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**CONSUMERS' MEANS-END CHAINS FOR
"THINK" AND "FEEL" PRODUCTS**

BY

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Qualitative or Motivation Research have great difficulties in gaining widespread acceptance in marketing research, due to their lack of rigor and validity. Laddering is a recently introduced method to conduct motivation research which holds the promise to resist the well-known criticisms. This paper attempts to contribute to the establishment of validity and reliability of the technique. The structural differences in the laddering data obtained for two types of products, "think" and "feel" products, are tested against hypotheses derived from this theoretically founded distinction.

Whether the influence of the involvement construct on structural properties of the ladders matches expectations is investigated as well. The results obtained indicate that laddering can be successfully applied to reveal cognitive structures. The technique appears not to be subject to an interviewer bias.

I. Introduction : Means-End Chain Theory.

Consumer researchers have always searched for satisfactory ways to understand and research the motivation of consumer behavior. Two major paradigms were adopted to achieve this goal (Holbrook & Hirschman, 1982) :

- (1) the "cognitively" oriented approach, supported by a wide range of quantitative analytical techniques (factor analysis, multidimensional scaling, conjoint analysis, multi-attribute attitude models of preference formation, etc.), where product perception in terms of attributes dominates the scene,
- (2) the "motivational" approach, typified by qualitative techniques (focus group discussions, depth interviews, projective techniques, etc.), emphasizing "self" as the driving force behind product purchases.

Both perspectives have proven to be to some extent inadequate to depict and clarify consumer behavior. The cognitive approach tends to reduce consumer choice to a rational optimisation problem, mainly based on product knowledge. Unconscious motives, goals, needs and values of the consumer are typically ignored. The motivational approach, on the other hand, suffers from the incapacity to relate the motives identified and the objects involved (products or brands) in a satisfactory way. The identification of existent motives merely indicates a phenomenon (this is

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exemplified by the attempts in consumer psychology to develop motivation inventories and typologies of personality and life-styles), but does not clarify a causal behavioral mechanism. Apparently, the diagnosis is that neither approach succeeds in "relating the object to the self".

Means-End-Chain Theory (Gutman, 1982) offers a new, interesting perspective to study consumer behavior by reconciling these contrasting, apparently conflicting approaches. Its major contribution lies in the acknowledgement that product and "self" are inextricably linked, and in providing the opportunity to study the middle ground between them in terms of both structure and content. The central tenet of Means-End-Chain Theory is that one must focus on the product's complete meaning structure stored in memory. The latter is thought to consist of a hierarchy of connected cognitive elements at different levels of abstraction : attributes, consequences and values. These form the "means-end chain" : attributes are the *means* by which the product provides the desired consequences or values, the *ends*. This exemplifies a basic assumption of the means-end chain approach, that is that products are bought for what they *do* for the consumer (Peter & Olson, 1987). For a finer-grained analysis of the mental representations of the product stored by the consumer each basic level of abstraction can be dichotomized into two sublevels illustrated below (Olson & Reynolds, 1983) :

This more detailed model will be referred to further in the paper and discussed more in depth (source : Olson, 1988, Peter & Olson, 1987).

Within the taxonomy, concrete and abstract attributes and functional consequences constitute the product knowledge. Concrete attributes (e.g. price) are the tangible, physical characteristics of the product. Abstract attributes (e.g. quality) are less tangible characteristics, often "chunks" of several concrete attributes. They are not directly observable and oftentimes differentially perceived by different persons. Functional consequences (e.g. saving money) refer to immediate physiological and direct, tangible outcomes of product use. The self-knowledge related to the product is represented by the psychosocial consequences, the instrumental and terminal values (Rokeach, 1973). Psychosocial consequences comprise both psychological consequences - i.e. intangible, personal, indirect

outcomes of product use, relating to how the product makes you feel (e.g. feeling attractive) - and social consequences - i.e. intangible, personal, indirect outcomes of product use, involving perceptions of other people's reactions (e.g. impressing others). Instrumental values (e.g. independence, honesty) refer to preferred modes of conduct. Terminal values (e.g. self-esteem, happiness) represent preferred end states of being.

From a means-end chain perspective, values are the ultimate source of choice criteria driving buying behavior. Values provide the overall direction for choice, guiding the selection of the desired consequences, which in turn provide salience to those attributes that possess the ability to produce the consequences.

In order to uncover the attribute-consequence-value chain, a specific depth interviewing technique called "laddering" was developed (for a methodological discussion, see Gutman & Reynolds, 1988).

Laddering refers to a 2-step interviewing process :

- 1) elicitation of salient criteria used to discriminate between products ; this is frequently done by means of a triadic sorting task (Kelly, 1955),
- 2) revelation of the entire means-end structure by continuous probing with some form of the question "why is that important to you?", starting at a given salient distinction and further using the response at each level as the basis for further questioning. This repetitive questioning is meant "to force the subject up the ladder of abstraction" until the value level is reached.

The complete hierarchical structure, going from concrete attributes to terminal values (ideally), at the individual level constitutes a "ladder". An illustration for insecticides is given in figure 1.

The ladders of all individuals in the sample are input to a (quantitative) aggregation process, which allows the construction of a hierarchical value map. The latter reflects the dominant perceptual orientations of a group of consumers towards the product involved.

figure 1 about here

The Means-End Chain Theory and the laddering methodology are introduced as a means to assess consumers' product knowledge and meanings. The means-end chain is assumed to represent product knowledge at different levels of abstraction - attributes, consequences and values - which are combined and organized to form an associative network or schema (Peter & Olson, 1987).

