

**THE IMPACT OF PRODUCT EXPERIENCE,
PRODUCT INVOLVEMENT AND
VERBAL PROCESSING STYLE ON
CONSUMERS' COGNITIVE STRUCTURES
WITH REGARD TO FRESH FISH**

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EXECUTIVE SUMMARY

1) The means-end chain model has been widely advocated for the understanding of how consumers perceive self-relevant consequences of products. The model implies that subjective product meaning is established by associations between product attributes and more abstract, more central cognitive categories like values. A means-end chain consists of concrete product attributes, abstract product attributes, functional consequences, psychosocial consequences, instrumental values, and terminal values.

2) The most common method of measuring means-end chains has been the laddering interview technique. Laddering is a semi-qualitative technique which is open for the respondent's own answers without flooding the interviewer with data, as do other qualitative techniques. The results from the laddering interviews are coded and usually presented in a so-called hierarchical value map.

3) However popular, a number of problems with means-end chain analysis have been pointed out. In this paper we report how three variables affect the outcome of a laddering study, namely (1) product experience, (2) product involvement, and (3) verbal processing style.

4) 90 respondents in the Copenhagen area were interviewed. Respondents were asked to rank four meat types, ie, (1) a fresh, whole, gutted plaice, (2) a package of frozen fish fillets, (3) a whole, frozen chicken, and (4) a package of fresh pork chops, according to how likely it would be that they would use them for a hot meal on a workday. Respondents were asked to give reasons for the ranking, and from the answers given, laddering procedures were carried out.

5) At the aggregate level, ie when comparing hierarchical value maps across different groups of consumers, the investigation showed that *less involved* consumers perceived more negative consequences of the consumption of fresh plaice than did the *more involved* consumers. Fresh fish is perceived to be difficult to get hold of – it has to be bought at the fishmonger's – difficult to prepare, and difficult to eat. These aspects are considered time-consuming and result in less time spent with the family. Both the less involved and the more involved consumers regard fresh plaice as healthy.

6) At the individual level, ie when comparing the amount and character of the data provided by the individual respondents, we found that consumers' level of *experience* had a significant positive relationship with the number of ladders retrieved in the interviews and a significant negative relationship with the proportion of consequence categories. There was no effect on the value categories' share of the total number of categories. As for consumers' level of *involvement* we found a significant positive correlation with the number of ladders provided in the interviews. Consumers' tendency towards a verbal processing style seemed to have no influence on neither the number of ladders, average length of the ladders, nor the proportion of value categories in the data set.

7) The study seems to indicate that it is possible to employ laddering with consumers with both higher and lower degrees of *involvement* and *experience*. The study also showed that the respondent's capability of *verbal processing* had no influence on the results. The method can therefore not be said to be more or less applicable to respondents with varying degrees of verbal processing ability.

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MEANS-END CHAINS AND THE LADDERING METHOD

The *means-end chain model* has been widely advocated for the understanding of how consumers perceive self-relevant consequences of products (Asselbergs, 1989; Grunert, 1995; Gutman, 1982; Olson & Reynolds, 1983; Reynolds & Gutman, 1988; Valette-Florence & Rapacchi, 1991). Very briefly, this model implies that subjective product meaning is established by associations between *product attributes* and more abstract, more central cognitive categories like *values*; this may motivate behaviour and create interest in the product attributes, which usually are not intrinsically interesting. By linking attributes to more abstract cognitive categories, chains of associations are established. Theoretically, a chain consists of the following elements: concrete product attribute, abstract product attribute, functional consequence, psychosocial consequence, instrumental value, terminal value. However, the length of chains may differ, and the extent to which product attributes are actually linked to the most abstract type of cognitive categories, ie, values, is said to be an expression of the consumer's involvement in the product (Celsi & Olson, 1988; Peter & Olson, 1993).

In principle means-end chains can be measured in several ways, but *laddering* has been the method advocated and used the most. First, a number of relevant product attributes have to be found. This can be done by direct questioning, triads, or sorting of products into meaningful piles. Then respondents are asked to state their preferences with regard to these attributes. On the basis of their preferences, respondents are asked "why do you prefer...?", and, when they answer, again with "why is that important to you?", and so on, until the respondent is tired or unable to answer. The idea is in this way to push the respondent up the means-end ladder. Subsequently the resulting data are coded, ie, similar answers are grouped into categories, based on which an implication matrix is constructed, with rows and cells defined by the categories resulting from the coding process. The cell entries are the number of times the two categories, to which the cell corresponds, has been mentioned in direct sequence in respondent ladders. The implication matrix forms the basis for constructing a so-called hierarchical value map. A hierarchical value map summarises the most important associations between cognitive categories at the various levels of abstraction in the form of a network.

Means-end chains and laddering have become popular for various reasons. The means-end model is intuitively appealing. Laddering is a semi-qualitative technique, which is open for the respondents' own answers, without flooding the researcher with text data, as do other qualitative techniques. Hierarchical value maps are very illustrative and popular with users of market research. However, several problems with both theory and method have also been pointed out (Grunert & Grunert, 1995; Grunert, Grunert & Sørensen, in press).

This paper has two objectives, one substantive and one methodological. Substantively, the paper is concerned with applying means-end chain theory and the laddering methodology to measuring and understanding consumers' cognitive structure with regard to fresh fish. Information about this will be relevant for marketers interested in understanding consumers' motivations and possible barriers with regard to the purchase of fish, and can be used as a basis for product development and the design of market communication. Methodologically, we are interested in investigating some of the problems which have been men-

tioned previously in connection with the use of the laddering interviewing technique (Grunert, K. G., Grunert, S. C. & Sørensen, in press). These problems will be described in the next section.

