in the pre-purchase phase and those consumed later are actually the same, or at least as similar as practically possible.

Later in the paper a number of studies exploring various parts of the Total Food Quality Model and examples of how these techniques are used will be presented.

QUALITY DIMENSIONS AND CONSUMER SEGMENTS

Having established a general framework for the analysis of food choice and quality perception, this section introduces four dimensions, which we believe are quite universal for consumer quality perception of food products. We will then distinguish between different consumer segments, ie groups of consumers, which differ in the way they perceive food quality and make food choices. This prepares the ground for the more detailed analysis in the subsequent sections of the paper.

Quality dimensions

The Total Food Quality Model views quality as a construct in the mind of the consumer, and distinguishes between expected and experienced quality. In addition, it views quality as an abstract construct, inferred

from informational cues and own experience, which is instrumental for the attainment of purchase motives. Finally, quality has been regarded as multidimensional.

We believe that, from the consumer's point of view, food quality – both expected and experienced – has four major dimensions. These dimensions, which cover the major aspects of food quality found from numerous focus group studies (Grunert, Larsen, Madsen & Baadsgaard, 1996), appear to be universal, at least in Western industrialised countries. We call them *taste and appearance*, *health*, *convenience*, and *process*.

For most people, food is, and has always been, a matter of pleasure. The hedonic characteristics of food – primarily *taste*, but also appearance and smell – thus constitute a central dimension of quality for consumers. This has always been the case, of course, but in recent decades consumers have shown an increasing interest in other quality dimensions as well. The hedonic quality dimension mostly represents an *experience characteristic* of a food product, since taste can usually only be established after consumption.

Health is a quality dimension that has become very important to many consumers, and a number of studies indicate that, today, health is as important as taste, and that consumers form preferences based on this dimension motivated by expectations of both a longer life and one of higher quality (Roininen, Tuorila, Zandstra, de Graaf & Vehkalahti, 2001). Here, we regard health-oriented food quality as how consumers perceive a food product will affect their health. This includes functional qualities of foods, but consumers are also concerned about safety and risk-related issues. Health-related qualities are mostly *credence characteristics*, since the consequences for one's health of eating a specific food is a matter of trust, and can seldom be ascertained after consumption.

In recent years, consumers have attached increasing importance to the way food is produced, ie the production *process* has become a dimension of quality, even when it has no immediate bearing on the taste or healthiness of the product. This quality dimension covers organic production, production that takes animal welfare into consideration, and production without the use of GMOs. Much of consumer interest in the production process focuses on 'naturalness.' This quality dimension is also a *credence characteristic*, since the consumer must rely totally on guarantees about production-oriented quality from various sources.

Finally, another factor of increasing importance to consumers is *convenience*. From a consumer point of view, convenience is much more than just ease of purchase or quick consumption. Convenience means the saving of time, physical or mental energy at one or more stages of the overall meal process: planning and shopping, storage and preparation of products, consumption, and the cleaning up and disposal of leftovers (Gofton, 1995).

The four quality dimensions should not be regarded as independent – there are clearly both overlaps and interrelationships. These interrelationships are not unambiguous, and vary from product to product, for instance consumers sometimes perceive good taste and healthiness to be positively correlated, and negatively correlated at other times. Taste is sometimes perceived to be related to the process quality dimension and at other times not. Such inferences are typical of consumer quality perception and we will comment more on them later in the paper.

Consumer segments

While we believe that the four quality dimensions presented above are fairly universal, their relative importance differs between consumers. Generally, the processes of food choice and quality perception are characterised by individual differences: not only will there be differences in the relative importance of the quality dimensions, but also in the way they are inferred from available cues, in the way consumers shop and thus are exposed to various kinds of quality cues, and in the way they prepare and eat their meals, with resulting differences in the quality experienced during consumption. Furthermore, the purchase motives driving the food choice and quality perception process will differ between consumers.

In order to take account of these differences, it is useful to distinguish between different consumer *segments*. We categorise consumers according to their different ways of shopping for food, ways of preparing meals, eating situations, ways of weighting quality dimensions and purchase motives for food, ie their *food-related lifestyle* (Brunso & Grunert, 1998; Grunert, Brunso & Bisp, 1997; Grunert, Brunso & Bredahl, 1998), which we define as the general pattern of how consumers use food to fulfil basic motives or attain life values. Food-related lifestyle can be measured by means of a questionnaire which has been extensively tested for cross-culturally validity, ie for its ability to obtain results which can be compared even though respondents come from different countries, cultures, and language areas (Scholderer, Brunso, Bredahl & Grunert, in press).

Extensive research on consumers' food-related lifestyle in a number of European countries (Grunert, Brunso, Bredahl & Bech, 2001), and also some countries outside Europe (Askegaard & Brunso 1999; Reid, Li, Bruwer & Grunert, in press), has established a number of basic food consumer segments which are described below together with general demographic characteristics:

The uninvolved food consumer. Food is not a central element in the lives of these consumers. Consequently, their purchase motives for food are weak, and their interest in food quality is limited mostly to the convenience aspect. They are also uninterested in most aspects of shopping, don't use specialty shops, and don't read product information, limiting their exposure to and processing of food quality cues. Even their interest in price is limited. They have little interest in cooking, tend not to plan their meals, and snack a great deal. Compared to the average consumer, these consumers are single, young, have part- or full-time jobs, average to low-level incomes, and tend to live in big cities.

The careless food consumer. In many ways, these consumers resemble the uninvolved food consumer, in the sense that food is not very important to them, and, with the exception of convenience, their interest in food quality is correspondingly low. The main difference is that these consumers are interested in novelty: they like new products and tend to buy them spontaneously, at least as long as they don't require a great effort in the kitchen or new cooking skills. The careless food consumer is in general, as the uninvolved food consumer, young and often live in big cities. But in contrast to the uninvolved, these consumers are more educated and they lie in the upper income brackets.

The conservative food consumer. For these consumers, the security and stability achieved by following traditional meal patterns is a major purchase motive. They are very interested in the taste and health aspects of food products, but are not particularly interested in convenience, since meals are prepared in the traditional way and regarded as part of the woman's tasks. The conservative food consumers have the

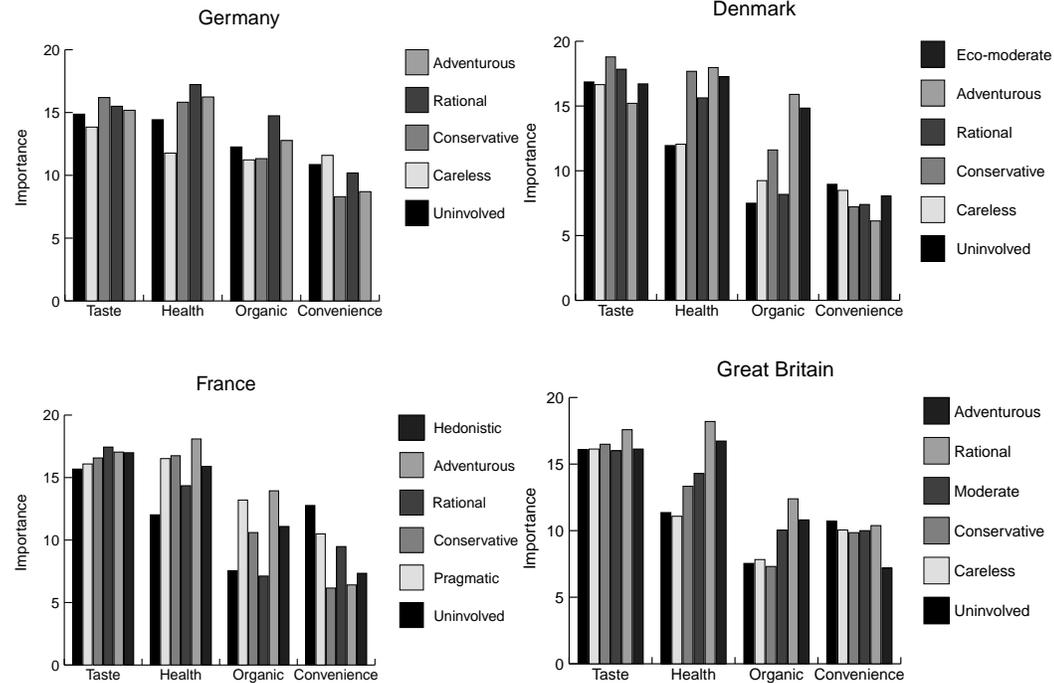
highest average age and they are the least educated. Households are on average smaller, and household income is in general lower than that of the other segments. These consumers tend to live in rural areas.

The rational food consumer. These consumers process a lot of information when shopping; they look at product information and prices, and they use shopping lists to plan their purchases. They are interested in all aspects of food quality. Self-fulfilment, recognition and security are major purchase motives for these consumers, and their meals tend to be planned. Compared with the average food consumer, this segment has a higher proportion of women with families. The level of education and income in this segment differ from country to country, but they tend to live in medium-sized towns and a relatively large proportion of these consumers do not work.

The adventurous food consumer. While these consumers have a somewhat above-average interest in most quality aspects, this segment is mainly characterised by the effort they put into the preparation of meals. They are very interested in cooking, look for new recipes and new ways of cooking, involve the whole family in the cooking process, are not interested in convenience and reject the notion that cooking is the woman's task. They want quality, and demand good taste in food products. Self-fulfilment in food is an important purchase motive. Food and food products are important elements in these consumers' lives. Cooking is a creative and social process for the whole family. The adventurous food consumer is in general from the younger part of the population, and household size is above average. The adventurous food consumers have the highest educational level and have high incomes. They tend to live in big cities.

Figure 3 shows how the importance of the basic four quality dimensions differs between the segments in a number of European countries. In interpreting the figure, it should be noted that the types described above are the basic segments we have found across countries. In addition to these, a particular country may have idiosyncratic segments which differ a little from the basic types described above. Thus, the figure shows a *pragmatic* segment for France, covering consumers with a lot of interest in both health and organic food, as well as in convenience and snacking, a *hedonistic* segment for France, which resembles the adventurous segment, but with a stronger emphasis on the pleasurable aspects of food, a *moderate* segment for Great Britain, expressing an average attitude to all aspects of food-related lifestyle, and an *eco-moderate* segment for Denmark, where organic production is the only aspect of food these consumers are really interested in. As can be seen in the figure, taste and health are very important quality dimensions, both across countries and across segments. Besides, also process and convenience-related qualities are quite important to many consumers in the four countries.

Figure 3. Quality dimensions and consumer segments in four countries



Note: The columns show the means for the importance of the four quality dimensions across countries and segments (min 3; max 21).

In the following, we will discuss the elements of the Total Food Quality Model in more detail, taking into account segment-specific differences whenever possible. We will structure the discussion according to the four basic dimensions of food quality – taste, health, convenience, process – and the price dimension. At the same time, each of the following sections will focus on a particular aspect of the Total Food Quality Model. Since health is a credence characteristic, the discussion of this aspect also looks at how it is inferred from various cues, and thus in more detail at the vertical (hierarchical) aspect of the Total Food Quality Model. Taste, on the other hand, is an experience characteristic, expectations of which can be confirmed or disconfirmed during consumption. For this reason, the discussion about taste will look more into the horizontal (before/after) dimension of the Total Food Quality Model. The discussion on convenience focuses more on the interplay of shopping, meal preparation and products, and also on how some of the external constraints on consumers (in terms of time and money) affect the importance of convenience. When discussing consumer interest in process characteristics, we will concentrate on organic production and on the inferences, both vertical and horizontal, which consumers make from organic production. Finally, in the section on price, we will look at how price cues are perceived and processed in the shopping situation, and how they affect the purchase decision. We end the discussion with a section on brands and generic quality marks, which can be regarded as a means of improving consumers' ability to form valid quality expectations, and to make use of their quality experiences in future purchases, across the major quality dimensions.

TASTE: THE HEDONIC DIMENSION

It goes almost without saying that consumers want good taste in food. Taste is, and has always been, one of the major – and often *the* major – criteria for evaluating food products. Taste is the most important, but not the only, aspect in what we can call the hedonic quality dimension of food. The term hedonic means "to do with pleasure", and is related to the philosophy of hedonism, which holds that pleasure is the ultimate goal of all human behaviour. Many food products have aesthetic or sensual qualities that give the consumer pleasure, as opposed to utilitarian (functional) aspects of food products. The hedonic aspects of food include appearance, smell, and especially taste. Quantitative studies on important predictors of food choice usually conclude, not surprisingly, that taste and pleasure are among the most important predictors of food choice (Roininen, Lähteenmäki & Tuorila, 1999).

Hedonic quality is an experience characteristic of food, since this dimension, especially taste, can often only be established after consumption. Thus, consumers have to form expectations about the hedonic quality of a food product to make a purchase decision. These expectations are, as explained above, based on the information available at the time of purchase (Olson & Jacoby, 1972; Steenkamp, 1990). Expectations of taste, for example, will be formed based on appearance, price, packaging, the store in which the product is bought, or other cues. Expectations can also be formed based on previous experience with the same product, or if the product is recognizable, for example by its brand name.

In the following, we will look at the formation of quality expectations regarding the hedonic dimension, and into the relationship between expectations and subsequent experience, in more detail. In relation to the Total Food Quality Model, the studies explore how intrinsic and extrinsic cues are used by consumers to form expected quality. Furthermore also the relationship between expected quality and experienced quality (before and after purchase in the Total Food Quality Model) is explored. Since the problem of matching expectations with experience is especially pronounced for unbranded products, we will concentrate on these, using beef and pork as examples.

Formation of quality expectations: An example of beef

In order to determine how consumers use intrinsic and extrinsic cues to form expectations about beef quality, data were collected in four countries: France, Germany, Spain, and the United Kingdom (Grunert, 1997). The study was based on an extended conjoint analysis design, where consumers evaluated product descriptions constructed from a factorial design of intrinsic and extrinsic quality cues. Based on focus group interviews, the following quality cues were selected for the study:

Intrinsic quality cues

- cut: steak, roast, cubed, minced
- colour: light red, medium red, dark red for roast and steak; lighter red and darker red for cubed and minced
- fat lumps: major, minor (for steak, roast, and cubed only)
- fat rim: yes, no (for steak and roast only)
- marbling: high, low (for steak and roast only)
- fat content: high, low (for minced only)

Extrinsic quality cues

- price: low, medium, high
- origin: no information, Denmark, Ireland (in the UK: Scotland)
- information on animal production: no information, information ‘this meat is from animals bred and fed with due consideration to animal welfare and without artificial hormones and additives’

In order to operationalise the various combinations of intrinsic quality cues, 56 colour photographs of pieces of meat, representing combinations of intrinsic quality cues, were taken in co-operation with the Danish Meat Research Institute. All extrinsic information was printed on cards, presented to the respondent along with the photograph of the piece of meat. One extrinsic cue of some importance, which was not used as part of the profiles, refers to place of purchase. Consumers in all four countries have a choice of place of purchase, with supermarkets and butcher shops being the main alternatives. Since meat presentation differs considerably between supermarkets and butcher's, it was believed that this variable could not realistically be incorporated into the profiles. Instead, respondents were asked to rate each profile with regard to whether they thought this piece of meat would be on sale at a butcher's.

The focus groups indicated that the most important quality dimensions when evaluating beef were taste, tenderness, juiciness, freshness, leanness, healthiness and nutrition. For each product description (combination of photograph and extrinsic product information), the respondent rated perceived colour of the meat (four levels), perceived fat content (three levels), and perceived value for money (three levels). They then rated the seven quality aspects and the seven purchase motives. They rated the perceived purchase outlet and intention to purchase. After rating the four profiles, respondents answered a number of background questions on frequency of purchase of beef products, demographics, etc. 200 consumers were interviewed in each country. Interviews were carried out as hall tests in central locations in two or three cities in the respective countries, and all consumers rated four product profiles.

Table 1 shows some of the results from this study. Two factors appear to dominate the formation of expected quality: perceived fat and the place of purchase. This indicates considerable uncertainty on the part of consumers with regard to the formation of quality expectations. Fat content is actually not a good predictor of the quality aspects consumers are interested in, and to the extent it is, it is the opposite of what consumers suppose. A certain degree of marbling actually contributes to tenderness, taste and juiciness, whereas consumers seem to think it detracts from it. Thus, the formation of expectations about taste, tenderness and juiciness mainly based on fat attributes is actually dysfunctional. The high degree of importance attached to buying from a butcher shows that consumers prefer to entrust the purchase decision to an expert more capable of predicting the outcome of the meal than they themselves. The use of colour as a cue in the quality perception process does not add to the accuracy of the prediction of quality aspects either.