The laddering technique aims at identifying consumers' knowledge both in terms of content and structure. The different concepts elicited in the ladders reveal *what* the consumer knows, whereas the organization of knowledge (*how*) is reflected by, for instance, the number and complexity of relationships between concepts, the completeness of the ladder, the strength of the connections. Furthermore, from the study of the presence of and the linkages between the cognitive elements (attributes, consequences and values) product meaning can be derived. Finally, the identification of the underlying benefits, goals and values associated with the product gives insight into the consumers' motivation to purchase.

However, the potential of the laddering methodology is questioned. The critiques concentrate on issues such as validity and reliability (Durgee, 1985, Morgan, 1984). Foremost, the possibility of subjectivity on the interviewer's side and the scope for construction and rationalization on the subject's side are criticized. Stated differently, it is argued that ladders do not necessarily reflect true cognitions or feelings of the consumer vis à vis the product or brand.

Meanwhile, predictive validity is assigned to the technique through the demonstration that consequences and values identified in the ladders contribute significantly to the clarification of consumers' preferences (Reynolds & Perkins, 1987, Perkins & Reynolds, 1988).

More research is required to investigate the validity and reliability of laddering. Questions concerning the appropriateness of the methodology to identify structural properties of knowledge, product meaning and consumer motivation, demand more empirical investigation. Reliability needs to be further assessed. The investigation of the stability of the responses at different points in time and across interviewers may provide more insight in the issue. This paper aims at dealing with some of these questions and is an attempt to contribute to a more widespread acceptance of the Means-End Chain approach.

We will use Means-End Chain Theory and the laddering methodology as a framework to study two types of products, namely "think" and "feel" products. The distinction will be elaborated upon hereafter. The assumption is that differences between these products are manifest in the knowledge structures of consumers. The latter are reflected by the "ladders" elicited for these products, which therefore constitute the unit of analysis we will concentrate on.

By studying theoretically founded product differences and using several interviewers, we hope to be able to add construct validity and to assign objectivity to this recent methodology in consumer research.

II. The "think/feel" distinction : a review

The "think/feel" distinction is often found as one of the basic dimensions spanning consumer behavior and consumption experiences ; it is often portrayed as a dimension in addition and orthogonal to that of high/low involvement. This results in a 2X2 matrix, the so-called Foote, Cone, and Belding product classification scheme (Vaughn, 1980). Within this matrix, products and services are classified according to whether the purchase decision occurs under high or low involvement and is susceptible to cognitive (thinking) versus affective (feeling) information processing. Other authors have ever since adopted a similar distinction in addition to the involvement construct. Rossiter and Percy (1987) classify brand attitudes on the involvement- and on the informational/transformation dimension. The latter is treated as a dichotomy but can otherwise be considered equivalent with the "think/feel" distinction. Park & Young (1983, 1985) discuss the need for an elaborated view of involvement and suggest to differentiate between the cognitive and affective types of involvement, again a notion very much related to the "think/feel" distinction. A number of other notions in the literature point to a similar attempt to distinguish between the "rational" and "emotional" aspects of consumer behavior, e.g. instrumental versus hedonic consumption (Hirschman & Holbrook, 1982), factual versus evaluative content of persuasive messages (Holbrook, 1978), and informational versus transformational advertising (Puto & Wells, 1984).

There is some doubt concerning the assumption of orthogonality of the constructs of involvement and "think/feel". Some authors have postulated independence (Vaughn, 1980, Rossiter & Percy, 1987, and initially Ratchford, 1987), while others claim that the two dimensions are correlated (Park & Young, 1985, Park & Mittal, 1985). We believe that orthogonality hinges on the definition of involvement advocated by the researcher. The proponents of orthogonality basically define the involvement construct in terms of perceived risk only. The emotional component is neglected and can therefore be completely accounted for by the "think/feel" dimension; hence the correlation between involvement and "think/feel" should be weak. Zaichowsky (1987) provides evidence for this hypothesis by extracting from her involvement scale the emotional component and using it as a substitute for the "think/feel" distinction in the FCB-grid. Her results generally support the FCB product classification scheme. Others (e.g. Laurent & Kapferer, 1985) favor a more complex approach to involvement and consider "sign value" and "pleasure" to be important facets besides perceived risk. Both components constitute part of the elements comprised by the "think/feel" distinction and hence, a correlation between the latter and involvement is to be expected. Ratchford (1987) operationalized the FCB-grid and developed measurement scales for both the

involvement and "think/feel" dimension, which were extensively researched and validated. Although he initially adopted the orthogonal framework, he confirms the presence of a correlation between the "feel" component of the scale and the sign value and pleasure components of the Laurent & Kapferer (1985) involvement measures. Ratchford justifies this finding by treating thinking and feeling as antecedents of involvement. This implies a causal relation between these variables and involvement and therefore their measurement scales can be expected to be correlate.

It is clear that there is scope and need for further empirical research on the exact nature of the involvement - "think/feel" relationship. The unidimensionality or two-dimensionality of thinking and feeling is another issue deserving further research. However, this is beyond the scope of this paper. For our purposes, it suffices to accept that, although potentially correlated with involvement, the construct of "think/feel" offers a separate and intuitively appealing perspective for product classification. Until now the distinction is mainly recognized at a theoretical level, although Ratchford (1987) provided a useful and extensively validated measurement methodology.

The literature suggests that the "think/feel" distinction can be characterized in terms of three aspects : (see table I)

- *motives for buying* :

"Think" products are bought mainly for utilitarian, cognitive reasons (Ratchford, 1987, Rossiter & Percy, 1987, Park & Young, 1983), such as problem avoidance, problem removal or incomplete satisfaction. The buying of "feel" products is driven by the need to satisfy emotional wants (Hirschman & Holbrook, 1982), and by value-expressive and affective motives (Park & Young, 1983), e.g. ego gratification, social acceptance and sensory gratification (Ratchford, 1987).