PRODUCT EXPERIENCE, PRODUCT INVOLVEMENT AND VERBAL PROCESSING STYLE

Specifically, we want to investigate how three variables affect the outcome of laddering studies: product experience, product involvement, and verbal processing style.

Product experience

By definition, consumers' cognitive structures concerning a specific product category reflect the knowledge s/he has about product category in question. Insofar that means-end chains are considered extracts of consumers' cognitive structures, it follows that there may be differences in the amount and nature of information that is elicited in a laddering interview given the individual respondent's level of experience with the product category. Also, on an aggregate level, the derived hierarchical value maps may be different for groups of consumers with different levels of experience with that product category.

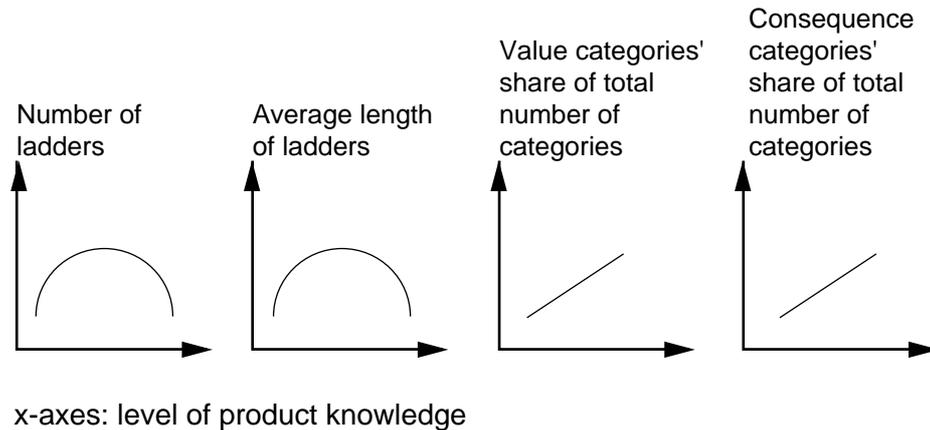
However, how product experience actually influences cognitive structures and the internal search for information is ambiguous. In a study of Johnson and Russo (1984) results suggest that increasing experience provides the consumer with improved knowledge of criteria that differentiate between product alternatives. But the study also show that the most experienced consumers have developed efficient decision procedures focusing on only the most relevant attributes or features. In accordance with these findings Alba and Hutchinson (1987) propose that increased experience leads to richer and more refined cognitive structures, ie, more cognitive subcategories, but they also propose that the ability to retrieve and analyse information and the ability to focus on the most relevant attributes improve as experience increases. In a laddering study by Grunert and Grunert (1993) it is also suggested that the more experienced consumers make shortcuts in their reasoning about what the products can do for them, ie, even though they reach the 'value' level more easily than less experienced consumers they tend to do so with fewer intermediary steps than the less experienced consumers.

As a result, there seem to be two opposite effects at play when consumers retrieve information from memory: the more experience the consumer has with a given product category, the more information is likely to be retrieved – but only up to a moderate level of experience, then the absolute amount of information retrieved decreases with increasing levels of experience.

In the context of means-end chains analysis this leads us to believe that the amount of information generated in a laddering interview as a function of the individual consumer's level of experience is an inverted U-shape. More specifically, we hypothesise that as a function of the level of experience (1) the number of criteria used for choosing among a set of products (here expressed as the number of ladders) as well as (2) the average length of the ladders will follow

an inverted U-shape. We furthermore propose that (3) the proportion of 'value' categories will increase with increasing levels of familiarity, whereas (4) the proportion of 'consequence' categories will decrease with increasing level of familiarity. These hypotheses are depicted in figure 1.

Figure 1. Expected influences of level of product experience on results from laddering study



Product involvement

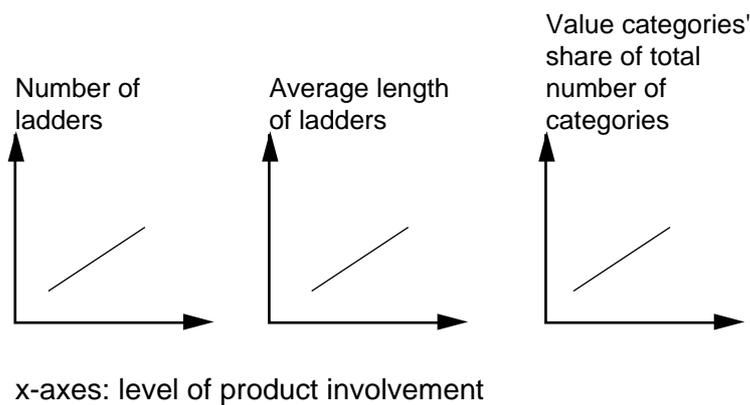
Even though product experience and product involvement are very likely to correlate, we perceive them as conceptually different; whereas a consumer's previous product experience is likely to increase the consumer's ability to process and generate information in a given situation, it is the level of involvement in the object that motivates the consumer to process (Celsi & Olson, 1988).

Involvement refers to consumers' perceptions of personal relevance for an object, activity or event. The effect of involvement on various aspects of consumer decision-making is relatively well researched. Highly involved consumers are more likely to process product related information than less involved consumers (Borgida & Howard-Pitney, 1983; Petty, Cacioppo & Schumann, 1983), and involvement is proposed to lead to greater perception of attribute differences or attribute variability (Howard & Sheth, 1969; Lastovicka & Gardner, 1978; Zaichowsky, 1985).