Table 1. Determinants of perceived quality of beef

Expected quality as determined by	Germany		Spain		United Kingdom	
	coefficient	t-value	coefficient	t-value	coefficient	t-value
perceived costs	-.097	-3.50	-.151	-4.55	-.059	-2.15
perceived colour	.044	1.67	-.014	-0.44	.037	1.27
perceived fat	-.452	-16.76	-.243	-7.69	-.551	-19.03
cut, roast	-.124	-3.92	-.015	-0.44	.002	-0.06
cut, cubed	.026	0.91	-.128	-3.53	.009	0.27
cut, minced	-.020	-0.67	-.120	-3.45	.020	0.63
origin, Ireland	-.002	-0.09	.022	0.61	.050	1.51
origin, Denmark	.033	1.14	-.018	-0.50	.012	0.36
info on breed/feed	-.019	-0.74	-.014	-0.47	.025	0.90
bought at butcher	.335	12.82	.337	10.77	.152	5.28
R ²	.45		.24		.35	

Coefficients are from a more comprehensive structural equation model and show how expected quality is affected by the various factors. The complete set of results can be found in Grunert, 1997.

Given this obvious uncertainty on the part of consumers, it is also interesting to note that the other extrinsic cues tested in the study, country of origin and information about breeding and feeding, had practically no effect on the formation of quality expectations. However, this should be seen in the light of the fact that the data for this study was collected in 1993, ie before the BSE crisis.

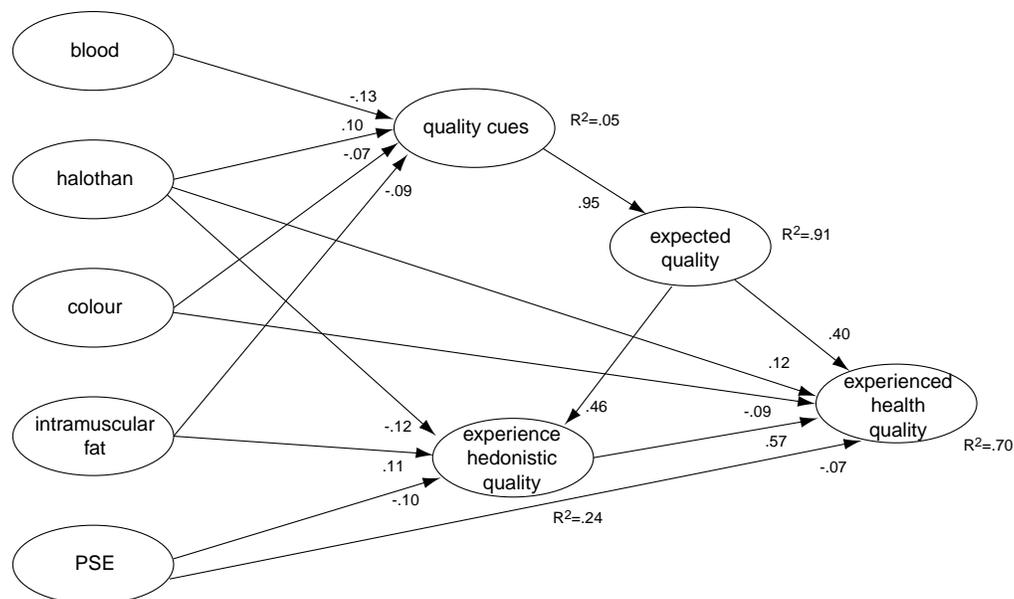
Quality expectations and quality experience: An example of pork

A study on quality perceptions of pork investigated the relationships between intrinsic quality cues, expected quality, experienced quality and physiological product characteristics (Bredahl, Grunert & Fertin, 1998). 200 German consumers who prepared and consumed pork at least twice a month, and who had the main responsibility for shopping for food and cooking in their own household, participated in the study. Real samples of pork chops were used in the study, and six physiological product characteristics were measured, all of which are commonly used in objective measurements of pork quality: halothane, PSE, pH, colour, blood splashes and intramuscular fat. Each consumer evaluated three pork samples. First, consumers were invited to a test studio where they were shown real, fresh samples of three kinds of pork and asked to evaluate the samples by filling in a questionnaire. They were then given colour-labelled samples of each of the three kinds of pork to take home, and asked to prepare and consume the meat for dinner the next three days, in a predetermined order. They were requested to use a preparation method that was familiar to them, and to use basically the same method on all three days. After the three days, an interviewer phoned the respondents to collect the data recorded in a new questionnaire.

The following quality dimensions were assessed based on focus groups and a review of the literature: nutritional value, wholesomeness, freshness, leanness, juiciness, taste and tenderness. These quality criteria appeared to be used by consumers both to form expectations about the quality of pork in a purchase situation and to evaluate the meat quality after preparation and consumption, and were subsequently used both to measure consumers' quality expectations of the raw meat samples and quality experiences after having consumed the meat at home. When viewing the raw meat, consumer perceptions of the following four intrinsic cues were measured: colour, share of fat, fat marbling and meat juice.

The data were subjected to structural equation modelling using LISREL (see, for example, Poulsen, Juhl, Kristensen, Bech & Engelund, 1996). Results are shown in figure 4, where the estimated coefficients express the strength and direction (positive versus negative) by which one factor affects another, and R^2 shows the amount of variance explained. Only significant relationships are shown in the model. From the physiological product characteristics, pH value had no significant relationship to either visual appearance or experienced quality, and is therefore not shown in figure 4.

Figure 4. Physiological product characteristics, intrinsic cues, quality expectations and quality experience for pork



Results based on structural equation model in LISREL. For details, including measures of fit, see Bredahl, Grunert & Fertin, 1998.

The coefficients show a very strong relationship between visual appearance (perceived quality cues) and expected quality. This means that the product quality expected by consumers was largely inferred from the following intrinsic quality cues: colour, share of fat, fat marbling and meat juice. The experienced hedonistic quality is related to expected quality, but only moderately: only 24% of the variance in experienced hedonistic quality is explained in the model, showing that respondents' ability to predict their hedonistic experience when eating the meat is quite limited. It should also be noted that the health-related quality that consumers actually "experience" when preparing and consuming the meat is reasonably well explained by their expectations. This is related to the fact that health-related quality aspects are credence characteristics, which cannot be directly experienced during consumption and are therefore inferred from expectations and from quality aspects that can be readily ascertained, i.e. hedonistic quality.

It can also be seen that there is quite a low relationship between the physiological characteristics and both expected and experienced quality. In two cases, the relationships between a physiological characteristic and quality expectation and experience have opposite signs, meaning that a certain objective product characteristic increases quality expectations but decreases quality experience, or vice versa.

Generally, this study shows that consumers have considerable difficulty in forming quality expectations. The one major cue used, fat, is dysfunctional, since its objective relationship to relevant quality dimensions like tenderness and taste is the opposite of what consumers assume – when they expect good quality, bad quality will result, and vice versa. The study also shows that objective measures of product quality may have quite weak relations to quality as experienced by consumers.

This study is not an unusual case, where consumers were especially bad at predicting their hedonic experience by looking at the raw product. Similar results have been obtained for other unbranded meat and fruit products (Bredahl, submitted; Grunert, 2001; Østergaard, 2001).

Discussion

In this section, we have presented results that shed some light on how consumers form expectations about hedonic food quality, and how this relates to the hedonic quality, which they actually experience when eating. The conclusion is clear: consumers find it difficult to form valid expectations about hedonic food quality. This finding can be related to the cues on which the quality expectation is based: consumers use cues which are only weakly related, or even unrelated, to the hedonic quality of the product, and sometimes they even misinterpret the directionality of the relationship between a quality cue and hedonic quality, as in the case of intramuscular fat in meat.

Of course, these findings should be seen in the light of the kind of product studied. Meats and fruits are examples of products which are usually unbranded, and which at the same time are characterised by considerable variation in quality. This makes the task of forming quality expectations difficult for consumers in two ways. Branded products make learning from experience easy since consumers can repurchase a brand they liked or avoid one they did not like. And the less the quality of a branded product varies over time, the easier this learning process will be.

This poses a problem, not only for consumers who do not get value for money, but also for producers. If a producer makes a product, which is actually superior in terms of the quality aspects consumers are interested in – e.g. taste – how can this message be conveyed to consumers if they are unable to recognise this superior quality? Or even worse: What if consumers misinterpret the superior product as an *inferior* product, as in the case of meat?

There are two ways out of this dilemma: Educating consumers in the appropriate use of the cues available, or by including additional cues, which can improve the formation of quality expectations. The main additional cues in the examples discussed above are generic quality marks and branding. To the extent that quality marks and/or brands actually correlate with differences in hedonic quality which consumers experience, they have the potential to improve the formation of quality expectations, and hence to be used in the quality perception process. At the end of this paper, we present some examples of the effects brands and generic marks can have.

At the same time, it should be noted that our results are not limited to products, which are unbranded in a narrow sense. The truly unbranded goods are (usually) fresh meat, fish, fruit, and vegetables, as opposed to food products, which have strong brands, such as soft drinks, beer, and some convenience and dairy products. In between, there is a large grey zone where products are branded, but where the brands are weak in the sense that consumer awareness of them is low, they can have a short lifetime, and they are not strongly related to consistent quality. In such cases, the brand will not be a strong cue in the formation of quality experience, and consumers will still rely to a large extent on other cues like packaging, price, the store, appearance, etc.

HEALTH: THE INVISIBLE DIMENSION

The concept of health is very broad and can be approached from different scientific perspectives, including medical, nutritional, social and psychological. The purpose of this paper is to discuss health from a consumer point of view – and not from a nutritional, medical or societal point of view. As will be shown below, consumers view aspects like nutrition as an important aspect of their own health – but the way consumers subjectively perceive nutritional effects may be different from the perspective of a nutritionist.

From a consumer point of view, health involves two main dimensions: eating healthily and avoiding unhealthy foods. The first dimension, eating healthily, is related to nutritional aspects such as a healthy diet, functional foods, less fatty foods and other factors related to health and nutrition.

The second dimension, avoiding unhealthy foods, deals with concerns about food safety. Food safety has been the subject of intensive public debate lately, and includes such diverse phenomena as BSE, pesticide residues in food, salmonella, and risks arising from novel production methods like genetic modification. The common denominator is the potentially adverse impact of the consumption of food on health. This "potentially adverse impact" has two components, namely hazard – the severity of the impact – and the probability of the hazard occurring (Ritson & Mai, 1998). Thus, we can define food safety as the opposite of food risk, i.e. the probability of not suffering some hazard from consuming the food in question. In fact, risk perceptions are strong determinants of food choice when a health threat is perceived to be a direct result of the specific food (Brug & Assema, 2001).

Both health dimensions (eating healthily versus avoiding unhealthy food) express qualities of the food that consumers cannot evaluate or judge by themselves, and are thus credence characteristics. Consumers do not usually, and do not expect to, feel healthier because they have eaten a product that is supposed to be good for them – at least not in the short run.

Taking a point of departure in the Total Food Quality Model, the health quality dimension raises two types of questions. The first refers to how consumers evaluate the health quality dimension of food, i.e., which cues do they use to infer healthiness and safety, and how do they perceive the health quality of different food products? The second refers to how the evaluation of health aspects enters the buying decision, that is 'intention to buy' in the Total Food Quality Model. To what extent is healthiness an ultimate condition of purchase, and to what extent can it be traded off against, for example, taste and convenience?

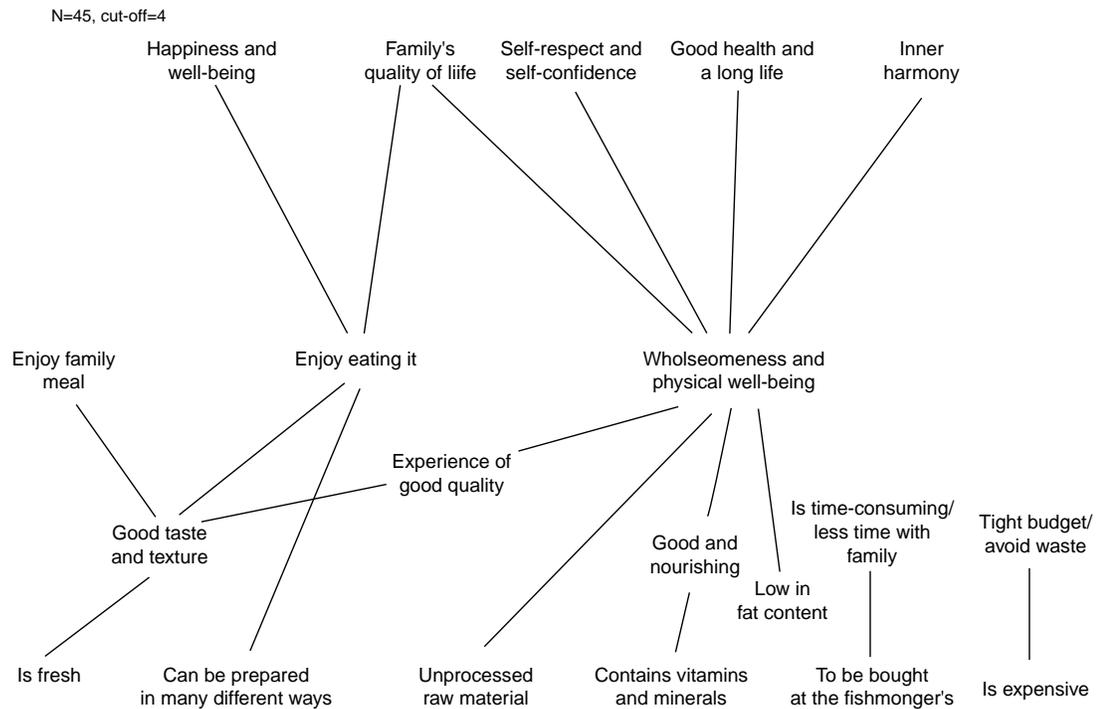
In the following, we will present some results that shed light on these issues. We start by presenting some results that show how health enters the overall quality evaluation process and how it is inferred from cues. We then move on to discuss two more specialised topics, one on positive health effects and one on perceived health risks. More specifically, we will discuss how consumers evaluate functional foods, i.e. food products, which are marketed as having positive health effects. Thus we here explore relationships between perceived quality cues, expected quality and intention to buy in the Total Food Quality Model-framework. Furthermore we look at consumer perception of genetic modification in food production and how it affects the quality perception and purchase decision process.

Consumers' perception of health in food products

Health is strongly linked to basic life values and purchase motives. At the same time, health is an invisible product characteristic and must therefore be inferred from more concrete intrinsic and extrinsic cues. How consumers mentally link concrete product attributes and other cues to perceived healthiness and other quality dimensions, and how this in turn is linked to more fundamental purchase motives and life values, can be investigated using the so-called laddering method mentioned in the methodological overview above. We therefore start by presenting examples from a number of studies, which have used this methodology to obtain insights into how consumers use various cues to infer healthiness.

A study of consumers' perceptions of fish and motives for buying seafood was carried out in Denmark in 1996, involving 90 laddering interviews (Nielsen, Sørensen & Grunert, 1997; Valette-Florence, Sirieix, Grunert & Nielsen, 2000). Consumers with different levels of experience with fish products were interviewed, and figure 5 shows the hierarchical value map for consumers with the most experience of buying, preparing and eating fresh fish. The figure illustrates consumers' reasons for and against choosing a fresh, gutted plaice as the main ingredient for an evening meal to be prepared at home. The attributes mentioned by consumers can be seen at the bottom of the map, the self-relevant consequences linked to these attributes in the middle, and the life values at the top.