Cognitive motives stress an individual's information processing activities and the attainment of ideational states. Emotional wants and affective motives refer to the sensory-emotive aspects of consumer behavior and emphasize an individual's feelings and the attainment of certain emotional states (McGuire, 1974).

- *mode of processing* :

Vaughn (1980) used the concept of brain specialization to differentiate between thinking and feeling. Think products are more apt to being processed logically and analytically, implying rational and sequential thinking, hence "left brain" processing. For "feel" products a more synthetic, holistic and intuitive approach is envisioned, pointing to "right brain" processing. Ratchford (1987), without endorsing the left/right brain approach, similarly refers to cognitive (stressing evaluation on performance related dimensions) processing for "think" products

and affective (emphasizing emotion, image and holistic judgments) processing for "feel" products.

- *focus of concern* :

"Think" products involve attention to functional performance, costs/benefits, and tangible, objective product qualities. "Feel" products are considered in terms of possibilities for self-enhancement, subjective meanings and emotional impressions of intangible product features (Park & Young, 1983, Holbrook, 1978).

However, because of the continuous nature of the "think/feel" dimension, identifying clear-cut and defining criteria for differentiation is virtually impossible. Some products will contain properties typical of both the "think" and "feel" side of the dimension. Hence, relative amounts of "think" and "feel" characteristics will define the nature of the product.

table I about here

"Think" and "feel" products are thus typified in terms of the "rational versus emotional" distinction. The distinction is well documented in the literature and provides a basis to study laddering by comparing the obtained laddering results to expectations concerning the knowledge structure and meaning of "think" and "feel" products.

Our purposes are twofold : first, to determine whether the Means-End Chain terminology and methodology are suitable and applicable for both the rational and emotional aspects of buying behavior. Second, to investigate whether laddering allows to reliably reveal structural aspects of consumers' knowledge.

III. The effects of "Think/Feel" on knowledge structures.

The emphasis of our research is on investigating the construct validity of the laddering methodology. If laddering is a valid measure of cognitive structure, ladders have to reflect existing structural differences in the knowledge of consumers about "think" and "feel" products. The ladders elicited, which are used as the unit of analysis, consist of different levels of abstraction (concrete and abstract attributes, functional and psychosocial consequences, instrumental and terminal values) and can have several steps within each level. For instance, within the level of functional

consequences consumers may identify two or more benefits derived from product usage.

In sum, possible structural aspects of a ladder to study are : (1) the number of levels, (2) the number of steps, (3) the type of levels present, (4) the frequency of occurrence of each level or the number of steps within each level, (5) the starting level and (6) the highest level reached.

We illustrate each aspect using the structural features of the ladder in figure 1 :

- (1) there are five levels : abstract attributes, functional consequences, psychosocial consequences, instrumental and terminal values,
- (2) there are seven steps,
- (3) the type of levels present are : abstract attributes, functional and psychosocial consequences, instrumental and terminal values; in this example only the "concrete attribute" level is missing,
- (4) the frequency of occurrence of each level (=the number of steps within the level) is one for the level of abstract attributes, two for the level of functional consequences, two for the level of psychosocial consequences, one for the level of instrumental values and one for the level of terminal values,
- (5) the starting level is the level of abstract attributes
- (6) the highest level reached is the level of terminal values.

Given the conceptual distinctions between "think" and "feel" products introduced before, considerable differences in structural aspects of consumers' knowledge about these two kinds of products are postulated.

The utilitarian nature of the driving force initiating the need for a "think" product makes that these are primarily thought of in terms of their functional performance (Ratchford, 1987, Park & Young, 1983). Attention and elaboration are focused on the relation between the product and the "physical", tangible, objective outcomes it produces (Ratchford, 1987). Functional performance, linked to the product, constitutes an essential and well organized part of knowledge about a "think" product. This is revealed in a large frequency of occurrence of functional consequences in the cognitive structure and in the existence of strong links with other knowledge components. When confronted with a "think" product (e.g. in a buying situation, through advertising, etc.), it is very likely that, due to the strength of the associations, functional consequences are spontaneously, automatically activated. As product performance is perceived as being produced by tangible, objective product features, functional consequences are most often directly related to concrete attributes. Furthermore, when encouraged to do so, consumers may realize that functional consequences lead to more abstract, subjective outcomes which are closely linked to the self (psychosocial consequences, values). Probably, this association is not as strong as the one between product attributes and functional consequences. The

instrumentality of product performance to fulfil needs or to attain values, goals is not often consciously experienced and intentionally used in information processing. Therefore, the product-related part of the knowledge structure is more salient to the consumer than the association of the product, through its performance, to the self.

For a "feel" product, the product (usage) experience is of utmost importance. Consumers expect these products to produce intangible, subjective results (Park & Young, 1983, Holbrook, 1978). Strong relations exist between the product and individual feelings and emotional states that can be attained (Hirschman & Holbrook, 1982, Ratchford, 1987). Psychosocial consequences therefore are highly accessible in the cognitive structure. The product as a whole or some abstract, intangible features are perceived as causing the psychological, social outcomes. As psychosocial consequences are part of the self-knowledge domain, they are assumed to be closely associated with needs, goals and values which are even more important to the individual. During information processing, this piece of self knowledge, linked to the product through psychosocial consequences, is easily activated. The self-related part of the knowledge structure is therefore more important to the consumer than the sheer knowledge about the product and its attributes.

In short, the main differences in cognitive structure between "think" and "feel" products can be described as follows. First, "think" products (especially through their concrete attributes) are mainly viewed as leading to objective, tangible, functional consequences while "feel" products (as a whole or by means of some abstract attributes) are associated with subjective, intangible, psychosocial consequences. Second, although the link between outcomes of product buying or -use and needs, goals and values exists for "think" products, this association is rather weak and therefore not frequently experienced consciously by the consumer. The psychosocial consequences, brought about by "feel" products are strongly related to needs, goals and values. As a result, "feel" products are often thought about in terms of a means to attain these goals and values.