Celsi and Olson (1988) suggest that the perceived personal relevance of a product is inferred by the activated cognitive structure of means-end associations that link people's knowledge about product attributes and benefits to their self knowledge about important needs, goals, and values. Thus, means-end knowledge structures can be regarded as the cognitive basis for involvement, and the retrieval of means-end knowledge would then be subject to the mentioned effects.

If it is assumed that highly involved consumers are more likely to process product related information than less involved consumers, this would indicate that the degree of involvement may influence the amount of information and number of attributes that can be generated in a laddering interview. Based on this reasoning and Celsi and Olson's (1988) view on involvement being related to linking product attributes to self-relevant consequences, we would expect that with increasing levels of involvement, respondents will produce (1) more ladders, (2) longer ladders, and (3) that the ladders are more likely to reach the value level. These hypotheses are depicted in figure 2.

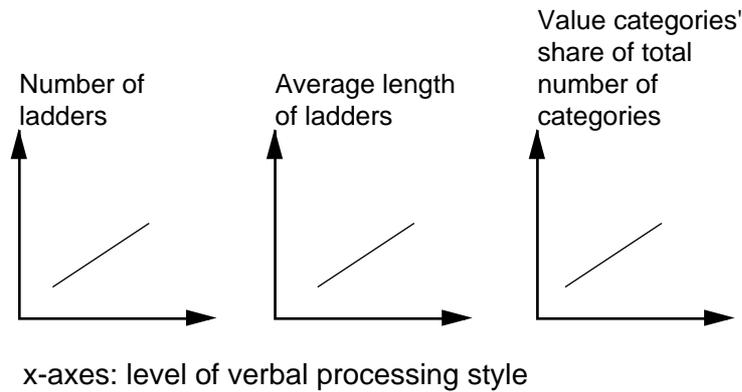
Figure 2. Expected influences of level of product involvement on results from laddering study



Verbal processing style

Above we have reviewed the possible influences of two factors that may influence a consumer's cognitive processes and consequently also effect the data generated by the means-end structures in a laddering interview. However, an issue now and then touched upon by researchers utilising qualitative interviews as a data collection technique is the effects of verbosity and/or verbal fluency of the respondents. Some people are simply more talkative than others and they use more words than others. Others may have a high degree of verbal fluency and may be more capable than others of formulating ideas and concepts – particularly those more abstract in nature. It is the latter view that is in focus here. If this view is correct, then there may be a threat of validity inherent in laddering studies: If elicited ladders and concepts are just as much a reflection of the respondent's ability to express herself as it is a picture of her actual product knowledge, then it seems questionable what is actually measured in a laddering interview. For the investigation of this issue, it is proposed that with increasing levels of verbal processing (2) the number of ladders and (2) their length, as well as (3) the values' share of the total number of categories will increase too. These hypotheses are depicted in figure 3.

Figure 3. Expected influences of level of verbal processing style on results from laddering study



DESIGN OF THE STUDY

As mentioned, the study was substantively concerned with subjective product meanings concerning fresh fish. To this end, a typical fresh fish product was chosen as stimulus: a whole, fresh, cleaned plaice. Since the subjective product meanings were to be measured for using this product as an ingredient in an everyday hot meal, typical alternatives to fresh fish were included in the study as well: a package of frozen fish fillets, a package of pork chops, and a whole, frozen chicken.

Interviews were conducted with 90 respondents from the Copenhagen area. All respondents were married women with at least one child under 10 years of age, and they all had the major responsibility for preparing meals in their households. The screening procedure also ensured that the respondents varied in their consumption levels of fresh fish; 30 respondents could be described as heavy users, 30 as medium users, and 30 as light or non users. Further, it was assured that they varied in educational levels; 45 had less than A-levels, 45 had A-levels or more.

In the interviews, the respondents' first task was to rank the four product alternatives according to how likely it would be that they would use them for the next hot meal to be prepared for the family. Then the respondents were asked to give reasons for the ranking. In this way choice criteria were elicited. From these choice criteria the laddering procedures were carried out. Since the choice criteria were not necessarily at the attribute level, but could also be at the consequence level, "backwards" laddering was applied in these cases in order to determine the concrete attributes that would lead to the abstract concepts. Otherwise, laddering proceeded according to the standard procedures described in, eg, Reynolds and Gutman (1988).

Involvement in the product class *fish* was measured using a 21-item scale adapted from Lastovicka and Gardner (1979). A scale of 39 newly generated items was used to measure the respondent's experience with fish. The items covered general experience with fish, experience with buying fish, experience

with storing fish, experience with the preparation and cleaning of fish, experience with cooking fish, experience with serving fish, and experience with eating fish. Style of processing was measured by using the style of processing scale proposed by Childers, Houston and Heckler (1985). It consists of two subscales of eleven items, one reflecting a verbal processing style and the other a visual one.

RESULTS

Substantively, the study was concerned with understanding consumers' motivation for and subjective product meanings of fresh fish. Methodologically, the study was concerned with understanding the influence of involvement, experience, and verbal processing style on the results of a laddering study. This was investigated in two ways: on an aggregate level by comparing the contents of hierarchical value maps of consumers with more or less experience, higher or lower involvement, and higher or lower degree of verbal processing style; on an individual level by quantifying the results of the individual laddering interviews and applying multiple regression analysis on the data. The aggregate analysis will, at the same time, be used for the interpretation of the substantive results. The analysis at the individual level will make it possible to test the hypotheses depicted in figures 1-3.