Figure 5. Hierarchical value map for fresh-gutted plaice, the most experienced fish eaters

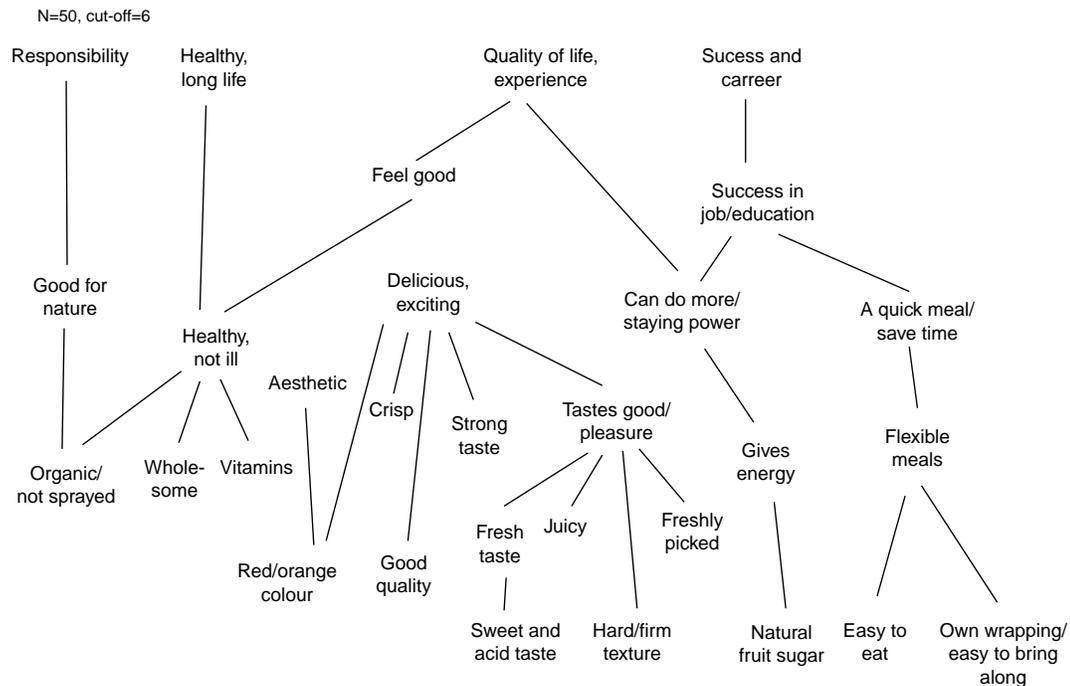


From Nielsen, Sørensen & Grunert, 1997

According to the study, *healthiness and physical well-being* is one of the most important reasons why these consumers buy fresh fish, along with *enjoyment*. According to these consumers, the fact that fresh fish is an *unprocessed product* (a natural product), contains *vitamins and minerals*, and is *low in fat* are all attributes which contribute to *wholesomeness and physical well-being*. And, as the map shows, healthiness is important because being healthy fulfils basic life values, the most important of which are *good health/a long life* and *the family's welfare*.

In a study on apples involving 50 laddering interviews of young Danes (18 to 35) (Bech-Larsen, 2001), respondents were asked to mention differences between apples and alternative foods. For each difference, the respondent was asked whether it had any importance, and if yes this formed the point of departure for the next laddering question. The resulting hierarchical value map is shown in figure 6.

Figure 6. Hierarchical value map for apples



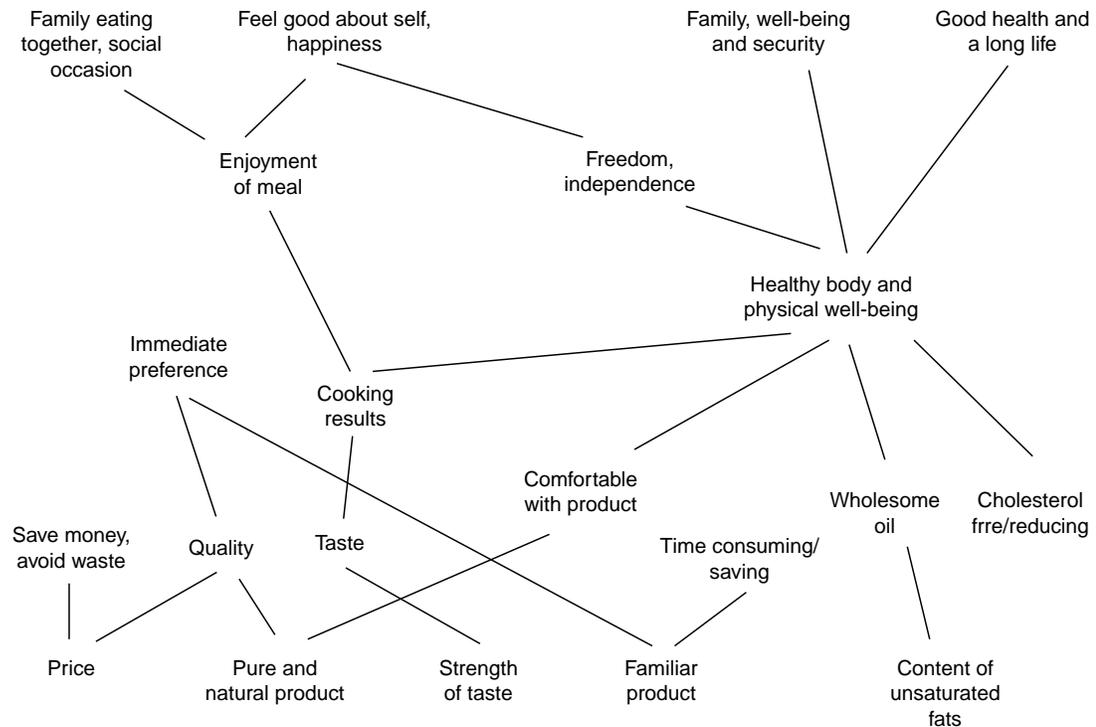
From Bech-Larsen, 2001.

Perceptions relating to the healthiness of apples appear on the right-hand side of the hierarchical value map. *Organic/not sprayed*, *wholesome*, and *vitamins* all contribute to the feeling of being *healthy and not ill*, leading to a *long, healthy life*, a *good feeling* and a *high life quality*. Interestingly, the health aspect by no means dominates, enjoyment and convenience also playing a major role.

Since fish and apples are probably more likely to be regarded as healthy than many other products, we also include an example of a product category, which is not necessarily regarded as healthy: vegetable oil (Nielsen, Bech-Larsen & Grunert, 1998). As part of a larger study, 90 Danish women between 20 and 50, who had at least one child living at home, and who shopped for and used edible oil on a regular basis, were interviewed. Seven types of oil were presented to the respondents, who were asked to rank them into three groups (most preferred, least preferred and in-between). The respondents were then asked to give reasons for the grouping. Laddering interviews were carried out based on the important attributes, and the resulting hierarchical value map can be seen in figure 7.

Figure 7. Hierarchical value map for vegetable oil

Denmark
cut-off = 15



From Nielsen, Bech-Larsen & Grunert, 1998.

Health is a very important consideration for Danish consumers when buying vegetable oil, as illustrated by the large number of links to and from *healthy body, physical well-being*. Health is mainly related to the content of unsaturated fat and cholesterol, but also to the oil being a pure and natural product. Moreover, the health-related concepts are closely associated with several personal values, which indicate a high involvement in health.

Together, the three examples give some insight into how consumers evaluate the healthiness of food products. Naturalness, a low degree of processing, and a low fat content are typical cues consumers use to infer healthiness. For certain products, as with vegetable oil, consumers use more specific information, e.g. the content of unsaturated fats. All three examples showed that healthiness is central for consumers' perception of food products.

The examples also underline the fact that health in food is subjective. This is in line with results from a pan-EU survey of consumer attitudes to food, nutrition and health based on representative samples in 15 countries (Lappalainen, Kearney & Gibney, 1998). The authors found that eating healthily was perceived to be among the top five influences on food choice in all countries, but also that, even though respondents rated eating healthily as very important, they indicated at the same time that public advice on eating habits

was not relevant for them. Eating healthily and the health concept are subjective, and consumers seem to believe that they can change their own eating behaviour sufficiently to ensure healthy meals.

Functional foods – the healthy food

As shown above, most consumers consider health and wholesomeness to be important food quality aspects. As a consequence, functional foods might be expected to be highly appreciated by consumers because of their health-promoting ingredients. But as will be shown below, it is not that simple.

The term “functional foods” covers food products that have been enriched with natural substances/components with specific physiological preventive and/or health-promoting effects. The difference relative to ‘normal’ foods is that consumers, without having to change their eating habits, can prevent disease or promote health.

To a large extent, of course, marketing functional foods successfully depends on whether consumers are aware of the positive health effects of these products. In the previous section, we saw examples of ingredients which consumers know about and whose importance for health they are aware of, e.g. unsaturated fatty acids. In such cases, just providing information about the ingredient will be enough to enable consumers to make the inference about healthiness. However, in other cases, consumers know very little about the potential functional ingredients in food products, so that inferences about healthiness will depend on providing additional information establishing this link. Current legislation on health-related claims for food products is very restrictive, and the marketing of functional foods is thus limited to mentioning the type of enrichment, while claims about the specific advantages of this enrichment are banned. The industry has repeatedly argued that the prohibition of health claims is the major barrier to growth of functional food products, whereas consumer associations argue that such claims can easily mislead consumers.

The importance of health claims for consumer acceptance of functional foods was demonstrated in a recent study on consumer response to such foods in Denmark, Finland and USA (Bech-Larsen, Grunert & Poulsen, 2001). The basic design of the study involved a conjoint task (approx. n=500 in each country), supplemented with questions on values, health-related perceptions and behaviours as well as nutritional knowledge. Three products were used for the conjoint task: spreads (butter and margarine), orange juice and flavoured yoghurt, and two types of enrichment components were varied across products, namely Omega-3s (n-3 fat from fish oil) and Oligosaccharides (a kind of fibre). Three types of claims were investigated: no claim, i.e. only information about the type of enrichment present in the food, a functional claim describing how the enrichment affects the body, and a prevention claim describing which diseases the enrichment can hinder.

The results showed that, in all three countries, both functional and prevention claims had a positive influence on consumers’ perception of the wholesomeness and convenience of the enriched products, and on consumer interest in purchasing these products. Figure 8 shows the effect of the three levels of claims. More precisely, the figure shows the proportion of the population (0-100%) that would choose a specific product given the different claims and that all products were available. This result illustrates the fact that when food products are marketed based on characteristics that cannot be assessed by the consumer, i.e. based on credence characteristics, quality perception becomes exclusively a question of communication. The effectiveness of this communication depends, in general, on three factors – the credibility of the

source, the motivation of the receiver to process the message, and the receiver's ability to understand it. Thus, while consumers may be motivated to process information about functional food ingredients, many will not have the ability to process such information, e.g. that a product has been enriched by omega-3 fatty acids, because they do not have the necessary nutritional knowledge. Explicit claims about the health effects of the enrichment will present the information in a way, which makes it more amenable to consumers' ability to process it, with a resulting higher degree of persuasion (Bech-Larsen, Grunert & Poulsen, 2001).

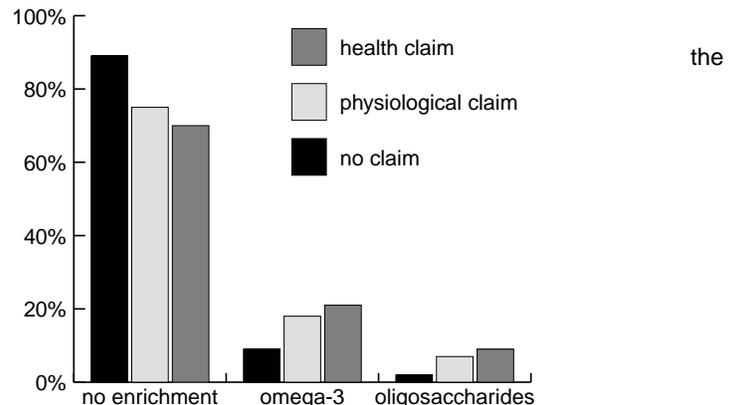
Figure 8. The effect of health claims on predicted market share for a functional food product

Omega-3:

- No claim: enriched by omega-3 fatty acids
- Physiological claim: omega-3s increase blood circulation in the legs
- Health claim: omega-3s reduce the risk of heart disease

Oligosaccharides:

- No claim: enriched by Oligosaccharides
- Physiological claim: oligosaccharides encourage the growth of beneficial bacteria in the gut
- Health claim: oligosaccharides reduce the risk of cancer in the gut



Based on Bech-Larsen, Grunert & Poulsen, 2001.

The lack of explicit health claims is not the only barrier to the acceptance of functional foods, however. Consumers are often spontaneously negative about functional foods, because they regard these products as artificial and as a way of 'cheating' compared with 'traditional' healthy eating (Poulsen, 1999). While functional foods seem to solve the traditional problem of a perceived trade-off between convenience and health – healthy eating takes more time and effort in the kitchen – they seem to run into a different trade-off between health and naturalness. When the functional ingredient is perceived as a natural 'extension' of the product, it therefore becomes more acceptable. For instance, Poulsen (1999) found that enriching bread with additional fibres was more acceptable to consumers than enriching it with calcium, whereas enriching milk with additional calcium is more acceptable than mixing fibres into milk.

Thus, the studies on consumer acceptance of functional foods again underline the subjective nature of the concept of healthiness, and the necessity of designing and marketing products in such a way that consumers, based on their own idiosyncratic knowledge structures, will infer the product to be healthy.

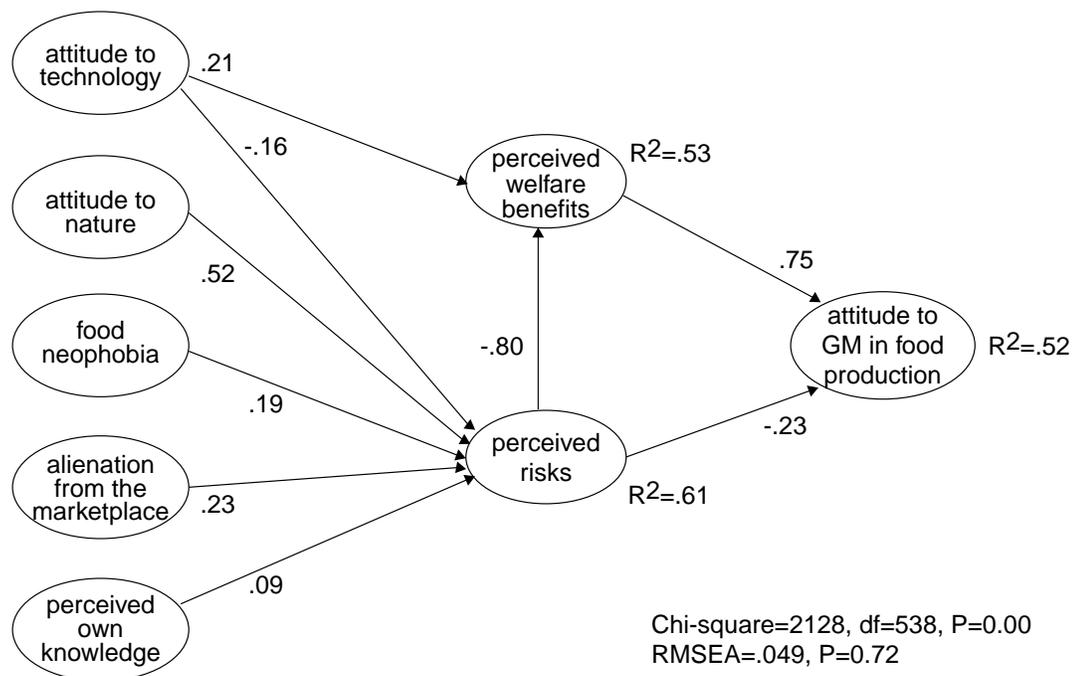
GMOs in food as a health risk

As mentioned at the beginning of this section, health has two dimensions for the consumer – eating healthily and avoiding unhealthy eating. The latter has mainly to do with food safety and risk perception. In the debate about risks, we can distinguish between food problems that have already caused illness (eg

BSE, pesticides, Salmonella, Camphyllibacta) and issues of a more speculative nature, where some people perceive a potential risk without damage actually having taken place. The risks of genetically modified organisms (GMOs) in food production are an example of the latter, which we will discuss in the following.

A number of studies of consumer attitudes to and perceptions of GMOs in food production have been carried out at the MAPP Centre. Based on the results of studies carried out across Europe, we find that consumers are very sceptical about the use of GMOs in food production, and they seem to associate the new technology with considerable risk (Bredahl, 1999, 2001; Bredahl, Grunert & Frewer, 1998; Grunert, Lähteenmäki, Nielsen, Poulsen, Ueland & Åström, 2001). In order to find out whether these negative attitudes are deeply rooted or easily changed, an attempt was made to relate consumer attitudes to GMOs in food production to more general, more basic attitudes. Figure 9 shows one of the main results of a study based on interviews of 1500 consumers in Denmark, Germany and the United Kingdom (from Bredahl, 2001). The attitude model shown is estimated by structural equation modelling using latent constructs. The coefficients in the figure show the strength and direction (positive versus negative) by which one factor affects another, and R^2 shows the explained variance of dependent factors. Furthermore, overall fit-measures reveal that the model fits the data well.