In sum, we hypothesize that :

HYP1 : Ladders for "think" products are more elaborated towards the product knowledge part of the ladder :

- a) the average number of levels related to product knowledge, consisting of the levels of concrete and abstract attributes and the level of functional consequences, present is higher than for "feel" products,
- b) the average number of steps within these levels is higher than for "feel" products.

HYP2 : Ladders of "feel" products are more elaborated towards the self knowledge part of the ladder :

- a) the average number of levels related to self knowledge, containing the level of psychosocial consequences and the levels of instrumental and terminal values, present is higher than for "think" products,
- b) the number of steps within these levels is higher than for "think" products.

HYP3 : Ladders of "think" products start at lower levels of abstraction than ladders of "feel" products.

HYP4 : Ladders of "feel" products reach the value level more often than ladders of "think" products.

HYP5 : The level of functional consequences constitutes the central knowledge level in the cognitive structure of a "think" product :

- a) this level has a larger frequency of occurrence than the other levels in the ladder,
- b) the strongest distinction with "feel" products occurs at this level with larger effects being found for "think" products,
- c) the level of functional consequences has the highest number of transitions to and from the other levels of abstraction.(1)

HYP6 : The level of psychosocial consequences constitutes the central knowledge level in the cognitive structure of a "feel" product :

- a) this level has a larger frequency of occurrence than the other levels in the ladder,
- b) the strongest distinction with "think" products occurs at this level, with larger effects being found for "feel" products,
- c) the level of psychosocial consequences has the highest number of transitions to and from the other levels of abstraction.

(1) a transition between two levels arises if there is a direct connection from one level to the other.

IV. Method

EXPERIMENTAL DESIGN AND PROCEDURE.

Two studies were designed. In a preliminary study we identified products fitting each into one of the four quadrants of the FCB-grid, using the Ratchford scales (1987) designed and validated for these purposes. These products served as stimuli for the main experiment. For the latter then, we chose to control for involvement initially by keeping that variable at a constant level 1) in order to reduce the complexity of the study, 2) because the emphasis of our study lies on the "think/feel" distinction primarily and it is desirable to control the involvement effects.

We concentrated on the low involvement quadrants for several reasons. First, low involvement products are probably less extensively researched in consumer behavior. Much research on product perception, knowledge and evaluation extends to the high involvement environment only, often under the acknowledgment that the results obtained are not transferable to the low involvement domain because "things are different there". Consequently, low involvement products deserve more attention. Moreover, low involvement products, perhaps more than their high involvement counterparts, are generally present in the daily reality of the average (oftentimes less involved) consumer.

Second, for the high involvement quadrants the distinction between "think" and "feel" may be less clear. Due to more self-reference processing for both types of products, interference with the direct "think/feel" impact leading to suppression of some effects can occur (Rossiter & Percy, 1987). Especially, the value-relatedness of product knowledge may be equally strong for "think" as for "feel" products. In the low involvement domain it is plausible that "feel" products are unambiguously positioned by the establishment of links, via psychosocial consequences, with (less important) values, whereas "think" products are focused directly towards the cognitive, rational aspects of buying behavior and a link with values is not often consciously experienced.

On the other hand, the literature on the relationship between "think/feel" and involvement suggests that the differences manifest themselves more clearly in the high involvement area. Park & Mittal (1985), for instance, claim that something that is extremely "think" or "feel" must also be highly involving. From this respect then, finding significant effects for low involvement products is a more stringent test.

Therefore, we restricted ourselves to the study of "think/feel" effects on the knowledge structures of low involvement products. Afterwards, we introduced the involvement dimension in the analysis by treating it as a covariate. This was done to

ascertain that the "think/feel" distinction accounted for all the effects studied and that these were not due to variations in involvement at the individual level.

PRELIMINARY STUDY

a. Procedure

A priori, we selected 60 products in such a way as to obtain 15 products that fit the criteria appropriate for placing each of them in one of the four different quadrants. The criteria used were derived from literature : the "think/feel" classification was based on the distinction made above (see table I), involvement was defined in terms of perceived risk mainly.

Moreover, the products were chosen to ascertain that the subjects (students) would be sufficiently acquainted with them. Within each quadrant 3 products were included that were employed by Ratchford (1987) in order to compare the results and to check for reliability.

A questionnaire was designed to identify the perceived classification of each product by the subjects. The design of the questionnaire was adapted from Ratchford (1987), who provided a set of involvement and "think/feel" measurement scales. The products were organized into three groups of 20, and randomly ordered within each group. The questionnaires for 20 products were collected to form a booklet. Next, the booklet was submitted to 130 subjects, who completed the measurements comprising ratings for involvement, "think/feel" and product knowledge at their own pace.

The scale items employed for the measurement of involvement are :

- (1) very important decision / very unimportant decision
- (2) decision requires a lot of thought / decision requires little thought.
- (3) a lot to lose if you choose the wrong brand / little to lose if you choose the wrong brand

The scales used to operationalize the "feel" construct are :

- (1) decision expresses one's personality / decision does not express one's personality
- (2) decision is based on a lot of feeling / decision is based on little feeling
- (3) decision is based on looks, taste, touch, smell or sound / decision is not based on looks, taste, touch, smell or sound

The "think" construct was measured through two scales :

- (1) decision is mainly logical or objective / decision is not mainly logical or objective
- (2) decision is based mainly on functional facts / decision is not based mainly on functional facts

The above were all 7-point scales, 1 representing high "think" or "feel" for the "think" and "feel" scales and high involvement for the involvement scales.

In order to control for product knowledge we measured it through two proxy-variables :

- (1) prior use of the product
- (2) prior purchase of the product

Both items were measured through a yes/no scale.