Analysis of scales used for measuring involvement, experience, processing style

Involvement in the product class *fresh fish* was measured using a 21-item scale adapted from Lastovicka and Gardner (1979). Cronbach's alpha of this scale was 0.77, which is not exceptionally good for a 21-item scale. A principal component analysis of the 21 items showed that three items correlated negatively with the first factor, which captured the main part of the variance. Taking a closer look at the items, it turned out that in these three items respondents were asked about their commitment to buying a specific kind of fish. But with the product category *fresh fish*, and probably other food products, a high degree of involvement will probably induce variety-seeking behaviour. A very involved buyer of fish will not be content always to eat the same kind of fish. In maximising the alpha of the scale, we chose to remove six other items as well. The scale reliability of the 12 remaining variables was 0.89. This reduced scale was used in the subsequent analysis.

A scale of 39 newly generated items was used to measure the respondent's experience with fish. Cronbach's alpha for all 39 items was 0.91. In order to maximise the reliability of the scale, six items were left out and the reliability of the scale improved slightly to 0.92.

The style of processing scale, as mentioned, consists of two separate scales of eleven items each, one measuring verbal processing style, the other visual processing style. The alpha of the verbal processing scale was 0.76, the alpha of the visual processing scale was 0.71.

Coding of laddering data

The 90 respondents of the study provided between 2 and 15 ladders each, with an average of 7.6 ladders per respondent. Most of the ladders were attributed to fish. On average, 2.9 ladders were attributed to fresh, gutted plaice, and 1.8 ladders were attributed to frozen fish fillet, 1.6 ladders were attributed to chicken and 1.4 ladders were attributed to pork chops.

The coding of the data was done separately for each product, because numerous statements appeared that were unique to a specific product. In the case of fresh, gutted plaice the coding resulted in 40 categories. The coding was done by two coders; one coder coded each ladder and established the list of categories, while the other coder checked the coding by comparing the original ladders to the ladders that appeared when the original statements of the subjects were replaced by categories from the list of categories. In a few instances of disagreement between the two coders, a consensus was reached by a discussion of the content of the ladders concerned. Table 1 shows the resulting list of categories for fresh, gutted plaice.

Table 1. List of categories for fresh, gutted plaice

<i>Attributes</i>
The fish has lived a free, natural life
To be bought at a fishmonger's
Is fresh
Unprocessed raw material
Has bones
Contains vitamins and minerals
Low in fat content
Good and nourishing
Good taste and texture
Poor taste and texture
Is inexpensive
Is expensive
Experience of good quality
Can be prepared in many different ways
Is not used to the product
Represents a variation in the fare

Consequences

Supports the fishmonger
Influences household budgets
Enjoy eating it
Do not like it
Is time-consuming/less time with the family
Gets stressed and busy
Wholesomeness and physical well-being
Gives energy
Exciting to prepare
Quick and easy to prepare
Difficult to prepare deliciously
Higher quality of time spent with the family
Sense of good mood and satisfaction
A poor meal
Annoyance and bad mood
Healthy eating habits
Good for children

Values

Family's quality of life
Good health and a long life
Happiness and well-being
Inner harmony
Politeness
Self-respect and self-confidence
Food not important

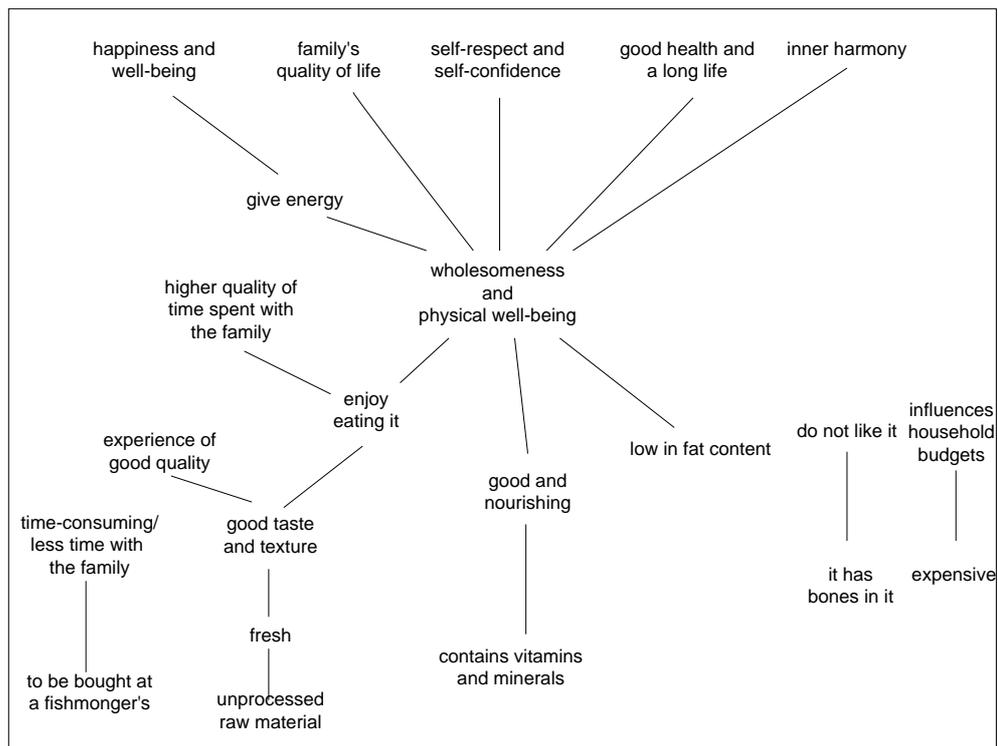
Analysis at the aggregate level: Hierarchical value maps

The coded ladders were then entered into and analysed by the programme LadderMap (Gengler & Reynolds, 1993). The LadderMap programme derives hierarchical value maps on the basis of an implication matrix, as proposed by Reynolds and Gutman (1988). The implication matrix is a square matrix where the rows and columns refer to the codes developed. The entries in the matrix refer to the number of times the codes at the top of the matrix are mentioned as a consequence of the codes at the left side of the matrix. Both direct and indirect

relations are recorded. An indirect relation is recorded between two codes in a ladder if they are mentioned in the same ladder but not directly after each other. A hierarchical value map is a graphical representation of this matrix.