Figure 9. Explaining consumer attitudes to GMOs in food production



Based on pooled Danish, German and UK data. Further details can be found in Bredahl, 2001.

Not surprisingly, attitudes to the use of GMOs in food production are explained by the risks and benefits associated with the technology. Three other aspects are more interesting: Firstly, the benefits perceived are to a large extent explained by the perceived risks, or, put another way, the more risks consumers perceive, the harder it becomes to see any benefits, suggesting that just providing more benefits (and information

about them) may not prove effective in changing consumer attitudes to genetic modification. Secondly, perceived benefits, and especially perceived risks, are linked to more general, underlying attitudes. ‘Attitude to nature’ covers a basic belief that humans are part of nature, with which they should live in harmony, and this attitude has a strong link to the risks perceived in food products involving GMOs. A positive attitude to technology affects attitudes to GMOs positively. ‘Alienation from the marketplace’ – the trust in the marketplace and that its actors function in a way which is to one’s own advantage – also has an impact, in that the more alienated consumers are, the more sceptical they are about GMOs. Finally, perceived knowledge about genetic modification has only a limited effect, and only on the risks perceived.

Given these results, it is not surprising that an experiment conducted as part of the same study, in which consumers were given more information about the pros and cons of GMOs in food technology in a variety of ways, showed that none of them had any effect on consumer attitudes (Frewer, Scholderer, Downs & Bredahl, 2000). Indeed, when consumers could choose between four product varieties, one of which was produced using GMOs, any information given about the pros and cons of genetic modification, no matter by which media and in which form, reduced the probability of the genetically modified product being chosen. Moreover, consumers in the control group, which did not receive any other information than that on the label stating that the product was genetically modified, were the most likely to choose the genetically modified product.

This is known as the attitude activation effect: the provision of additional information about genetic modification does not change attitudes to genetic modification in food production, but activates existing attitudes and makes them more relevant for the specific food choice (Eagly & Chaiken, 1993). And since attitudes were predominantly negative in the first place, the result of providing more information is a *decrease* rather than increase in the probability that consumers will actually choose a GMO product.

The GMO example provides an interesting additional aspect to the discussion on how consumers perceive health in food products. It shows that perceptions of healthiness are the result of interplay of bottom-up and top-down processes. Consumers infer healthiness from the cues available, both with regard to the product itself and information about the product. At the same time, the evaluation of these cues may be based on very general attitudes to, for example, how man should develop his relations with nature. When something is perceived as unnatural or detrimental to the harmony between man and nature, it will result in a perception of unhealthiness.

Discussion

This section has looked at health as a food quality dimension. We have established four major assertions about the role of health in consumer food quality perception.

Firstly, health is clearly an important aspect of consumer food quality perception and choice. Its importance is often on a par with taste, and, in some instances, may even be the most important.

Secondly, consumers have their own subjective ideas about what healthy food is. Consumers are not experts, and have little insight into medical or nutritional questions. Nonetheless, they have to make food purchase decisions all the time, where health considerations play a major role. Therefore, they develop their own indicators for healthiness. These are based on information accumulated over their lifetime, which can sometimes be way off the mark compared with objective health considerations. Consumers

have become more aware of some widely discussed concepts, such as low fat, vitamins, cholesterol, and unsaturated fatty acids, but other perceptions of healthiness are based on more general and vague considerations like naturalness.

Thirdly, health is an invisible quality and therefore a question of communication. Consumers do not expect to feel healthier due to healthy eating, so in contrast to the taste quality dimension, their evaluation of healthiness is not based on personal experience. Evaluating health in food products is thus exclusively a question of credible communication, and to create such credible and effective communication food manufacturers need to understand consumers' idiosyncratic psychological concepts of health, while at the same time taking into account legal restrictions on health claims, as the functional food example shows.

Finally, the health dimension may, in the consumer mind, be in conflict with other quality dimensions. We know that consumers can perceive taste and health to be opposites (Roininen et al., 2001), and we know that consumers may believe that convenience does not equate with healthy eating. But this section has also shown that, as food products become more high-tech in order to achieve more healthiness, consumers may run into a new perceived trade-off, namely between health and naturalness.

CONVENIENCE: THE EFFORT DIMENSION

“Convenience” reflects a tendency to reduce the time and effort used to prepare and consume food. This can be accomplished in various ways. Examples include eating convenience foods, buying take-away meals, eating in (fast-food) restaurants and using kitchen appliances. But convenience-related quality is related to more than just the time spent in the kitchen – it covers time and effort (mental and physical) spent buying, storing, preparing and consuming food (Gofton, 1995).

The convenience quality dimension can be characterized as a mix of both search and experience characteristics. When consumers buy a take-away meal (e.g. a pizza), they can evaluate most of the convenience quality of that meal in advance – before consumption (e.g. they know that no cooking time is needed). Consumers may have more difficulty in evaluating the degree of convenience of other kinds of meals or products in advance, only experiencing whether or not the product lived up to the (convenience-related) expectations after the final preparation of the meal.

Convenience products relate to many different kinds of meals – and in order to clarify some of the different possible solutions, Costa, Dekker, Beumer, Rombut and Jongen (2001) have proposed a consumer-oriented classification system for what they term ‘home meal replacements’. They propose four convenience classes for home meal replacements: ready to eat (consumed as purchased), ready to heat (requires heating before consumption), ready to end-cook (needs some further cooking) and ready to cook (may be prepared to cook, but still needs full cooking).

The importance of convenience in consumer food quality perception and choice

Two theoretical approaches have been used to explain the increasing importance of convenience to food consumers: The household production approach and the convenience orientation approach.

The household production approach was developed by Becker (1965), who argued that households produce output, such as meals for the family, by means of a production function in which products and services purchased, the capital of the household and the time used are the major production factors. Thus, when household income increases, and/or time becomes more limited due to an increase in working-hours for one of the family, households will substitute products with an increased degree of convenience for time.

But while the household production function can explain the increasing importance of convenience due to rising incomes and the increased participation of the woman in the labour force, it does not explain why households living under similar economic and time constraints differ in their use of convenience products/services. This led to a suggestion to measure both real time shortages and consumers' perceptions of time shortage, since time perception may be quite individual. Furthermore, convenience foods can be bought for other reasons than for saving time, e.g. liking the taste or to please the family.

Convenience orientation can be described as having a positive attitude to time and energy-saving aspects of household meal production. The concept has been defined and developed most clearly by Chandel (2001), who developed a one-dimensional convenience orientation scale containing such items as "the less physical energy I need to prepare a meal, the better", "the ideal meal can be prepared with little effort" and "preferably, I spend as little time as possible on meal preparation". Similar concepts also appear in other contexts, e.g. Steptoe, Pollard and Wardle's (1995) Food Choice Questionnaire and Luqmani, Yavas and Quraeshi's (1994) convenience segmentation study. Convenience orientation, being an attitudinal construct, is expected to have an impact on convenience-related behaviours, like the purchase of convenience products, the use of convenient shopping outlets and the use of eating out and home meal replacement.

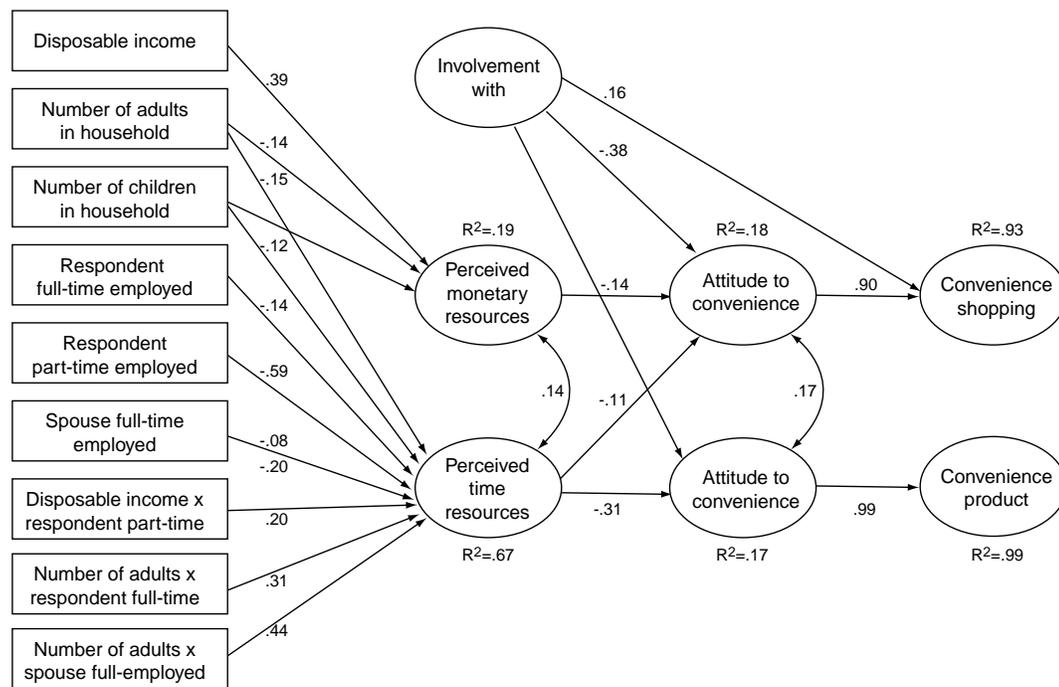
Here, the demographic determinants emphasized in the household production approach are regarded as determinants of convenience orientation, or, put in another way; convenience orientation is regarded as a mediator between demographic (and other) determinants and convenience-related behaviours. Household income is also regarded as a major determinant here, with higher incomes leading to a stronger convenience orientation. Other determinants are the participation of the woman in the labour market, where especially working more than 30 hours a week seems to be a major threshold. Finally, family size, and here especially single versus multi-person households, has been shown to be another determinant, with single households being more convenience-oriented (e.g. Candel, 2001; Cowan, Cronin & Gannon, 2001; Swoboda & Morschett, 2001; Verlegh & Candel, 1999).

Several authors have argued that the trend towards convenience also has roots in changing consumer values, and that values like individualism and self-fulfilment may be at variance with traditions like regular family meals and spending a lot of time in the kitchen. For example, Goldsmith, Freiden and Henderson (1997) found weak but significant relationships between various items in the List of Values (Kahle & Timmer, 1983), and a pro-snacking scale (see also Swoboda & Morschett, 2001).

Below results from a study on convenience are presented. The structural equation model shown in figure 10 (from Scholderer & Grunert, submitted) summarizes various factors affecting the role of convenience in consumer food quality perception and choice, together with estimates based on a French sample of consumers (similar results have also been obtained based on a UK sample). The study covers several areas of the Total Food Quality Model, namely objective and perceived costs in relation to time and money,

attitude towards two dimensions of convenience expressing expected convenience quality, and finally behaviour expressing intention to buy. As can be seen, attitudes to convenience had significant direct effects on convenience-related behaviour, and were in turn directly dependent on consumers' involvement with food and consumers' perceived household resources. Consumers' objective household resources do affect their convenience shopping and product usage, though only indirectly, i.e. the effect is completely mediated by consumers' perceptions of their household resources and, subsequently, their attitudes to convenience. An interesting result of the study is that perceived resources are not only affected by disposable income and amount of time worked, but that the pattern of relationships is more complex, which may explain the lack or paucity of relationships between objective resources and convenience behaviours found in some previous studies. Family composition in particular, in terms of the number of adults and children in the household, plays a major role in perceived resources.

Figure 10. Objective and perceived household resources, convenience orientation, and convenience behaviours



From Scholderer & Grunert, submitted.

Swoboda and Morschett (2001) distinguish between convenience shoppers and those who do not shop in convenience shops based on purchasing behaviour. They found that 57% of those surveyed were convenience purchasers, and that:

- Convenience purchasers seem to plan the purchase of convenience food products or meals in advance.
- The convenience customers place significantly more emphasis on the ease of purchase than price (both with respect to their weekly shopping and convenience purchases).

- Convenience purchasers tend not to be very price-conscious, accepting the more expensive prices in convenience stores, and the basic price they are prepared to pay for a product is higher.

The last two findings agree well with results of surveys of food-related lifestyles. As described earlier, some segments are much more convenience-oriented than others, especially the ‘careless’ food consumer. These consumers put most emphasis on quick and easy cooking, compared with the other segments. At the same time, these consumers are not as price-conscious as some of the other segments, which is the same combination of traits found by Swoboda and Morschett (2001).

This ‘careless’ segment is more or less what we would expect from consumers who are convenience oriented: they are not very interested in the taste, health or process-related quality aspects of food, and food as a means of achieving basic life values is not very important to them. However, interest in convenience has been rising in the other segments too, which means that the market for convenience products is expanding: while they have traditionally appealed to consumers with little interest in other aspects of food quality, there now seems to be a rising demand for products with good taste, health and process qualities, which are at the same time convenient to buy, store, and use.

PROCESS: ORGANIC PRODUCTION AND OTHER ASPECTS OF MANUFACTURING

Consumer concern regarding the way food products are produced has increased during the last 10-15 years. There are three broad areas of interest:

- Interest in organic production
- Interest in animal welfare
- Interest in products manufactured in a ‘natural’ way, i.e. without the use of advanced technology

The latter has already been dealt with in the section on health, where the use of GMOs in food production was given as an example of an advanced technology, which consumers regard as unnatural and therefore reject. This will not be discussed further here, except to point out that consumer interest in the production process also includes GMOs and related technical issues, and would have been just as relevant in this section. Here, we concentrate on how consumers perceive and evaluate positive process qualities, in particular on consumers’ perception of quality in organic food.

Process-related qualities of a food product are almost exclusively credence characteristics, since the consumer is seldom able to evaluate whether a food product has actually been produced under the promised conditions. Even during cooking and consumption, the consumer has no possibility of determining whether the food product has the promised process qualities.

As with other credence quality dimensions (e.g. health), consumers’ perception of quality is a question of the number of and trust in cues signalling these qualities. Organic farming, for example, is mainly characterised by a ban against the use of fertilisers, chemical crop sprays, prophylactics and industrial feed additives (Hansen & Sørensen, 1993). In addition, rules for animal husbandry are stricter than for conventional farming. These qualities are, however, not easy to evaluate or experience for the consumer, which indicates a need for special quality signalling systems. How generic marks can be used as cues

signalling process qualities is therefore an important factor, and will be discussed in the section on brands and generic marks. Below we present some results of consumers' perception – and evaluation – of food produced according to organic standards. In relation to the Total Food Quality Model framework, the studies explore the relationships from perceived quality cues over desired consequences to expected motive fulfilment. Furthermore also the relationship between expected quality and experienced quality (before and after purchase) is explored.