The order of presentation of the different scale items was randomized across products.

b. Subjects

Participants in this study were 130 students at the department of Applied Economics at the University of Leuven, aged 18 - 23 ($X=18.6$), enrolled in a preparatory mathematics course in september 1989. Subjects were randomly assigned to one of the three groups. The students were solicited by a class announcement and the questionnaire was submitted at the end of a class session. No course credit, or other incentives were given. Participation was voluntary.

c. Results

The data were controlled for the degree of knowledge of the subjects about each of the products studied. Observations for which a lack of knowledge was suspected (for subjects indicating no prior use and purchase) were deleted as they might cause unreliability in the measurements. This arose in only 7,5% out of the 2620 observations.

The involvement score was the average on the three scale items measuring involvement. Following Ratchford's (1987) recommendations the "think" and "feel" scales were collapsed into one unidimensional "think/feel" scale. This was operationalized by computing the difference between the averages on the scale items for "feel" and "think". Hence, the resulting "think/feel" score (on a scale from +6 for think to -6 for feel) reflected relative amounts of the "think" and "feel" characteristic. Both for the involvement and the "think/feel" score averages were computed on all products across individuals. The mid-point of each scale was used to dichotomize the products into high versus low involvement and "think" versus "feel". The reliability of our results was tested by comparing the positions on the measurement scales we observed with those found by Ratchford, for the three products included in the set that were borrowed from the stimuli used by that author. As the actual scale values in

Ratchford's data were not available to us, his results as presented in a two-dimensional space in the JAR paper were used. From these we computed approximations for the "think/feel" and involvement values. The positions almost coincided for the "think" products. However, for the "feel" products we observed a shift towards the "think"-end of the scale, although the order between products (most "feel" by Ratchford is most "feel" by us) was respected and they were assigned to the appropriate quadrant. In addition, for each group we conducted an analysis of variance testing whether the -theoretically founded and judgmentally decided - a priori "think/feel" and high/low classification produced significant effects on the "think/feel" and involvement scores respectively. The expectations were confirmed ($F(1,43)=149.09$, $F(1,41)=139.50$, $F(1,43)=123.87$, and $p=0.0001$ for the "think/feel" test for the 3 groups of subjects in the pre-study, $F(1,42)=419.89$, $F(1,41)=275.95$, $F(1,43)=172.96$ and $p=0.0001$ for the involvement test for the 3 groups). In all, we considered the results of a satisfactory reliability.

For the low involvement quadrants (involvement score > 3.5), we selected the 20 clearest cases of "think" and "feel" products. These were those products having a "think/feel" score that was near the endpoints on the "think/feel" scale.

For the **low involvement "think"** quadrant, the following products were selected (in descending order of "thinkness") :

batteries, glue, detergent, sellotape, plasters, insecticides, paper handkerchiefs, coffee, toothpaste, margarine.

Within the group of **low involvement "feel"** products the following 10 were retained (in descending order of "feelness") :

birthday cards, indoor plants, liquor, sunglasses, pilsner beer, pralines, porto wine, potato crisps, bisquits, chocolate.

MAIN STUDY

a. Procedure

One hundred subjects were interviewed individually. The subjects were led into a room especially arranged (easy chairs, dimmed lights) to create an informal, cosy atmosphere. The purpose was to make the subject feel comfortable and at ease in order to induce a positive mood state towards talking freely during the interview. Each subject was interviewed on both one "think" and one "feel" product. The products were assigned to individuals at random. In addition, they rated the products on the involvement and "think/feel" scales. The order of presentation of both types of

products was rotated across individuals, so was the order of the two rating tasks. The interviews were done by two interviewers with a psychological background and trained in conducting depth interviews.

The complete dataset consists of 731 ladders (average number of ladders per subject=3.65).

The individual data were submitted to two independent judges who decided on the appropriate level of abstraction for each item in a ladder. The fine-grained distinction between concrete and abstract attributes, functional and psychosocial consequences, instrumental and end values was used during the coding process (2). The categories used for the instrumental and end values were based upon the Rokeach (1973) classifications. The judges agreed in 85 % of the cases. Disagreement was clustered at the consequence level of the Means-End Chain continuum, the decision of rating a statement as a functional or psychosocial one was not always straightforward. For these cases, consensus was reached after mutual deliberation.

b. Subjects

The subjects were marketing students at the department of Applied Economics in Leuven. Their age ranged between 19 and 26 ($X=21.6$) and half of the sample were female. The subjects participated in partial fulfillment of a marketing course requirement.

c. Results

c.1 Manipulation check.

A "think/feel" check was used to ascertain whether the products we selected to be "think" or "feel" based on the pilot study were accordingly perceived by the subjects in the main study. Subjects consistently rated the "think" and "feel" products on the appropriate side of the "think/feel" scale. ($F(1,198)=102.44$, $p=0.0001$, $X_{\text{think}}=2.249$, $X_{\text{feel}}=-0.536$) The average involvement level turned out to be low ($X=5.285$ on a scale of 1 to 7, with 7=very low involvement). Hence, the manipulation was considered to be successful.

c.2 The effects of the "think/feel" distinction on the laddering responses.

An analysis of variance was conducted to test the effects of the treatment variable "think/feel". The individual ladders elicited constitute the unit of analysis.

(2) the definitions used to decide on the appropriate levels of abstraction were borrowed from Olson (1988) and Peter & Olson (1989) and can be found in the introduction part of the paper.

The independent variables used are : the "think/feel" classification, the product, the interviewer, the subject and the order in which the products were presented. Although a complete model is specified to reduce the magnitude of the error term, only the effects of the "think/feel" categorization will be commented upon. The dependent variables used are defined in terms of ladder components : the total number of levels in a ladder, the total number of steps in a ladder, the starting level of a ladder, the highest level reached in a ladder, the presence of the different levels, and the number of steps within each level.