In the following, we present the resulting hierarchical value maps separately for consumers with higher and with lower involvement in fish. To this end, the 90 subjects were split into two groups of 45 according to their score on the involvement scale. The consumers with the higher scores on the involvement scale provided 161 ladders with regard to fresh plaice. The less involved consumers provided 108 ladders. On the basis of implication matrices for the two groups of subjects, separate hierarchical value maps were derived. A cut-off level of 4 was chosen, which means that a link is drawn between two concepts if at least four respondents have mentioned a concept as a direct or indirect consequence of another concept. Choosing a cut-off level of more than one reduces the complexity and thereby increases the transparency of the resulting hierarchical value map, because it means that only those links that are mentioned most often by respondents are represented in the map. It also means that the resulting hierarchical value map does not represent all of the links originally mentioned by respondents. Consequently, choosing a cut-off level involves a trade-off between the amount of data represented by the map and the transparency of the map. The maps presented here include between 44% and 54% of all direct links mentioned by respondents.

Figure 4. Hierarchical value map for fish for the more involved respondents



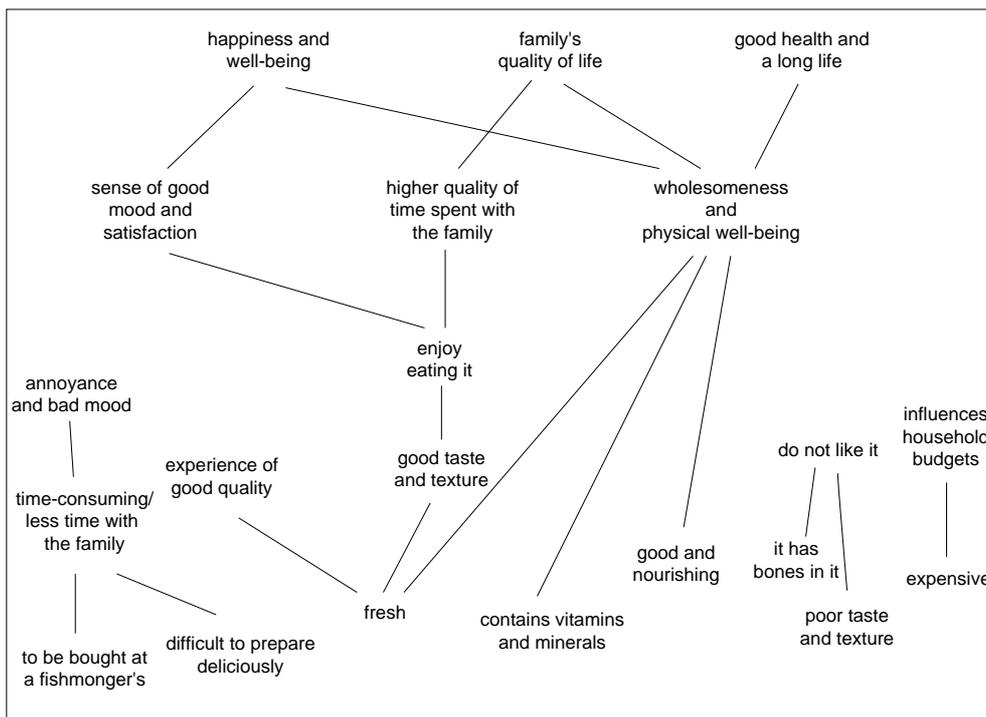
The map for the more involved consumers is shown in figure 4. It consists of two main parts, a part that is centred around “wholesomeness and physical well-being”, and a part centred around “enjoy eating it”. Fresh plaice is low in fat

content, it contains vitamins and minerals and it is therefore perceived as good and nourishing. All these attributes contribute to these consumers' feeling of wholesomeness and physical well-being. Wholesomeness and well-being leads to a number of central values for the consumer, namely "Happiness and well-being", "The family's quality of life", "Self-respect and self-confidence", "Good health and a long life", and "Inner harmony". This part of the map represents what could be termed the health factor.

Fresh plaice is regarded as an unprocessed raw material which means that it is fresh. A fish that is fresh tastes good and has a good texture and is therefore a pleasure to eat. Enjoyment of eating leads to a higher quality of the time spent with the family and it has an impact on the wholesomeness and well-being of these respondents; this connects to the values at the top of the map. This part of the map represents the hedonistic factor.