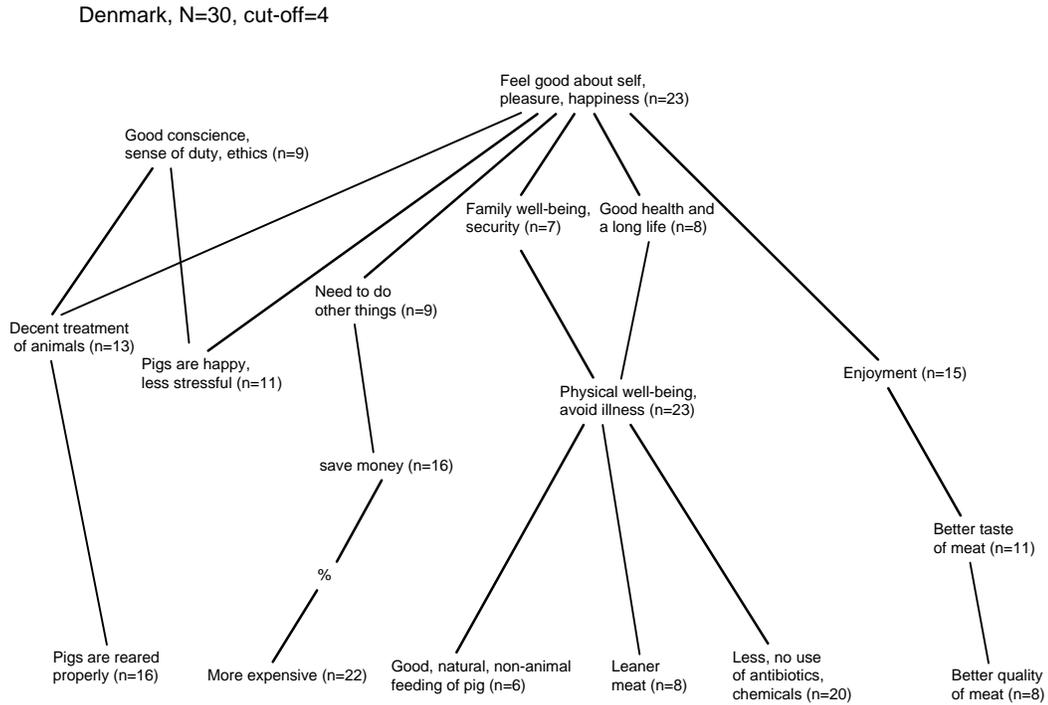
Purchase motives for organic products

There has been a huge increase in demand for organic food products during the last decade, both in Denmark and many other countries (Beckmann, Brokmose & Lind, 2001; Squires, Juric & Cornwell, 2001). Today, around 15 percent of Danish households regularly buy organic food, and around 47 percent frequently or occasionally (Squires et al., 2001). But what drives the demand – what are the purchasing motives for buying organic food products, even at a higher price?

It has been suggested that there are two major motives for choosing organic products, namely health and environmental concerns (Bjerke, 1992). A means-end study with a starting point in consumers' perception of organic pork, carried out in Denmark and Great Britain, gives a more detailed insight into the attributes, desired consequences and life values associated with the 'organic' concept (Bech-Larsen & Grunert, 1998). In this study from 1996, consumers in Great Britain and Denmark were asked to imagine that they had to choose between ordinary and organic pork, and then asked to explain both the difference between the two types of meat and why the product attributes mentioned were important to them.

The resulting hierarchical value maps are shown in figures 11 and 12, cut-off levels express the minimum number consumers that mentioned the drawn relationships. As can be seen from the results, Danes regard *good, natural, non-animal feeding of pig, leaner meat, and less, no use of antibiotics, chemicals* as important attributes, which are expected to lead to *physical well-being, avoid illness*, which in turn are expected to lead to *good health and a long life*. Again we find that the health aspect is important to consumers, and that naturalness is closely related to health. For both the British and Danish respondents, there seem to be at least four different reasons for choosing or not choosing organic pork: Animal welfare, budgetary restraints, health, and enjoyment. Concerns for animal welfare seem to be more important to British consumers than to the Danish. Budgetary restraints seem to be important both in Great Britain and in Denmark. This is by far the most important motive for not eating organic pork, according to the laddering studies.

Figure 11. Hierarchical value map for Danish consumers' perception of organic/ conventional pork



From Bech-Larsen & Grunert, 1998.

Figure 12. Hierarchical value map for UK consumers' perception of organic/conventional pork



From Bech-Larsen & Grunert, 1998.

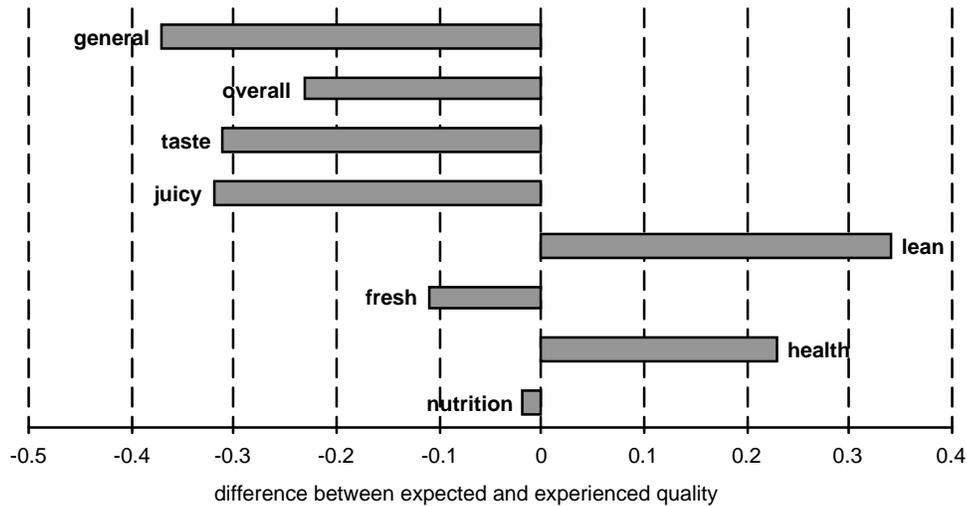
The means-end study shows two important things. Firstly, consumers make a whole range of positive inferences from the label 'organic,' and these refer not only to concern for the environment and health, but also to animal welfare and better taste. Secondly, positive inferences do not necessarily lead to a purchase if consumers do not think that the trade-off between give and get components is sufficiently favourable. There has been considerable discussion on the price differential of various organic products and how this relates to the size of the demand for them. In 1992, when the price differential of organic food was much higher than now, Hansen and Sørensen (1993) conducted a study simulating the effects of lower prices on demand for organic food. Their results were corroborated shortly after when a large retail chain lowered its prices for organic food, which had the effect of raising the level of demand for organic food products in Denmark to one of the highest in the world.

Expectations and experiences with an organic product

The fact that consumers associate organic production not only with good health, animal welfare and concern for the environment, but also with good taste means that the characteristic 'organic' is no longer only a credence characteristic, but is also partly an experience characteristic, where expectations can be confirmed or disconfirmed after the purchase. Where consumers have (perhaps unrealistic) expectations about the better taste of organic products, a disconfirmation of this expectation raises another potential barrier to organic demand.

In a choice experiment, where respondents had to choose between conventional and organic pork, those choosing the organic variety expected it to be of better quality across all quality dimensions, including taste and tenderness (Grunert & Andersen, 2000). However the quality experienced after preparing and eating the organic pork generally fell short of expectations, as shown in figure 13 where differences between expected and experienced quality of the measured quality dimensions have been calculated. Consumers were asked to evaluate the shown quality dimensions on 7-point scales before and after tasting, and as can be seen in figure 13, expectations exceed the experienced quality in most cases (only exceptions are evaluations of the dimensions lean and health).

Figure 13. Differences between expected and experienced quality for organic pork



From Grunert & Andersen, 2000.

When consumers realise that the taste of organic products does not live up to expectations, they may come to suspect that, in some cases, there is a trade-off between taste and process. There may also be a trade-off between process and convenience. Convenience will usually require a higher degree of processing, which in turn may be perceived to be at odds with the desire for natural, low-tech production, which is a major component of consumer interest in the process dimension. Recent research (Bech-Larsen & Grunert, 2001) confirms the expectation that, the higher the degree of processing, the lower the degree of consumer interest in organic products.

Consumer segments and organic consumption

We can expect interest in organic products to differ between consumer segments. Table 3 illustrates variations in the consumption of organic food products across food-related lifestyle segments in Denmark (from Bech, 1999). The table shows the proportion of the specific segments that often buy the various organic products. As can be seen, there are big differences in the consumption of various organic food products across the different segments. As expected, the eco-moderate consumers have the highest consumption rates for some products (e.g. milk, bread, coffee), and, together with the adventurous food consumers, by far the highest consumption levels for the rest of the products. But their purchasing motives are not the same; the eco-moderates are first and foremost interested in their own (and their family's) health, while environmental concerns play a minor role. The opposite is true for the adventurous food consumers – they are very concerned about the environment, while their own health comes second. As can also be seen, for most products, the uninvolved and careless food consumers have the lowest consumption levels, with the conservative and rational food consumers lying in the middle.

Table 2. Food-related lifestyle segments and organic consumption in Denmark

Organic products	The uninvolved	The careless	The conservative	The rational	The eco-moderate	The adventurous
Buy often:						
Potatoes	5,8%	6,7%	19,6%	19,7%	41,9%	45,1%
Eggs	23,3%	24,9%	39,9%	32,0%	66,2%	66,3%
Milk	12,6%	25,8%	24,6%	31,4%	70,0%	65,7%
Bread	8,0%	18,3%	36,7%	23,2%	49,1%	44,0%
Ice cream	1,2%	2,1%	3,7%	8,2%	8,2%	11,2%
Coffee	2,5%	4,1%	6,3%	6,5%	20,1%	16,9%

From Bech, 1999.

Discussion

The discussion of the role of process characteristics, and more specifically of organic production, in consumer food quality perception and choice in this section leads to three general conclusions.

Firstly, and not surprisingly, interest in this quality dimension differs considerably between consumers. Segmenting consumers according to their food-related lifestyle is a useful way of understanding these individual differences.

Secondly, in consumers' perception, process characteristics are not a quality dimension in themselves, but are intricately linked to the other quality dimensions, especially health. Consumers believe process characteristics to have health consequences, and specifically they think that organic products are healthier. In some cases, they also think they taste better.

Thirdly, even though studies show that about half of the population in Denmark has a positive attitude to organic production (Bech-Larsen & Grunert, 2001), this does not translate into a market share of 50% for organic products. Various barriers prevent positive attitudes turning into purchase behaviour, the two main ones being the price differential and the trade-offs with other quality dimensions.

CONSUMERS' PRICE PERCEPTION AND WILLINGNESS TO PAY

So far, we have discussed consumers' quality perception and how it determines their food choice. In other words, we have concentrated on the 'get' components of the choice process (Zeithaml, 1988). But consumer food choice also depends on the 'give' component, ie the cost of the purchase, the price they have to pay for the qualities sought. In this part of the paper we will discuss how consumers perceive prices, how prices affect buying intentions, and present results from two MAPP studies on consumers' price perception and willingness to pay.

Two approaches to analysing price effects

In general, research on price and willingness to pay in relation to food has been carried out in two different research traditions (Ritson & Petrovici, 2001). The first is the econometric tradition, where price elasticity is calculated based on purchase statistics, and willingness to pay is estimated based on consumer responses to different price levels, either in a real market context or in experimental settings typically employing the contingent valuation method (Lee & Hatcher, 2001). In this way, it is possible to analyse how consumers *react* to different market conditions, and important knowledge is gained about consumer response to changes in, for example, price levels and personal income. This tradition represents an objective view on price and price reactions.

The other tradition, which is the approach taken in this paper, takes a starting point in consumer behaviour research, and tries to explain *why* consumers react as they do to market and price conditions, and to investigate their intention to buy (willingness to pay) based on how consumers process information about prices. This tradition represents a subjective view on price and price perceptions.

In the Total Food Quality Model, price perception and information processing influences buying intention, which is depicted on the left side of the model: The cost cues are the actual 'signals' indicating the price of a specific food product in the market place. But only a small proportion of these cues are in fact perceived by consumers, and may affect how they perceive the cost of a specific food product, which in turn can affect the intention to buy it.

It follows from this that even when two consumers perceive the same cost cues in the market place, they may not infer the same cost from the cues. This depends on a number of person-dependent factors, eg price involvement, brand loyalty, planning behaviour, internal reference prices and choice heuristics. Thus, in the Total Food Quality Model, two aspects are particularly relevant for the processing of price information:

The cue perception process: How consumers perceive prices, i.e. what determines which, when, where and why price cues are actually perceived by consumers (price cognition)

The price integration process: How consumers evaluate perceived prices vis-à-vis the perceived qualities of a food product, i.e. what determines which, when, where and why the perceived price affects the buying process/willingness to pay (willingness to pay)

Below, we present results from two studies, the first is on consumers' price awareness and cognition, and the second is about consumers' willingness to pay.

The cue perception process: Price cognition

There have been a number of studies on consumers' price knowledge of ordinary shopping goods like coffee, margarine, etc. In a classic field study, Dickson and Sawyer (1990) checked shoppers' recall of prices of grocery items within 30 seconds after an item had been chosen. They found that as many as 53% could not recall the price of the product they had just chosen, indicating that, for more than half of the involved consumers, price was irrelevant. The result is striking, since price has been found to be one of the most important types of information used by consumers when shopping for grocery products (Lappalainen et al., 1998; Lichtenstein, Ridgway & Netemeyer, 1993).

Different explanations have been proposed to account for the low level of price awareness in the shopping situation found in many studies. One of the more acknowledged explanations is that price awareness in a shopping situation only leaves weak traces in working memory, so price awareness should be measured using a recognition test instead of a recall test (Monroe, Powell & Choudhury, 1986). Since most studies of price knowledge apply an open-ended price recall test to measure consumers' price awareness at the point of selection, this may explain the low level of price awareness found in past studies.

In order to explore this in more detail, a Danish study on consumers' price awareness at the point of selection was carried out in 1998 in two large supermarkets in Aarhus (Jensen, 2001). Eight food product categories were included in the study: coffee, sausages, rye bread, juice, müsli, rice, raisins and margarine. A total of 213 shoppers of these product categories were asked to participate. The shoppers were contacted immediately after they had selected a particular grocery item. An open-ended price recall test was carried out first, followed by a price recognition test. In the price recognition test, the shoppers were asked to point out the exact price on a scale, regardless of their estimate in the price recall test. The recognition scale consisted of between nine and fifteen prices, one being the correct price. The price alternatives were listed in numerical order and displayed the original prices in the supermarket.

Results show that, without any cues, as many as 68.6% of the Danish respondents were able to recall the exact price of the brand just chosen, whereas 71.7% were able to recognise the exact price from the recognition scale. Thus, both price memory tests resulted in higher measured price awareness than has been found in previous (mostly American) studies. As many as 92.7% of the respondents knew whether the brand they had just chosen was on offer, whereas only 35% reported that they actively searched for offers in the product category. This result suggests that many consumers are passive receivers of communication on price promotion.

A discriminant analysis was used to identify which variables determine consumers' price awareness. According to the results, consumers who are aware of the price at the point-of-selection are more

- inclined to make good deals,
- more 'low-price' involved, and
- bought special-priced items to a larger extent.

Earlier studies have suggested that price involvement is generally low in the case of grocery items, an assumption which is partly questioned in this study. The high degree of price awareness at the point of selection in this study implies that at least some consumers associate price information search with situational and/or personal self-relevance. Furthermore, two dimensions of price involvement seem to be

able to discriminate between consumers who were aware of the price and those who were not: deal proneness and low-price proneness.

The conclusions from this study are important to our understanding of consumer price perception and knowledge – and further research into how the prices consumers are aware of, are perceived and processed in memory, e.g. in relation to their existing internal reference prices, could provide important additional information about price perceptions.

The price integration process: Willingness to pay

Intention to buy is usually discussed in terms of a trade-off between give and get components of the purchase, ie perceived quality and perceived costs. Although price is the major cost cue, it has also been found to be an indicator of quality. Price appears as a relevant quality cue when consumers do not have adequate information about intrinsic quality cues, or when it is the only available cue (Zeithaml, 1988). As a consequence, it is often argued that price has a positive influence on expected quality: The higher the price, the higher the expectations of quality. However, there are usually many quality cues in the marketplace, and studies taking this into account typically find a diminishing relationship between price and expected quality.

The trade-off between expected quality and expected costs, and its impact on intention to buy, is commonly analysed by means of conjoint analysis. The following example is from a study exploring the demand for Danish organic milk products in Northern Germany (Baadsgaard, Grunert, Grunert & Skytte, 1994). A conjoint analysis was carried out based on samples of 100 consumers for each of the following products: cheese, butter and milk. The aim of the conjoint analysis was to investigate the impact of origin (nearby, Denmark, no indication), type (organic, conventional, biodynamic, 'natural') and packaging (only for milk and butter, type of packaging depends on product) cues on major quality aspects such as taste, freshness, nutrition and healthiness. An additional aim was to show how these cues, together with price, determine intention to buy and expected market share for the product in question. Respondents were asked about their preferences and about their intention to buy different product profiles, based on systematic combinations of the quality cues and three price levels. Respondents were also categorised as 'greens' or 'whites' depending on their level of environmental awareness.

The results are shown in Table 3. As can be seen, price is the most important determinant of purchase intention for butter (weight 32.1%) and milk (weight 54.5%), whereas for cheese it was origin (weight 45.4%). Price was less important to the 'greens' than to the 'whites'. Furthermore the utilities of the different quality dimensions are shown in the table, e.g. 'Denmark' has only positive utility for 'Whites' buying intention of cheese.