The first hypothesis postulates that "think" products are more elaborated towards the product knowledge part of the ladder. This hypothesis is operationalized by testing whether :

- a) the average number of product-knowledge related levels present, comprising the concrete and abstract attribute levels and the level of functional consequences, is higher than for "feel" products. This is confirmed by the data ($F(1,18)=8.06$, $p=0.01$, $X_{\text{think}}=1.88$, $X_{\text{feel}}=1.64$),
- b) the average number of steps within these levels is higher than for "feel" products, which receives confirmation as well. ($F(1,18)=33.08$, $p=0.0001$, $X_{\text{think}}=2.69$, $X_{\text{feel}}=1.92$). Hence, hypothesis 1 is supported.

figure 2A about here

More detailed evidence reveals that the support for the hypothesis is due to the effects found at the level of concrete attributes and in particular at the level of functional consequences :

figure 3A about here

- the subhypothesis that the average presence of concrete attributes is higher for "think" than for "feel" products ($F(1,18)=3.07$, $p=0.09$, $X_{\text{think}}=0.66$, $X_{\text{feel}}=0.54$) is marginally supported in the correct direction. As there can be only one step at

this level, the test for the number of steps within the level is identical to the one just mentioned.⁽³⁾

- the subhypothesis that a) the average presence of the level of functional consequences is higher for "think" than for "feel" products is supported ($F(1,18)=57.91$, $p=0.0001$, $X_{\text{think}}=0.84$, $X_{\text{feel}}=0.47$), b) the average number of steps within this level is higher for "think" than for "feel" is supported as well ($F(1,18)=77.04$, $p=0.0001$, $X_{\text{think}}=1.58$, $X_{\text{feel}}=0.67$).

We also find that a) the average presence of abstract attributes is higher for "feel" than for "think" products ($F(1,18)=19.3$, $p=0.0004$, $X_{\text{think}}=0.36$, $X_{\text{feel}}=0.62$), b) the average number of steps within the abstract attribute level is higher for "feel" than for "think" products ($F(1,18)=18.46$, $p=0.0005$, $X_{\text{think}}=0.42$, $X_{\text{feel}}=0.70$).

Even though abstract attributes are part of the product knowledge, postulated to be more important for "think" than for "feel" products, these findings are congruent with the notion that for "feel" products, consumers perceive consequences to be "materialized" by abstract, less tangible attributes. Hence, the latter constitute the most salient product related knowledge available in memory. This is in contrast with "think" products for which consumers' knowledge is more oriented towards tangible, concrete product features.

Second, we hypothesized that the ladders of "feel" products are more elaborated toward the self knowledge part of the ladder. Operationally, we tested whether :

- a) the average presence of self knowledge related levels (psychosocial consequences, instrumental and end values) was higher for "feel" than for "think" products, which was confirmed ($F(1,18)=15.74$, $p=0.001$, $X_{\text{think}}=1.22$, $X_{\text{feel}}=1.45$),
- b) the average number of steps within these levels was higher for ladders of "feel" products, which receives support from the data as well ($F(1,18)=28.22$, $p=0.0001$, $X_{\text{think}}=1.54$, $X_{\text{feel}}=2.12$).

(3) It is virtually impossible for subjects to mention two or more concrete attributes in one ladder. When the questioning starts at the level of concrete attributes, it is quite normal that the answer to the probe "why is that important to you" immediately is of a higher level of abstraction. For instance, the question of why the color of a product is important can hardly be answered by referring to other concrete qualities of the product.

An identical phenomenon occurs at the level of the end values. By definition, an end value is terminal and does not lead to more end values. Hence, at the level of end values the presence and frequency of occurrence coincides as well.

figure 2B about here

In sum, based on these results hypothesis 2 is supported.

Additional detailed evidence was provided by the tests at the separate levels of abstraction :

figure 3B about here

- the subhypothesis that a) the average presence of psychosocial consequences is higher for "feel" than for "think" products, is convincingly supported ($F(1,18)=29.07$, $p=0.0001$, $X_{\text{think}}=0.62$, $X_{\text{feel}}=0.83$, b) the average number of steps within this level is higher for "feel" than for "think" products, is supported as well ($F(1,18)=32.77$, $p=0.0001$, $X_{\text{think}}=0.92$, $X_{\text{feel}}=1.50$).
- at the level of instrumental values no significant effects of the treatment variable were observed.
- the subhypothesis that the average presence of the level of end values is higher for "feel" than for "think" products received support at the 5% level ($F(1,18)=4.17$, $p=0.05$, $X_{\text{think}}=0.36$, $X_{\text{feel}}=0.41$). As only one end value can occur for a ladder, the results of this test can be transferred to the test on the number of steps within the level of end values.

Although the detailed analysis supports the proposition that ladders of "feel" products are self knowledge-oriented, we notice that the main difference between the effects of "think" and "feel" products is accounted for in terms of the presence and frequency of occurrence of the level of psychosocial consequences. The evidence for differential effects at the value levels is less conclusive.

table II about here

We might clarify this finding by studying the transition probabilities between the different levels of abstraction. A transition probability between levels x and y is defined as the probability that level x will be connected directly with level y in the

following step of the ladder. In table II the transition probabilities from each level to all other levels are given for "think" and "feel" products. The numbers in bold refer to transition probabilities that differ significantly between both types of products. These results are derived from Chi-square tests on the differences between "think" and "feel" in each row and subsets of a row of the probability matrix. The main differences are situated in the product-related knowledge part of the ladder. The transition probabilities to reach the abstract attributes and the consequence levels starting from the attribute levels and the level of functional consequences are clearly distinct. Once the link between the product and the self is established (this is when the level of psychological consequences is attained), transition probabilities to go to the value levels are more or less equivalent for "think" and "feel" products. This finding reflects that the self knowledge related to a product is organized similarly independent of the product type. It may be argued that for "think" products it is less probable that a strong link with self knowledge exists, but that once the level of psychosocial consequences is reached (which happens less frequently than for "feel" products) the transitions toward higher order states will be as easily made as for "feel" products.