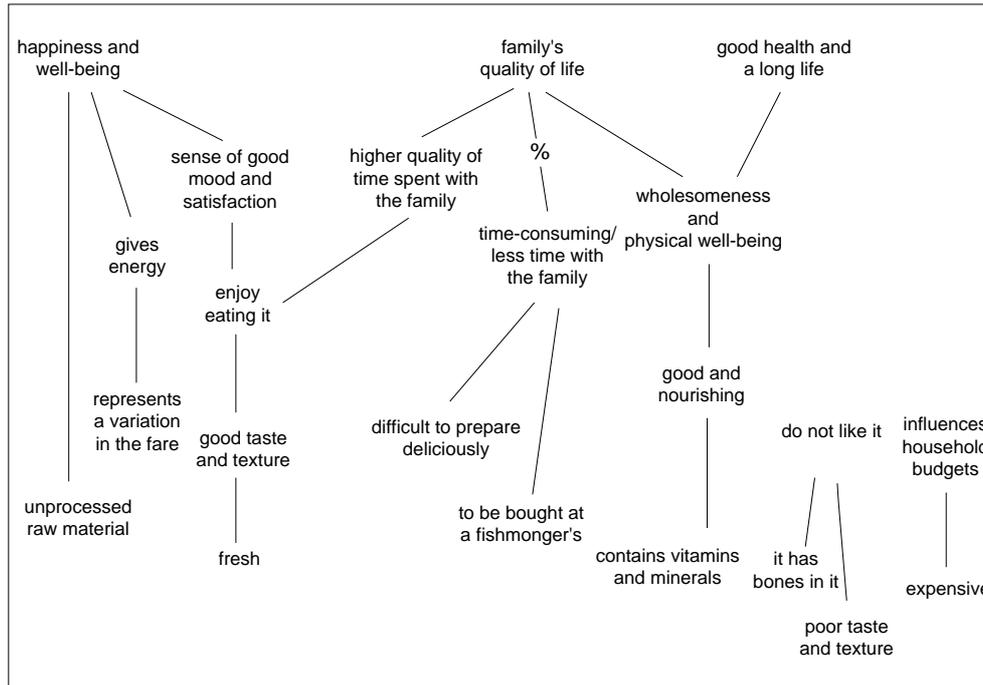
The health factor seems to be central for the involved consumers, and their attitude towards fresh, gutted plaice seems to be very positive. The only three drawbacks are that fresh fish has to be bought at a fishmonger's, which is time-consuming, it is expensive, which influences household budgets, and some people don't like the bones. The demotivating parts of the map are rather limited.

Figure 5. Hierarchical value map for fish for the less involved respondents



The less involved consumers also mention both the hedonistic and the health factor, but the health factor seems to be less dominant for these consumers. The demotivating parts of the map, on the other hand, are larger for the less involved consumers than for the involved ones. The lack of convenience of fresh plaice seems to be a problem for these consumers. It is time-consuming to obtain fresh plaice, because it has to be bought at a fishmonger's and not at the supermarket.

Figure 7. Hierarchical value map for fish for the less experienced respondents



As for the effect of verbal processing, our hypothesis was that consumers with a verbal style of processing were better at stating their buying motives in words. The laddering method will therefore uncover a relatively larger part of these consumers' cognitive structure. To see if this effect is reflected in the hierarchical value maps, respondents were split into two groups according to their score on the verbal processing scale. The respondents scoring high on verbal processing mentioned 146 ladders, respondents scoring low on verbal processing 123. The map for consumers with higher scores on verbal processing style contains 23 linkages between concepts, whereas the map for the consumers with lower scores in verbal processing style contains 17 linkages between concepts. This seems to indicate an effect of the tendency towards verbal processing on the amount of data generated in laddering interviews. The hierarchical value maps are shown in figures 8 and 9. However, only the analysis at the individual level will show whether this tendency holds.

Until now the data analysis has been done on the aggregate level by comparing hierarchical value maps across different groups of consumers. This will now be supplemented by an analysis at the individual level, at which the influence of experience, involvement and processing style on the amount and character of the data provided by the individual will be investigated.

Figure 8. Hierarchical value map for fish for respondents with higher degree of verbal processing style