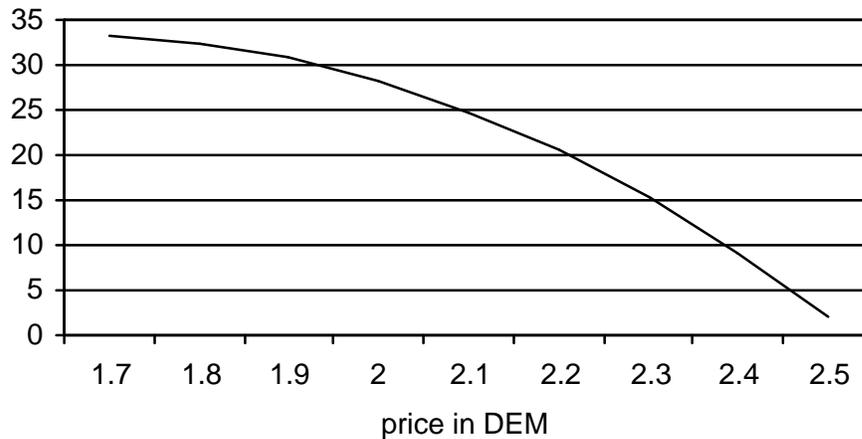
Table 3 shows the aggregate results across respondents. By computing individual utilities, the conjoint results can be used to estimate the expected market share for certain combinations of price and quality cues. Figure 14 shows the expected market share for an organic Danish butter wrapped in paper for the three different price levels under the assumption that this is the only organic variety on the market, and with a quadratic curve fitted to the three data points. As can be seen, when organic butter is priced at the low end of the price spectrum, about 33% would prefer it, even though it is of Danish origin. With increasing price, the market share falls until it reaches zero at a price of about DEM 2.50 per 250 g (1994 prices).

Table 3. The impact of quality and price cues on buying intention

	All resp.	'Greens'	'Whites'		All resp.	'Greens'	'Whites'		All resp.	'Greens'	'Whites'		All resp.	'Greens'	'Whites'	
Origin																
	Denmark	-.11	-.11	Denmark	-.23	-.42	.06	Denmark	.17	-.10	-.30					
	Nearby	.44	.32	Nearby	.83	1.10	.60	Nearby	.39	.36	.41					
	No info	-.33	-.20	No info	-.61	-.68	-.54	No info	-.21	-.32	-.11					
Weight		27.2%	29.7%		45.4	47.2%	44.1%		12.4%	11.1%	11.6%					
Packaging																
	Unpacked	.22	.36					Unpacked	-.10	.15	-.41					
	Foil	-.13	-.21					Bottle(R)	.45	.54	.38					
	Paper	-.08	-.15					Tetrapak	-.35	-.69	.02					
Weight		13.6%	19.8%						14.3%	21.4%	11.6%					
Type																
	Organic	.26	.36	Organic	.15	.24	.06	Organic	.02	.13	-.12					
	Conv.	-.44	-.64	Conv.	-.57	-.86	-.26	Conv.	-.57	-.68	-.43					
	Biodyn.	.38	.44	Biodyn.	.26	.47	.08	Biodyn.	.59	.50	.71					
	Natural	-.19	-.17	Natural	.13	.15	.11	Natural	-.04	.05	-.15					
Weight		27.2%	35.2%		31.3%	36.9%	19.1%		18.8%	21.1%	20.1%					
Price																
	1.70 DEM	.38	.12	0.8 DEM	.20	.14	.25	1.20 DEM	1.38	1.17	1.61					
	2.00 DEM	.14	.16	1.15 DEM	.22	.20	.25	1.60 DEM	.32	.30	.40					
	2.30 DEM	-.52	-.28	1.50 DEM	-.43	-.37	-.50	2.00 DEM	-.171	-.15	-.200					
Weight		32.%	15.4%		23.5%	15.9%	36.8%		54.5%	46.4%	56.7%					

From Baadsgaard, Grunert, Grunert & Skytte, 1994.

Figure 14. Conjoint analysis of price and expected market share



Based on Baadsgaard, Grunert, Grunert & Skytte, 1994.

The above example is typical of the way one can analyse willingness to pay for hypothetical products employing a conjoint technique. The study, with its differentiation between ‘green’ and ‘white’ consumers, also indicates the importance of distinguishing between different types of consumers, since they are not all equally price-sensitive, and the trade-off between different product qualities and price can vary considerably from one consumer group to another.

This was further explored in a study conducted in Germany in 2001, where the utilities of a number of quality dimensions and price were estimated with regard to pork chops (Grunert, Skytte, Esbjerg, Poulsen & Hviid, 2002). A computer set-up was used: 299 respondents were given a limited amount of time to choose between four packages of pork chops shown on a computer screen. Each product was shown as a picture of pork chops (the four pictures were almost identical and were meant to indicate a realistic set-up like in a supermarket), and additional information could be selected by mouse-clicking. The additional information was about animal welfare, residuals, country of origin and price, and was varied across the four products. Consumers had to choose the product they would buy.

Utility results are shown in table 4, and reveal that two segments with quite different trade-offs between product qualities and price: the quality-seeking consumers and the price-sensitive consumers. In the table, product no 1, with no information about animal welfare or residuals, from Denmark and priced DEM 9,99 is assigned (arbitrarily) the utility of 0 and is used as baseline. All other utilities show how the products’ overall utility changes when the quality/price varies according to the baseline.

Table 4. Utilities for the two segments

		Quality seeking 59%	Price-sensitive, 41%
Picture	#1	0.00	0.00
	#2	-0.44	-0.51
	#3	-0.29	-0.18
	#4	-0.18	-0.46
Information on animal welfare	No	0.00	0.00
	Yes	0.48	0.76
No residual guaranteed	No	0.00	0.00
	Yes	0.29	0.26
Country of origin	Denmark	0.00	0.00
	Germany	0.75	0.76
Price	DEM 9.99	0.00	0.00
	DEM 11.99	0.31	-1.17
	DEM 14.99	0.35	-3.20

From Grunert, Esbjerg, Skytte, Poulsen & Hviid, 2002

In general consumers prefer pork chops with animal welfare qualities, promising no residuals, and pork chops from Germany. But as can be seen in table 4, the price-sensitive consumers are very interested in the price: the utility decreases with increasing prices – and this is not offset by the other product qualities. For the quality-seeking consumers we find the opposite: utility increases with increasing prices (at least within the measured price interval DEM 9.99 – DEM 14.00) meaning that these consumers use price as an indicator of quality: higher price means better quality.

Similarly price-quality effects have been found in other studies, one of them (Juhl, Høg & Poulsen, 2000) is presented later in this paper. Therefore, differences in price-sensitivity between consumer groups should be taken into account when researching consumers' price knowledge and intention to buy, which will improve the ability to determine which qualities are sought by whom in the marketplace.

BRANDS AND GENERIC MARKS IN THE QUALITY PERCEPTION PROCESS

One of the premises of the Total Food Quality Model is that consumers form expectations about the quality of a product based on the information – quality cues – at hand before the purchase. We have also seen that these inferences follow consumers' idiosyncratic reasoning, which may be at odds with the real determinants of quality. Thus, consumers' use of cues to infer quality can be quite misleading (Cox, 1967; Grunert, 1986), which explains why they often experience a low degree of correspondence between expected and experienced quality. In many situations, consumers could benefit from more information about different quality aspects when they make decisions about purchasing or repurchasing food products. Brand

names, generic marks, and labelling schemes are all possible ways of providing consumers with additional information about food products.

One way to differentiate between the many different labels on food products is to distinguish between mandatory labelling schemes, brands and generic marks. A generic mark is some sort of non-company specific symbol, which certifies that a product has certain characteristics (e.g. the Max Havelaar mark stands for ethically correct production, and the Danish 'Ø' mark for organic production). The term "mark" is used to distinguish these schemes from manufacturer' or retailer' brand names (eg Lurpak, Buko) and mandatory labelling schemes, e.g. for price and origin of meat. Broadly speaking, the most important types of generic marks for foodstuffs are quality marks, quality and origin marks, origin marks and organic marks. Less widespread are ethical marks, marks, which signal wholesome ingredients, and environmental marks (e.g. dolphin-safe). The notion "generic" implies that all parties that fulfil the requirements for certification are entitled to carry such a mark on their products. Normally, a generic mark is used on products in combination with brands and, thus, intended as a brand support. Consequently, rival brands can be endorsed if they apply to enter a mark's scheme and meet its standards.

As indicated above, brands often coexist with a generic mark, especially in the food sector. One example is the Danish brand "MesterHakket", which also had the generic quality mark "Den Blå Lup" (when that mark existed). Another example is the "Harmonie" line of dairy products, which also have a generic mark for organic products.

The Total Food Quality Model can be used to model the effect of generic marks, brand names etc., on the quality perception process. Research has shown that consumers' likelihood of using such cues in the quality perception process is affected by three factors.

Firstly, extrinsic cues like price, brand name and generic marks are used by consumers mainly in situations where information on intrinsic cues is difficult to obtain, difficult to understand, or not believed. Extrinsic cues can assist imperfectly informed consumers in their decision processes, because they transform aspects of quality from credence or experience to search characteristics (van Trijp, Hoyer & Inman, 1996; Grunert, Juhl & Poulsen, 2001).

Secondly, the use of brands and generic marks will depend on the degree of perceived risk associated with the purchase. When all products are perceived as being alike, there is no risk and the use of extrinsic cues will be limited.

Thirdly, the brand or generic mark must be perceived to be credible. The credibility of a brand is largely associated with its history, i.e. a brand, which has existed for a long time and has been continuously associated with a certain form and level of quality will have a high credibility. History can also support the credibility of generic marks, but here credibility will also depend on the body assigning the mark.

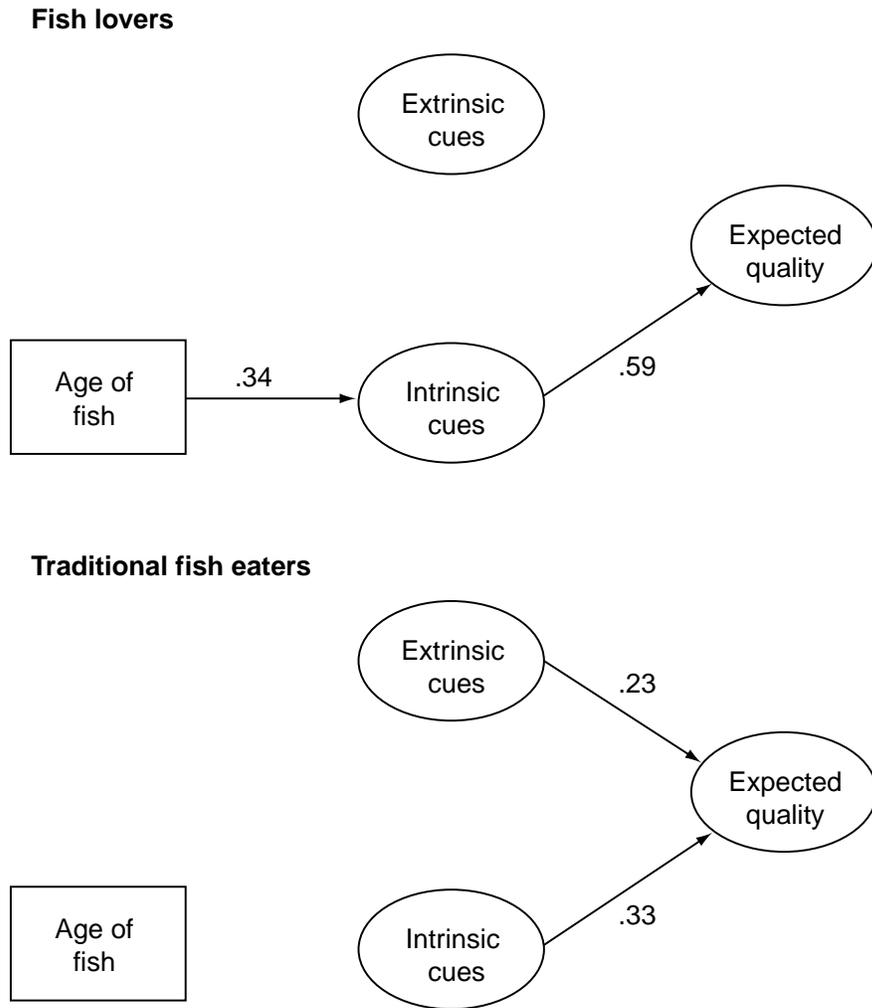
Consumer involvement, experience, and the use of extrinsic cues

In a study on quality perception of fresh fish, consumers were given samples of two types of fresh fish products (plaice and cod) to be consumed at home (details of this study can be found in Poulsen & Juhl, 1999). The age of the product, measured by the number of days from catch to sale to the consumer, varied. For half of the respondents, information about the age of the fish was provided on a label on the packaging. All respondents were fish eaters. Respondents rated their impression of the extrinsic quality cues (label), intrinsic quality cues (odour, appearance), and the expected quality of the fish (in addition, there were also measures of experienced quality, which are not reported here). Effective sample sizes were 220 for plaice and 255 for cod.

The respondents were classified into two segments identified in previous research (Poulsen & Juhl, 1998). The segmentation was based on consumers' paired comparisons of the suitability of different types of meals in their household. All respondents were fish eaters, and the segments differ in how much they like serving fresh fish, hence the naming "fish lovers" and "traditional fish eaters". In the present study, 31% were classified as "fish lovers" and 62% as "traditional fish eaters", while 7% could not be classified.

Structural equation models were estimated separately for fish lovers and traditional fish eaters (results can be seen in figure 15). We are interested in seeing how the two types of information provided affect the quality perception process: first the odour and appearance of the fish (intrinsic cues), which we assume is related to the age of the fish, and second the label (extrinsic cue), which gives explicit information on age. Figure 15 shows that the relationships differ between the two segments. For the traditional fish eaters, both their evaluation of odour/appearance and the label affect their quality expectation, but their evaluation of odour/appearance is not affected by the age of the fish. The fish lovers base their quality expectations only on their evaluation of odour/appearance, which is related to the age of the fish (the higher the age the lower the quality evaluation). They do not use the label information.

Figure 15. Use of label information by two segments of fish eaters



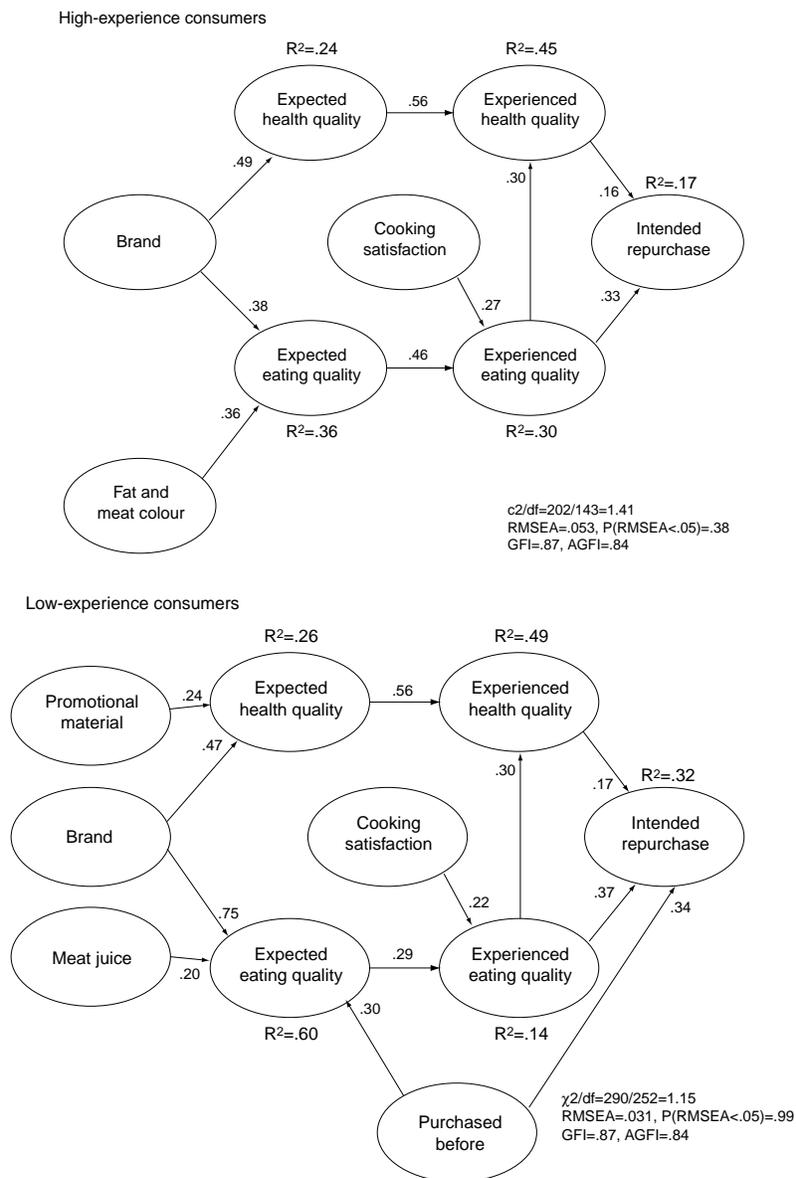
From Poulsen and Juhl, 1999. Coefficients are estimated by PLS and are part of a more comprehensive causal model.