Additional support for the findings on the main orientation of the ladders of "think" and "feel" products is provided by the results of the two closely related hypotheses 3 and 4 concerning the starting and ending levels of the ladders.

We have previously argued that ladders of "think" products should start more often at the level of concrete attributes, whereas ladders of "feel" products would develop out of abstract attributes. The latter conjecture was already partially confirmed by the finding that abstract attributes were to a larger extent present for "feel" products (cfr. hypothesis 1). In operational terms, we tested whether the average starting level for "think" products was lower than for "feel" products. Hypothesis 3 was marginally supported and in the correct direction ($F(1,18)=3.51$, $p=0.07$, $X_{\text{think}}=1.36$, $X_{\text{feel}}=1.56$). Apparently, the pervasiveness of the abstract attribute level for "feel" products is not so strong as to make concrete attributes completely redundant. Consistent with the hypothesis on the self knowledge orientation of "feel" products, we postulated that "feel" products would reach the value level more often. Operationally, we tested whether, on average, the end level of a "feel" product was at a higher level of abstraction than for "think" products. We found that on average the end level for a "think" product was less high on the abstraction hierarchy than the end level of a "feel" product ($F(1,18)=7.33$, $p=0.01$, $X_{\text{think}}=4.65$, $X_{\text{feel}}=4.82$). Hence, hypothesis 4 was supported by the data.

Until now, we confirmed that ladders of "think" products are oriented towards the product knowledge part and hence, start at lower levels of abstraction. Ladders of

"feel" products are focused on the self knowledge part and hence reach the level of values more often. In both cases however, there is a need to establish the link between product knowledge and self knowledge. We argue that this occurs through the level of functional consequences and psychosocial consequences for "think" and "feel" products respectively. Therefore, these levels assume a central position in the ladder, which is reflected by :

- 1) a larger frequency of occurrence than for the other levels in the ladder,
- 2) clear differences in presence between both types of products,
- 3) a number of transitions or connections to and from these levels larger than for the other levels of abstraction.

The conjecture of centrality of the functional consequences for "think" products received support :

- 1) the level of functional consequences clearly occurs more frequently than do the other levels of abstraction (see table III),
- 2) the differential impact of the "think/feel" distinction in favor of an increased magnitude of effects for "think" products manifests itself most clearly at the level of functional consequences (cfr. table III). The latter conjecture was examined for significance under the discussion of hypothesis 1. There, we provided evidence for a substantial support of the subhypothesis that functional consequences were to a larger extent present for "think" than for "feel" products,
- 3) in terms of the number of transitions from the level of functional consequences, we observed that 43% of all transitions (total=1230) start at the level of functional consequences (against 21% for concrete attributes, the second highest number). Moreover, 47% of all transitions are going to the level of functional consequences (the next highest number is 28% for the level of psychosocial consequences). Hence, the level of functional consequences functions as a linchpin in the knowledge structures for "think" products.

table III about here

Similarly, we provide evidence for the hypothesis that psychosocial consequences constitute a central level in the cognitive structure typically activated for "feel" products :

- 1) this level occurs most frequently in the ladder (see table III),
- 2) the difference between "think" and "feel" as reflected in the ladders and pointing to incremental effects for "feel" products, is most striking at the level of psychosocial consequences (see table III). Under the elaboration of hypothesis 2

we have shown that the dominance of "feel" products in the self knowledge part of the cognitive structures is mainly due to the large presence of psychosocial consequences. This effect was found to be very significant,

- 3) examination of transitions for "feel" products reveals that 34% of all transitions (total=1069) are out of the level of psychosocial consequences (against 20%, the next highest number out of the level of functional consequences) whereas 48% are into this level, (compared with 21% going to the level of functional consequences, the next highest number).

In sum, hypotheses 5 and 6 are supported.

Based on the above findings, coupled with the knowledge that on average the ladders of both types of product consist of 3 levels and 4 steps, the following picture for the typical knowledge structure of "think" and "feel" products emerges :

- * The cognitive structure of a "think" product most typically contains a concrete attribute, two functional consequences and a third level, known with less certainty, but likely to be a psychosocial consequence.
- * The cognitive structure of a "feel" product typically comprises one abstract attribute, two psychosocial consequences and a third level, likely to be terminal values, although this is less obvious.

Moreover, "think" and "feel" products differ considerably in terms of the probability that transitions occur between on the one hand the components of the product-related knowledge and on the other hand these same levels and the level of psychosocial consequences. However, once the level of psychosocial consequences is reached the effects of the "think/feel" categorization on transition probabilities towards higher order states diminishes markedly. In other words, although psychosocial consequences are to a lesser extent present and not as easily reached for "think" products, the transition probabilities from this level to higher order levels are more or less equivalent as for "feel" products.

c.3 Introduction of the involvement dimension.

c.3.1 Hypotheses.

Ex post, two arguments led us to introduce the involvement dimension in the analysis :

- 1) the observation that a surprisingly high number (46%) of the ladders reached the value level (instrumental or terminal values), which is considered a characteristic for

high involvement products in the Means-End-Chain literature (cfr. Reynolds, 1988, Peter & Olson, 1987). Although Peter & Olson (1987) suggest that the strength of the connection and the importance of the values attained, for which no measures are available in our data, need to be taken into account as well to decide on the involvement level, the results point to the possibility that the findings are biased due to the presence of more involved individuals,

2) the literature on the FCB product classification matrix mentions the possibility of a correlation between the "think/feel" and the involvement construct. Hence, the causal variables may need to be disentangled to identify their separate effects.