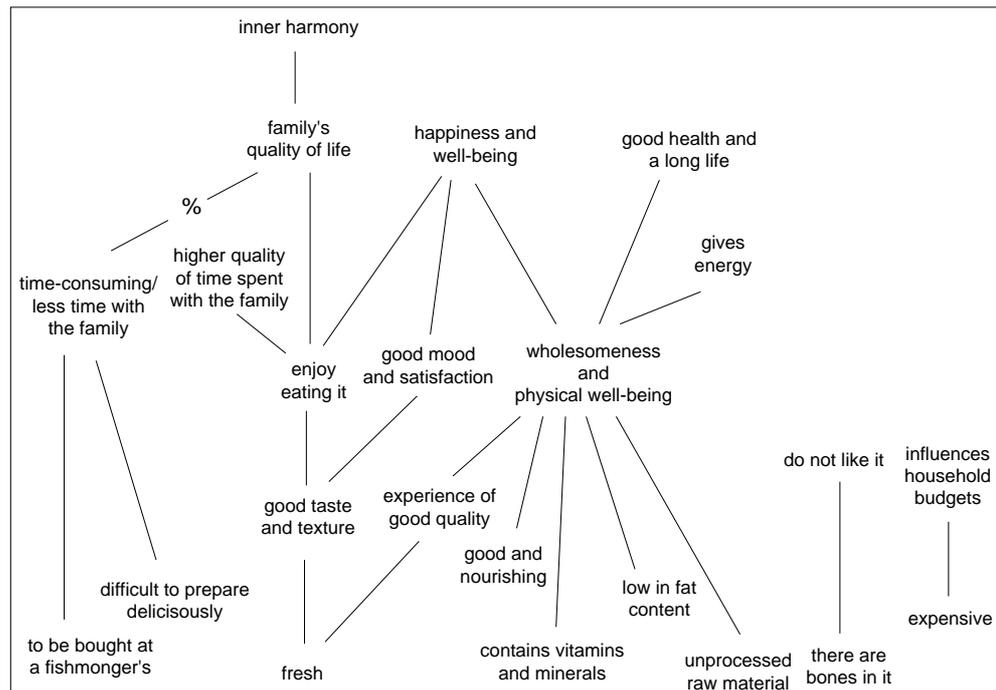
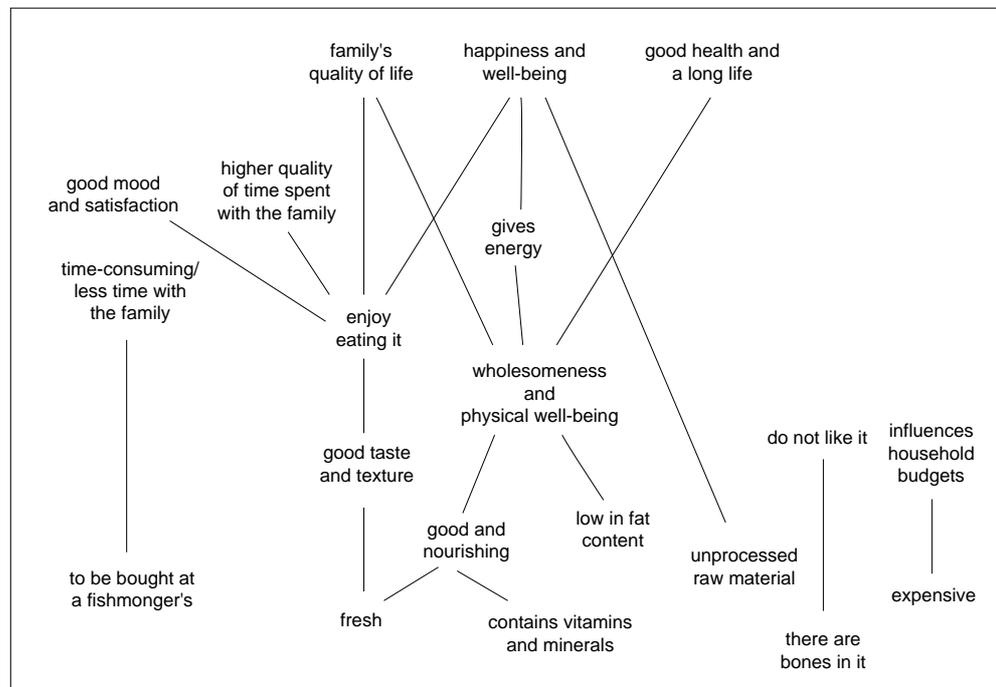


Figure 9. Hierarchical value map for fish for respondents with lower degree of verbal processing style



Analysis at the individual level

The following variables were recorded at the individual level in order to characterise the amount and type of data generated from each respondent:

- The number of ladders provided by each respondent (*ladnumber*)
- The average length of these ladders, ie, the average number of concepts in each ladder (*ladlength*)
- The number of values relative to the total number of concepts in the ladders (*valueprop*)
- The number of consequences relative to the total number of concepts in the ladders (*conseqprop*)

These variables were recorded both with regard to the ladders attributed to fresh, gutted plaice only, and with regard to all ladders provided by respondents. It is now investigated how involvement, experience and verbal processing style influence these variables. A priori we expect the following relationships:

- *Ladnumber*, *ladlength*, and *valueprop* increase with increasing involvement. Higher degrees of involvement will facilitate retrieval of information from memory, and since more links between attributes and the value level indicate more – and more relevant – perceived self-relevant consequences, they should be associated with a higher level of involvement.
- *Ladnumber*, *ladlength*, and *valueprop* increase with increasing tendency towards verbal processing, because this facilitates retrieval of information from memory in a verbal interview, and this effect can be expected to be especially strong with regard to the formulation of the most abstract type of cognitive categories, ie, values.
- *Ladnumber* is expected to have an inversely U-shaped relationship to experience. While the cognitive structure tends to become more elaborate with increasing experience with a product, at some level of experience chunking sets in, and additional information intake becomes dominated by a relevance criterion (Grunert, 1982).
- *Valueprop* is expected to increase with experience, since more experience will allow consumers to better detect which values can be attained by the products in question.
- *Conseqprop* is expected to decrease with experience, as previous research has shown that more experience tends to result in intermediate links being left out in means-end chains (Grunert & Grunert, 1993).
- Also *ladlength* is as a result of the two latter relationships expected to have an inversely V-shaped relationship to experience.

Table 2 shows the bivariate correlations between the variables (only for ladders with regard to fresh fish).

Table 2. Bivariate correlations

	lad- number	lad- length	conseq- prop	value- prop	exper- ience	involve	verbal
ladnumber	1.00	.03	-.238	.12	.40**	.39**	.16
ladlength	.03	1.00	-.05	.48**	.06	.13	.05
conseqprop	-.23*	-.05	1.00	-.34**	-.25*	-.15	-.15
valueprop	.12	.48**	-.34**	1.00	.12	.15	.11
experience	.40**	.06	-.25*	.12	1.00	.60**	.26*
involve	.39**	.13	-.15	.15	.60**	1.00	.08
verbal	.16	.05	-.15	.11	.26*	.08	1.00

* $p < .05$ ** $p < .01$ (2-tailed)

Effect of experience. The significant correlation of .40 between experience and the number of ladders indicates a linear (instead of a U-shaped) relationship between experience and the number of ladders provided by consumers. There is no significant correlation between experience and the proportion of values in ladders. As we hypothesised, there is a significant negative correlation (-.25) between respondents' experience and the proportion of consequences in the ladders of respondents.

Effect of involvement. As expected, there is a significant correlation (.39) between involvement and the number of ladders provided by respondents. The correlation of .13 between involvement and the average length of ladders is not significant, this expectation is therefore not confirmed. No significant correlation is found between involvement and the proportion of values in ladders either.