We can relate this difference to the difference in degree of involvement with fish between the two segments. Fish lovers, who are involved with fish, are able to determine the age of the fish from its odour and appearance, and for them the label is superfluous and thus not used. The traditional fish eaters, who are less involved with fish, are not able to decode the intrinsic cues in the same way, and thus use the label information. Use and effect of the label is thus different depending on the degree of product involvement.

This result is supplemented nicely by a set of results obtained concerning consumer quality perception of a new line of branded high-quality beef (Bredahl, submitted). Consumers who bought the branded beef were interviewed in the supermarket about their quality expectations, and were interviewed again after consumption concerning their quality experience.

The relationships between perceived intrinsic cues (fat and meat colour), perceived extrinsic cues (brand, promotional material), expected quality, experienced quality, cooking satisfaction and intended repurchase were estimated using structural equation modelling. 310 consumers participated in the study. Of these, 48% consumed beef at least once every two weeks, and were classified as consumers with high experience with the product. The remaining 52% consumed beef more seldom and were classified as low experience consumers. Figure 16 shows the estimated relationships separately for these two groups of respondents.

Figure 16. The role of brand in the quality perception of beef for consumers with low and high degree of product experience



From Bredahl, submitted.

The results show marked differences between high and low-familiarity consumers in the formation of eating quality expectations. While the intrinsic cue *perceived meat juice* plays a certain role, brand is the predominant quality cue among low-familiarity consumers. Consequently, the explained variance of expected eating quality is also impressively high among low-familiarity consumers. Among high-familiarity consumers, brand is also important, but has much the same level of importance as the intrinsic cues *perceived fat* and *meat colour*. Thus, the brand is relatively more important, and intrinsic cues relatively less important, for consumers with a low degree of product experience. Furthermore, the relationship between expected and experienced eating quality is clearly higher for high-familiarity consumers, indicating that these are better at forming quality expectations, which are actually predictive of their later quality experience. This indicated, that brand is mainly used by respondents who find it more difficult to evaluate quality just by looking at the product. It should also be noted that this difference in the relative importance of brand only holds for eating quality, not for health quality. This is not surprising, however, since health is a traditional credence characteristic, which means that ordinary consumers cannot evaluate it before or after purchase and consumption, and that a higher degree of product experience therefore does not help in evaluating this aspect of product quality.

Trust and the use of extrinsic cues

The use of extrinsic cues will depend on the extent to which consumers believe them to be indicative of quality, which in turn depends on the credibility of the cue. For brands, credibility is to a large extent related to the brand history. For generic marks, credibility also depends on the history of the mark, but in addition to this it depends on the body assigning the mark. Whether, for example, government bodies have more credibility than producers' associations does seem to be culturally dependent, though.

Organic marks are an interesting example here, since they are assigned in different ways in different countries. In Denmark, for example, the organic mark is controlled and assigned by the state, and government endorsement is also clearly reflected by the use of the Danish royal crown in the mark. In other countries, e.g. Germany, organic marks are assigned by a number of different bodies, mostly voluntary producers' associations, with no government interference.

The effect of organic marks in Denmark and Germany has been compared in a study by Bech-Larsen and Grunert (2001). They found that Danish consumers trust their organic mark much more than German consumers. They also showed that this difference in trust has an impact on the effect of the mark. The more consumers trust the mark, the more they believe that organic products are better for the environment or for animal welfare. Perhaps even more interesting, they found that the more consumers trust the organic mark, the more likely they are to buy organic products in the supermarket, whereas consumers with less trust in the organic mark are more likely to buy organic products in specialty shops, e.g. health food shops, where they can get more personal advice. Thus, consumers substitute the use of the extrinsic cue 'generic mark' with the use of another extrinsic cue, the shopping environment, depending on their degree of trust in the mark.

Segment-specific consumer reactions to brand and generic marks

We can also expect that consumers will differ with regard to the use of brands and generic marks, which calls for a segment-specific approach. A recent study (Juhl, Høg & Poulsen, 2000) has investigated the value different consumer segments attach to the government-controlled generic marks “Ø-mærket” (the mark for organic products) and “Den Blå Lup” (a quality mark which has since been abandoned), and the private retailer brand “Mesterhakket,” when they purchase minced meat. The results reveal four consumer segments, which use these extrinsic cues quite differently.

Table 5. Segment-specific reactions to quality marks and brands

(Numbers are estimated utilities)

	Segment 1 (21%)	Segment 2 (53%)	Segment 3 (16%)	Segment 4 (10%)	Total (100%)
No mark	0.00 ^a	0.00 ^a	0.00 ^a	0.00 ^a	0.00 ^a
“Mesterhak” (retailer brand)	2.29 ^b	2.91 ^b	-0.52 ^b	1.38 ^b	1.56 ^b
“Blå lup” (quality mark)	2.82 ^b	0.41 ^b	-0.01	-0.07	0.54 ^b
“ø” (organic mark)	2.27 ^b	2.29 ^b	1.67 ^b	-0.08	1.63 ^b
Price (elasticity)	4.62 ^b	-2.56 ^b	-3.00 ^b	-23.48 ^b	-2.29 ^b
Description	”Price as a quality cue”	”Positive toward labelling”	”Eco-oriented”	”Price- sensitive”	

^a Fixed

^b Significant at the 1% level or higher

From Juhl, Høg and Poulsen, 2000.

Different groups of consumers clearly react to and use brands/marks in different ways, as can be seen in table 5 (from Juhl, Høg & Poulsen, 2000). The table shows that some consumers use all brands and marks, while others are interested only in organic production, and others yet mostly in price. The row ‘no mark’ indicates that a package of meat at a specific price (DKK 22,95) is fixed at zero. The value of the different marks is then estimated as the contribution to the overall product evaluation. Price is measured as elasticity, e.g. the change in overall evaluation caused by a 1% increase in price.

A closer look at price shows that some consumers perceive price as a cost they want to minimize. These ”price sensitive” consumers attach a lot of importance to price and want the cheapest product available. But other consumers perceive price as a sign of high quality, which they want to maximize. This segment of consumers is called ” price as a quality cue”.

The segment "positive towards labelling" is the biggest, with 53% of consumers. Compared with consumers on average, this group considers brands and marks to be more important. The last segment, the "eco-oriented", attaches a lot of importance to organic production. The organic mark "Ø" has a positive utility, whereas the quality mark "Blå Lup" plays no role, while the retailer brand even has a negative utility.

Discussion

Brands and generic marks can improve consumers' ability to evaluate the quality of a food product at the point of purchase. In this way, they benefit not only the consumer, but also the manufacturer who wants to market a product with qualities, which are difficult or impossible for the layman to ascertain.

However, this positive effect of brands and generic marks is dependent on a number of factors. Firstly, use of the brand and mark must be related to specified objective product characteristics. Only when the brand or mark actually makes intrinsic, but difficult to ascertain, product characteristics extrinsic, and thus visible, will there be an effect. Secondly, the intrinsic characteristic must be relevant for consumers. Brands or marks, which guarantee product characteristics, which consumers find uninteresting or take for granted, e.g. the level of hygiene in production, will have no effect. Thirdly, the brand or mark must be regarded as trustworthy, which is linked both to its history and its sponsor.

But perhaps most importantly, the effect of brands and marks will depend on the consumer. Consumers with a high degree of expertise and involvement with the product in question have less need for extrinsic cues, since they are better at judging quality based on the product's intrinsic cues. But consumers also differ in the types and levels of quality they are interested in, so not all brands and marks will be of equal interest to all consumers.

GENERAL DISCUSSION

This paper, which has presented a broad range of issues on consumer food quality perception and choice, shows that food quality is a complex issue. When manufacturers complain that consumers are not willing to pay for better quality, consumers complain that food quality is not good enough, and politicians claim that food quality is not taken seriously enough as a competitive parameter by the food industry, they may all be right. This is because food quality, above all else, is a question of communication. Consumers have complex, vague and sometimes contradictory wishes with regard to food quality, which differ with different consumers. Manufacturers have the difficult task of understanding these wishes, trying to determine which of them can be fulfilled in a profitable way, translating them into production processes, and then communicating back to consumers about the qualities being offered. Politicians may want to increase the importance of quality in competition by, for example, improving consumers' possibilities for choice through labelling schemes and quality marks, but they too can misinterpret how consumers view quality, neglect to take care of individual

differences, and fail to define quality standards or categories in a way which consumers will perceive as relevant.

We believe that there are five major aspects in consumer food quality perception and choice which are important to keep in mind when analysing food quality.

Firstly, from the consumer point of view, quality is subjective. The quality of a food product is in the mind of the consumer – some aspects of the product are perceived as good and others as bad. Some, e.g. good taste, are good because they lead to immediate hedonic reinforcement of the food purchase. Others are good because the consumer believes they have positive consequences, e.g. for a better health, for the environment, or for society at large. While, objectively, such convictions may be wrong, they constitute reality for the consumer who perceives quality and makes choices. It is no use lamenting the fact that consumers do not understand food quality. It is we, who are working professionally with food, who do not understand consumers.

Secondly, consumers differ. Some are not even interested in food. Others are interested, but in very different ways. Such differences lead to different patterns of quality perception and food choice. These can be analysed, and grouping consumers into segments is a major improvement over undifferentiated approaches to ‘the consumer.’ Segmentation, when done properly, is a powerful tool for a better understanding of consumers, which, unfortunately, has been routinely ignored in the analysis of food quality.

Thirdly, food quality from the consumer point of view increasingly covers intangible dimensions. Only the sensory properties of food are really accessible to consumers. Health effects, organic production, the technology used – all these are invisible, intangible aspects of food products. In order to ascertain them, consumers use indicators, which they construct according to their own models of how food production works. Consumers are not experts, and most of them will never develop the skills to evaluate all aspects of food quality. When they judge whether a product is healthy or a production method is natural, they use simple indicators which they know are imperfect, but which are those they understand – visible fat, the list of additives, the use of GMOs. Consumers can be informed about individual aspects, and may learn about the importance of, for example, riboflavines, but the general principle of using simplified and imperfect rules will not change.

Fourthly, as a consequence, quality perception is to a large extent a question of the information environment in which the quality perception takes place. Which cues are available? What is their predictive power – objectively and in the eyes of the consumer? How trustworthy are the sources at hand? Different information environments for different products will lead to different quality perceptions. The same product will be perceived differently in a supermarket than in a health food shop. Adding a brand or a label may make a difference. Adding a new sponsor to an existing label may increase its impact on quality perception. And here, too, individual differences play a role – the amount and kind of experience and expertise, and the type of quality preferred by the consumer, will influence the utilisation of the information environment, with different consequences for the perceived quality.

Finally, there is no doubt that price is an important parameter in consumer choice, and that the trade-off between price and quality is an important aspect in consumer food choice. But unwillingness to pay for a certain quality does not necessarily mean a lack of interest in quality. If a consumer is not willing to pay for a specific quality, it can be due to many other reasons than lack of interest in quality:

- the product does not, in an objective sense, have the specific quality the manufacturer claims
- the consumer does not desire the specific quality (enough), i.e. the consumer does not consider the quality improvement to be worth the price differential
- the consumer does not realise that the product actually has the specific quality

To make things more complicated, price is also subjectively perceived. The consumer's trade-off between perceived quality and price may not be based on the objective price at all, but on a price the consumer thinks the product has, based on previous experience. Price, if the consumer actually notices it in a purchase situation, may be perceived as high or low not only in relation to perceived quality, but also in relation to a subjective reference price, which again is based on previous experience. A high price may even be regarded as positive, a sign of high quality.

This does not mean that it is impossible to understand and analyse consumer food quality perception and choice, and we hope we have provided many examples to the contrary in this paper. Nor does it mean that it is hopeless to try to analyse relationships between objective quality, objective price and consumer demand. But it does suggest that, to obtain a complete understanding, a host of additional variables must be taken into account.

REFERENCES

- Acebrón, L. B. & Dopico, D. C. (2000). The importance of intrinsic and extrinsic cues to expected and experienced quality: An empirical application for beef. *Food Quality and Preference*, 11, 229-238.
- Ajzen, I. & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*, 1st ed. Englewood Cliffs, NJ: Prentice-Hall.
- Andersen, E. S. (1994). The evolution of credence goods: A transaction approach to product specification and quality control. MAPP working paper no 21.
- Askegaard, S. & Brunsø, K. (1999). Food-related life styles in Singapore: Preliminary testing of a Western European research instrument in Southeast Asia. *Journal of Euromarketing*, 7, 65-86.
- Baadsgaard, A., Grunert, K. G., Grunert, S. C. & Skytte, H. (1994). Undersøgelse af mulighederne for eksport af økologiske mælkeprodukter til Nordtyskland. MAPP project paper.
- Bech, A. C. (1999). Fokus på den økologiske forbruger. *Levnedsmiddelbladet*, 37, 8-9.
- Bech-Larsen, T. & Grunert, K. G. (1998). Integrating the theory of planned behaviour with means-end chain theory – A study of possible improvements in predictive ability. 27th EMAC Conference, Stockholm, May.
- Bech-Larsen, T. (2001). Model-based development and testing of advertising messages: A comparative study of two campaign proposals based on the MECCAS model and a conventional approach. *International Journal of Advertising: The Quarterly Review of Marketing Communications*, 20, 499-519.
- Bech-Larsen, T. & Grunert, K. G. (2001). Konsumentenscheidungen bei Vertrauenseigenschaften: Eine Untersuchung am Beispiel des Kaufes von ökologischen Lebensmitteln in Deutschland und Dänemark. *Marketing-ZFP*, 23(3), 188-197.
- Bech-Larsen, T. & Nielsen, N. A. (1999). A comparison of five elicitation techniques for elicitation of attributes of low involvement products. *Journal of Economic Psychology*, 20, 315-341.
- Bech-Larsen, T., Grunert, K. G. & Poulsen, J. B. (2001). The acceptance of functional foods in Denmark, Finland and the United States: A study of consumers' conjoint evaluations of the qualities of functional foods and perceptions of general health factors and cultural values. MAPP working paper no 73.
- Becker, G. S. (1965). A theory of the allocation of time. *Economic Journal*, 75, 493-517.
- Beckmann, S. C., Brokmose, S. & Lind, R. L. (2001). *Danske forbrugere og økologiske fødevarer*. Copenhagen: Handelshøjskolens Forlag.
- Bjerke, F. (1992). *Forbrugernes interesse for økologiske produkter*. Roskilde: Institut for Samfundsøkonomi og Planlægning, RUC.
- Bredahl, L. (1999). Consumers' cognitions with regard to genetically modified food. Results of a qualitative study in four countries. *Appetite*, 33, 343-360.
- Bredahl, L. (2001). Determinants of consumer attitudes and purchase intentions with regard to genetically modified foods: Results of a cross-national survey. *Journal of Consumer Policy*, 24, 23-61.
- Bredahl, L. (Submitted). Cue utilisation and quality perception with regard to branded beef. *Food Quality and Preference*.