Tendency towards a verbal processing style seems to have no influence on neither number of ladders provided by respondents, average ladder length nor the proportion of values in ladders.

It is also interesting to note that some of the independent variables correlate. The scales of involvement and experience correlate significantly (.60), and so do the scales of verbal processing style and experience with fish (.26). These correlations make it necessary to employ multiple regression analysis to look at the relationships, in order to take into account the collinearity of the independent variables. In addition to involvement, experience, and verbal processing style, two dummy variables for respondents' education level were included as independent variables, because we suspected that a high school education and/or a higher education would increase respondents' ability to give abstract reasons for their choices in a laddering interview. A stepwise regression procedure was used to isolate the independent variables with the highest explanatory power. When testing the hypotheses about the influence of processing style and educational level, the dependent variables were based on all ladders provided by respondents. When testing the hypotheses about the effect of experience with

fish and involvement with fish, the dependent variables were only based on ladders attributed to fresh, gutted plaice.

Verbal processing style and educational level. Three stepwise multiple regressions were performed with number of ladders, average length of ladders, and the average proportion of values in ladders as dependent variables. In each of the three regressions the independent variables were verbal processing style (verb), high school diploma (d1), and higher education (d2). In none of these regressions did any of the independent variables enter into the regression at a significance level of .05. It can therefore not be confirmed that the degree of verbal processing style or the level of the respondents' education has any effect on the amount and character of the laddering data.

Involvement and experience. We expected a linear relationship between the number of ladders attributed to fish and the respondents' involvement level. We also hypothesised that there is a quadratic relationship between the number of ladders attributed to fish and the respondents' experience level. Involvement, experience and experience² are therefore included in the analysis as independent variables. Only involvement enters the regression and seems to be the best predictor of the number of fish ladders provided by respondents ($\beta=.45$, $p<.01$, $r^2=.19$). Experience correlates, as we have seen, significantly with the number of ladders, but the regression seems to indicate that experience with fish does not have an effect over and above that of involvement. A quadratic relationship between experience and the number of ladders attributed to fish is not confirmed. A plot of *ladnumber* against experience indicates a linear relationship between experience and *ladnumber*, which is also confirmed by the significant correlation between the two variables.

A stepwise regression was performed with the length of the fish ladders, *ladlength*, as the dependent variable, and experience, experience² and involvement as the independent variables. None of the independent variables entered the regression at a significance level of .05. It is therefore not confirmed that the length of ladders provided by respondents is influenced by the respondents' experience with or involvement with the product category.

To test the hypothesis that respondents who are experienced with a product category will tend to have a smaller proportion of consequences, another regression analysis was conducted with *conseqprop* as the dependent variable and experience and involvement as independent variables. The result confirms our hypothesis about a negative relationship between *conseqprop* and experience ($\beta=-.25$, $p=.02$, $r^2=.05$).

In the final stepwise regression, we tested the hypothesis that *valueprop* increases with experience and involvement. No variables entered into this regression, and it is therefore not confirmed that involvement or experience with a product category increase the proportion of values in respondents' ladders.

CONCLUSIONS

Substantive results

The study gives insight into consumers' motivation and subjective product meanings with regard to fresh fish. More specifically, it gives insight into how consumers mentally link the purchase and consumption of fresh fish to the attainment of life values, and also which possible demotivating factors prevent consumers from buying and consuming fresh fish.

The life values which appeared in the study mainly fall in two categories, individual and social. Happiness, well-being, self-respect and self-confidence are examples of individual values. Social values are mainly family-related. This distinction into two groups of values reflects much of the basic research that has been conducted on consumer and human values (eg, S. C. Grunert & Juhl, 1995; Schwartz & Bilsky, 1987). One group of concepts, which appeared as very central, are those relating to health and physical well-being. Health-related aspects appear on several levels and have a central position in the hierarchical value maps. The study also showed, however, that this does not necessarily mean that the perception of a food product's wholesomeness will affect buying behaviour very much. Since both consumers with more and less experience with buying fish perceive its wholesomeness, the health component does not appear to be a very good discriminator with regard to buying behaviour. The major distinction between those who buy more and those who buy less (and consequently have more or less experience) seemed to be the perception of negative consequences, and of the inhibition of value attainment. The difficulties in buying, preparing and eating fish were perceived as leading to negative consequences mainly for those who bought less, and partly detracted from the same values which otherwise were seen as positive in the context of food products, like the family's well-being.

Methodological results

The study seems to indicate that it is possible to employ the laddering method with consumers with both higher and lower degrees of involvement and experience. This conclusion is supported by two observations. One is that the differences in the hierarchical value maps observed for consumers with higher and lower degrees of involvement/experience have face validity: they show a similarity in the positive consequences perceived and discrepancies in the negative consequences/barriers perceived. The other one is that the degree of experience/involvement seems to mainly influence the *number* of ladders produced, which is expected based on the grounds of both the elaborateness of the underlying cognitive structure and the cognitive processes at work during retrieval, whereas there are no or only very small effects on the *type* of ladders produced; especially the ladders in the low experience and/or low involvement conditions are not necessarily shorter. It therefore seems that the laddering method can be used to extract the substantial differences in the subjective product meanings of consumers with higher and lower degrees of experience/involvement, without jeopardising the basic assumptions of the method, namely that subjective product meanings can be analysed by extracting means-end chains.

The study also showed that the respondent's capability of verbal processing had no influence on the results. The method can therefore not be said to be more or less applicable to respondents with varying degrees of verbal processing ability.

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