- Bredahl, L., Grunert, K. G. & Fertin, C. (1998). Relating consumer perceptions of pork quality to physical product characteristics. *Food Quality and Preference*, 9, 273-281.
- Bredahl, L., Grunert, K. G. & Frewer, L. J. (1998). Consumer attitudes and decision-making with regard to genetically engineered food products: A review of the literature and a presentation of models for future research. *Journal of Consumer Policy*, 21, 251-277.
- Bremner, H. A. (2000). Toward practical definitions of quality for food science. *Critical Reviews in Food Science and Nutrition*, 40, 83-90.
- Brice, R. (1997). Conjoint analysis: A review of conjoint paradigms and discussion of the outstanding design issues. *Marketing and Research Today*, 25, 260-266.
- Brug, J. & Assema, P. v. (2001). Beliefs about fat. Why do we hold beliefs about fat and why and how do we study these beliefs? In: L. Frewer, E. Riskvik & H. Schifferstein (Eds.), *Food, People and Society. A European Perspective of Consumers' Food Choices*, pp. 39-55. Heidelberg: Springer.
- Brunsnø, K. & Grunert, K. G. (1998). Cross-cultural similarities and differences in shopping for food. *Journal of Business Research*, 42, 145-150.
- Candel, M. J. J. M. (2001). Consumers' convenience orientation towards meal preparation: Conceptualization and measurement. *Appetite*, 36, 15-28.
- Cardello, A. V. (1995). Food quality: Relativity, context and consumer expectations. *Food Quality & Preference*, 6, 163-170.
- Carroll, J. D. & Green, P. E. (1995). Psychometric methods in marketing research: Part I, conjoint analysis. *Journal of Marketing Research*, 32, 385-391.
- Cohen, J. B., Fishbein, M. & Ahtola, O. T. (1972). The nature and uses of expectancy-value models in consumer attitude research. *Journal of Marketing Research*, 9, 456-460.
- Costa, A. I. A., Dekker, M., Beumer, R. R., Rombuts, F. M. & Jongen, W. M. F. (2001). A consumer-oriented classification system for home meal replacements. *Food Quality and Preference*, 12, 229-242.
- Cowan, C., Cronin, T. & Gannon, M. (2001). Market for convenience foods and consumer attitudes to convenience foods. 71st EAAE Seminar: The Food Consumer in the Early 21st Century, Zaragoza, April 19-20.
- Cox, D. F. (1967). The sorting rule model of the consumer product evaluation process. In: D. F. Cox (Ed.), *Risk Taking and Information Handling in Consumer Behavior*, pp. 324-369. Boston: Graduate School of Business Administration, Harvard University.
- Darby, M. R. & Karni, E. (1973). Free competition and the optimal amount of fraud. *Journal of Law and Economics*, 16, 67-88.
- Deliza, R. & MacFie, H. J. H. (1996). The generation of sensory expectation by external cues and its effect on sensory perception and hedonic ratings: A review. *Journal of Sensory Studies*, 11, 103-128.
- Dickson, P. R. & Sawyer, A. G. (1990). The price knowledge and search of supermarket shoppers. *Journal of Marketing*, 54(3), 42-53.
- Eagly, A. H. & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace.
- Fishbein, M. A. & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.

- Frewer, L., Scholderer, J., Downs, C. & Bredahl, L. (2000). Communicating about the risks and benefits of genetically modified foods: Effects of different information strategies. MAPP working paper no 71.
- Gardial, S. F., Clemons, D. S., Woodruff, R. B., Schumann, D. W. & Burns, M. J. (1994). Comparing consumers' recall of prepurchase and postpurchase product evaluation experiences. *Journal of Consumer Research*, 20, 548-560.
- Gofton, L. (1995). Dollar rich and time poor? Some problems in interpreting changing food habits. *British Food Journal*, 97(10), 11-16.
- Goldsmith, R. E., Freiden, J., Henderson & Kenneth V. (1997). The impact of social values on food-related attitudes. *British Food Journal*, 99(9), 352-357.
- Green, P. E. & Srinivasan, V. (1978). Conjoint analysis in consumer research: Issues and outlook. *Journal of Consumer Research*, 5, 103-123.
- Green, P. E. & Srinivasan, V. (1990). Conjoint analysis in marketing: New developments with implications for research and practice. *Journal of Marketing*, 54(4), 3-19.
- Grunert, K. G. & Andersen, S. (2000). Purchase decision, quality expectations and quality experience for organic pork. 9th Food Choice Conference, Dublin, July 28-31.
- Grunert, K. G. & Grunert, S. C. (1995). Measuring subjective meaning structures by the laddering method: Theoretical considerations and methodological problems. *International Journal of Research in Marketing*, 12, 209-225.
- Grunert, K. G. (1986). Cognitive determinants of attribute information usage. *Journal of Economic Psychology*, 7, 95-124.
- Grunert, K. G. (1995). Food quality: A means-end perspective. *Food Quality and Preference*, 6, 171-176.
- Grunert, K. G. (1997). What's in a steak? A cross-cultural study of the quality perception of beef. *Food Quality and Preference*, 8, 157-174.
- Grunert, K. G. (2001). Færdigfædning af slagtekøer: Rapport fra en forbrugerundersøgelse. MAPP project paper no 1.
- Grunert, K. G., Beckmann, S. C. & Sørensen, E. (2001). Means-end chains and laddering: An inventory of problems and an agenda for research. In T. C. Reynolds & J. C. Olson (Eds.), *Understanding Consumer Decision-making: The Means-End Approach to Marketing and Advertising Strategy*, pp. 63-90. Mahwah, NJ: Lawrence Erlbaum.
- Grunert, K. G., Brunsø, K. & Bisp, S. (1997). Food-related lifestyle: Development of a cross-culturally valid instrument for market surveillance. In: L. R. Kahle & L. Chiagouris (Eds.), *Values, Lifestyles, and Psychographics*, pp. 337-354. Mahwah, NJ: Lawrence Erlbaum.
- Grunert, K. G., Brunsø, K. & Bredahl, L. (1998). Food-related lifestyle in France and Germany. In I. Balderjahn, C. Mennicken & E. Vernet (Eds.), *New Developments and Approaches in Consumer Behaviour Research*, pp. 1-15. Stuttgart: Schäffer-Poeschel/Macmillan.
- Grunert, K. G., Brunsø, K., Bredahl, L. & Bech, A. C. (2001). Food-related lifestyle: A segmentation approach to European food consumers. In: L. J. Frewer, E. Risvik, H. N. J. Schifferstein & R. von Alvensleben (Eds.), *Food Choice in Europe*, pp. 211-230. Heidelberg: Springer.

- Grunert, K. G., Juhl, H. J. & Poulsen, C. S. (2001). Perception de la qualité en alimentaire et rôle des labels. *Revue Française de Marketing*, 183-184(3-4), 181-196.
- Grunert, K. G., Lähteenmäki, L., Nielsen, N. A., Poulsen, J. B., Ueland, O. & Åström, A. (2001). Consumer perceptions of food products involving genetic modification: Results from a qualitative study in four Nordic countries. *Food Quality and Preference*, 12, 527-542.
- Grunert, K. G., Hartvig Larsen, H., Madsen, T. K. & Baadsgaard, A. (1996). *Market Orientation in Food and Agriculture*. Norwell, MA: Kluwer.
- Grunert, K. G., Skytte, H., Esbjerg, L., Poulsen, C. S., & Hviid, M. (2002). Dokumenteret kødkvalitet. MAPP project paper no 2.
- Gutman, J. (1982). A means-end chain model based on consumer categorization processes. *Journal of Marketing*, 46(2), 60-72.
- Gutman, J. (1991). Exploring the nature of linkages between consequences and values. *Journal of Business Research*, 22, 143-149.
- Hansen, J. K. & Sørensen, H. C. (1993). The importance of price for the sale of ecological products. MAPP working paper no 13.
- Ismail, B., Haffar, I., Baalbaki, R. & Henry, J. (2001). Development of a total quality scoring system based on consumer preference weightings and sensory profiles: Application to fruit dates (Tamr). *Food Quality and Preference*, 12, 499-506.
- Jensen, B. B. (2001). Consumers' price awareness at the point-of-selection: What constitutes the most appropriate measure of consumers' price awareness and what determines the differences? 2001 Fordham University Pricing Conference, New York, November 2-3.
- Juhl, H. J., Høg, E. & Poulsen, C. S. (2000). Forbrugernes vurdering af nogle udvalgte kvalitetsmærkninger for hakket oksekød: Undersøgelsens design, gennemførelse og resultater. MAPP project paper no 2.
- Kahle, L. R. & Timmer, S. G. (1983). A theory and a method for studying values. In: L. R. Kahle (Ed.), *Social Values and Social Change: Adaption to a Life in America*, pp. 43-69. New York: Praeger.
- Lappalainen, R., Kearney, J. & Gibney, M. (1998). A pan EU survey of consumer attitudes to food, nutrition and health: An overview. *Food Quality and Preference*, 9, 467-478.
- Lawless, H. (1995). Dimensions of sensory quality: A critique. *Food Quality and Preference*, 6, 191-199.
- Lee, K.H. & Hatcher, C.B. (2001). Willingness to pay for information: An analyst's guide. *The Journal of Consumer Affairs*, 35, 120-140.
- Lichtenstein, D. R., Ridgway, N. M. & Netemeyer, R. G. (1993). Price perceptions and consumer shopping behavior: A field study. *Journal of Marketing Research*, 30, 234-245.
- Louviere, J. J. (1994). *Conjoint analysis*. In R. E. Bagozzi (Ed.), *Advanced Methods of Marketing Research*. Cambridge: Blackwell.
- Luqmani, M., Yavas, U. & Quraeshi, Z. A. (1994). A convenience-oriented approach to country segmentation: Implications for global marketing strategies. *Journal of Consumer Marketing*, 11, 29-40.

- Lutz, R. J. & Bettman, J. R. (1977). Multiattribute models in marketing: A bicentennial review. In A. G. Woodside, J. N. Sheth & P. D. Bennett (Eds.), *Consumer and Industrial Buying Behavior*, pp. 137-149. New York, NY: Elsevier.
- Monroe, K. B., Powell, C. P. & Choudhury, P. K. (1986). Recall versus recognition as a measure of price awareness. *Advances in Consumer Research*, 13, 594-599.
- Nelson, P. (1970). Information and consumer behavior. *Journal of Political Economy*, 78, 311-329.
- Nelson, P. (1974). Advertising as information. *Journal of Political Economy*, 82, 729-754.
- Nielsen, N. A., Bech-Larsen, T. & Grunert, K. G. (1998). Consumer purchase motives and product perceptions: A laddering study on vegetable oil in three countries. *Food Quality and Preference*, 9, 455-466.
- Nielsen, N. A., Sørensen, E. & Grunert, K. G. (1997). Consumer motives for buying fresh or frozen plaice: A means end chain approach. In J. B. Luten, T. Børresen & J. Oehlenschläger (Eds.), *Seafood from Producer to Consumer: Integrated Approach to Quality*, pp. 31-43. Amsterdam: Elsevier.
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17, 460-469.
- Oliver, R. L. (1993). Cognitive, affective, and attribute bases of the satisfaction response. *Journal of Consumer Research*, 20, 418-431.
- Olson, J. C. & Jacoby, J. (1972). Cue utilization in the quality perception process. *Third Annual Conference of the Association for Consumer Research*, pp. 167-179. Chicago.
- Olson, J. C. & Reynolds, T. J. (1983). Understanding consumers' cognitive structures: Implications for marketing strategy. In: L. Percy & A. G. Woodside (Eds.), *Advertising and Consumer Psychology*, pp. 77-90. Lexington, MA: Lexington Books.
- Østergaard, P. (2001). In-home versus laboratory sensory testing using non-expert consumers: A comparable study using testing of varieties of Danish strawberries as cases. *The 4th Pangborn Sensory Science Symposium, Dijon*. July 21-26.
- Poulsen, C. S. & Juhl, H. J. (1998). Identifying consumer segments using Thurstone Case V scaling model. *ANZMAC 98th Conference*, pp. 2029-2039, November 30 - December 2, Dunedin.
- Poulsen, C. S. & Juhl, H. J. (1999). Fersk fisk - kvalitet i detailhandelen: Forbrugerundersøgelsernes design, gennemførelse og resultater. *MAPP project paper no 2*.
- Poulsen, C. S., Juhl, H. J., Kristensen, K., Bech, A. C. & Engelund, E. (1996). Quality guidance and quality formation. *Food Quality and Preference*, 7, 127-135.
- Poulsen, J. B. (1999). Danish consumers' attitudes towards functional foods. *MAPP working paper 62*.
- Reid, M., Li, E., Bruwer, J. & Grunert, K. G. (In press). Food-related lifestyles in a cross-cultural context: Comparing Australia with Singapore, Britain, France and Denmark. *Journal of Food Products Marketing*.
- Reynolds, T. J. & Gutman, J. (1988). Laddering theory, methods, analysis, and interpretation. *Journal of Advertising Research*, 18(1), 11-31.
- Ritson, C. & Mai, L. W. (1998). The economics of food safety. *Nutrition & Food Science*, 98, 253-259.

- Ritson, C. & Petrovici, D. (2001). The economics of food choice: Is price important? In: L. Frewer, E. Riskvik & H. Schifferstein (Eds.), *Food, People and Society: A European Perspective of Consumers' Food Choices*, pp. 339-363. Heidelberg: Springer.
- Roininen, K., Lähteenmäki, L. & Tuorila, H. (1999). Quantification of consumer attitudes to health and hedonic characteristics of foods. *Appetite*, 33(1), 71-88.
- Roininen, K., Tuorila, H., Zandstra, E. H., de Graaf, C. & Vehkalahti, K. (2001). Differences in health and taste attitudes and reported behaviour among Finnish, Dutch, and British consumers: A cross-national validation of the Health and Taste Attitude Scales (HTAS). *Appetite*, 35(1), 33-45.
- Schifferstein, H. (2001). Effects of product beliefs on product perception and liking. In: L. Frewer, E. Riskvik & H. Schifferstein (Eds.), *Food, People and Society*, pp. 73-97. Heidelberg: Springer.
- Scholderer, J. & Grunert, K. G. (Submitted). Consumers, food and convenience. *Journal of Economic Psychology*.
- Scholderer, J. Brunsø, K., Bredahl, L. & Grunert, K. G. (In press). The cross-cultural validity of food-related lifestyles. *Appetite*.
- Sheppard, B. H., Hartwick, J. & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15, 325-343.
- Squires, L., Juric, B. & Cornwell, B. T. (2001). Level of market development and intensity of organic food consumption: Cross-cultural study of Danish and New Zealand consumers. *Journal of Consumer Marketing*, 18, 392-409.
- Steenkamp, J.-B. E. M. & van Trijp, H. C. M. (1991). The use of LISREL in validating marketing constructs. *International Journal of Research in Marketing*, 8, 283-299.
- Steenkamp, J.-B. E. M. (1990). Conceptual model of the quality perception process. *Journal of Business Research*, 21, 309-333.
- Steenkamp, J.-B. E. M. & van Trijp, H. C. M. (1996). Quality guidance: A consumer-based approach to food quality improvement using partial least squares. *European Review of Agricultural Economics*, 23, 195-215.
- Stepoe, A., Pollard, T. M. & Wardle, J. (1995). Development of a measure of the motives underlying the selection of food: The food choice questionnaire. *Appetite*, 25, 267-284.
- Swoboda, B. & Morschett, D. (2001). Convenience-oriented shopping: A model from the perspective of consumer research. In: L. Frewer, E. Riskvik & H. Schifferstein (Eds.), *Food, People and Society*, pp. 177-196. Heidelberg: Springer.
- Valette-Florence, P. (1997). A causal analysis of means-end hierarchies: Implications in advertising strategies. In: L. Kahle & L. Chiagouris (Eds.), *Values, Lifestyles, and Psychographics*, pp. 199-216. Mahwah, NJ: Lawrence Erlbaum.
- Valette-Florence, P., Sirieix, L., Grunert, K. G. & Nielsen, N. A. (2000). Means-end chain analyses of fish consumption in Denmark and France: A multidimensional perspective. *Journal of Euro-marketing*, 8, 15-27.
- van Trijp, H. C. M., Hoyer, W. D. & Inman, J. J. (1996). Why switch? Product category-level explanations for true variety-seeking behavior. *Journal of Marketing Research*, 33, 281-292.

- Verlegh, P. W. J. & Candel, M. J. J. M. (1999). The consumption of convenience foods: Reference groups and eating situations. *Food Quality and Preference*, 10, 457-464.
- Wittink, D. R., Vriens, M. & Burhenne, W. (1994). Commercial use of conjoint analysis in Europe: Results and critical reflections. *International Journal of Research in Marketing*, 11, 41-52.
- Woodruff, R. B. & Gardial, S. F. (1996). *Know your customer: New approaches to understanding customer value and satisfaction*. Malden, MA: Blackwell.
- Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2-22.