Thus, the involvement dimension is introduced in order to investigate whether the effects of the "think/feel" distinction established previously hold after we control for involvement.

Given the consistency observed in our findings - the results for the different related hypotheses all point in the same direction - and the coincidence of the empirical results with the theoretical conceptualization of the "think/feel" distinction, we argue that the effects found earlier can indeed be attributed to the "think/feel" manipulation. Therefore, we hypothesize that the inclusion of involvement will not alter the first set of results.

HYP 7 : The effects of the "think/feel" distinction will not disappear when involvement is introduced in the analysis.

Although involvement is postulated not to change the main effects of the "think/feel" manipulation, the variable can significantly affect some dependent variables by itself or in interaction with the "think/feel" construct. As involvement is added only to purify the effects of our treatment variable, we will not elaborate on all of its main effects at each level of abstraction. However, one interesting proposition with respect to the influence of involvement at the highest levels of abstraction, pointing to the issue of validity of the laddering technique, must be made. As was stated before, Peter & Olson (1987) define involvement as the degree of personal relevance, which is a function of the attainment of important consequences and values. Hence, within the Means-End-Chain framework high involvement is manifest by the fact of reaching (important) values. We measured involvement through the constructs of perceived risk and importance. However, increasing levels of perceived risk and/or importance probably imply increased personal relevance. Thus high involvement, as measured here, should result in an increased strength of association between the product and the self.

HYP 8 : Ladders from more highly involved individuals are more oriented towards the value end of the ladder ; a positive effect of involvement on the presence and frequency of occurrence of the levels related to self knowledge, and in particular on the end value level is expected.

Besides its effect on value-relatedness of the product, involvement influences the extent and nature of information processing and, as a consequence, the way knowledge is organized (Celsi & Olson, 1988, Greenwald & Leavitt, 1984, Mitchell, 1983). As well at the product- as at the self knowledge level, the cognitive structure is better organized under high involvement conditions. This is reflected in the existence of stronger links between the concepts that are most salient to the individual. The obtained results indicate that abstract attributes, psychosocial consequences and values constitute the most important knowledge components for "feel" products. Concrete attributes and functional consequences are central aspects of the cognitive structure for "think" products. Due to the higher degree of self-reference processing consumers perform when involvement is high, it is very probable that functional consequences are related to important personal goals and values. Therefore, values are another important knowledge component for "think" products. Because strong connections lead to a more accessible knowledge-chunk, both for "think" and "feel" products, frequent activation of salient knowledge components is expected. When involvement is low, relations between knowledge components are weaker. The difference in strength of linkage between more or less important knowledge components is not as clear as when involvement is high. Therefore, the probability that less central knowledge components are activated is higher than under high involvement conditions. In terms of interaction effects, it is thus postulated that differences between "think" and "feel" products will be more pronounced under high than under low involvement conditions (Park & Young, 1983, Park & Mittal, 1985).

HYP 9 : Under high involvement, the distinction between "think" and feel" products is accentuated.

c.3.2 Design.

In order to test the hypotheses we stepped out of the previously used design, where ladders were classified as relating to low-involvement "think" or "feel" products, based on an independent prior classification. Here, use was made of a debriefing question on the subject's self-assessed level of involvement and

think/feelness w.r.t. each product. Using the self-assessment, ladders were classified as pertaining to one of the four high/low involvement by think/feel quadrants. Although products were on average less involving, there was enough variance in the involvement measure to differentiate between more and less involving subjects.

A significant correlation ($r=0.25$, $p=0.0003$) between the measurement scales of both constructs was observed, which implies rejection of the orthogonality assumption desirable for factorial analysis of variance. Therefore, we felt that regression analysis was a more appropriate method to proceed.

Three alternative regression models were considered :

- 1) an ANOVA type of regression model where involvement, "think/feel" and the interaction between them were introduced as dummy variables. This model accounts for variance among conditions only. It has the advantage of being comparable with the ANOVA results obtained in the first part of the research. However, within condition (co)variation is treated as "error"-variance,
- 2) a straight regression where the continuous scores of involvement and "think/feel" are used as independent variables. This model focuses on the variance within involvement and "think/feel". As level effects cannot be separated out it is hardly comparable to the previously obtained results,
- 3) a combined model that allows to take into account both within and between variance, where dummy variables are introduced to reflect the main and interaction effects on the one hand and variables representing individual deviations from the condition means to account for the individual level information in the data on the other. The model is comparable to an analysis of covariance.

The three alternative models were run on all dependent variables of interest. In general, the "think/feel" and involvement effects observed in the three models were very similar. The complete model specification of alternative 3 was chosen as it is conceptually superior and because it performed slightly better (in terms of R^2 and significance of the predictors). Hence, only the results of model 3 will be discussed hereafter.

c.3.3 Results.

Based on the results of the regression analysis reproduced in table IV, we conclude that none of the previously encountered "think/feel" effects were significantly affected by the introduction of involvement. On the contrary, some effects that were marginally significant or nonsignificant earlier became significant. Moreover, additional evidence for the strength of the "think/feel" impact is provided

by the findings that besides the effect at the main level, there is scope for significant effects at the level of individual deviations from the condition means.

Both the main and interaction effects observed are in the expected direction. Within-condition regression weights, reflecting the individual deviations from the condition means, with the hypothesized sign are established as well.

Table IV about here

Hypothesis 1, postulating that ladders of "think" products are more oriented towards the product knowledge part, is supported in the regression analysis by the main effects of "think/feel" and by the significance of the within-condition regression weights :

- a) a significant main effect is obtained for the test on the average presence of levels related to product knowledge (LL in table IV). In addition, significant within-condition regression weights with the hypothesized sign were established,
- b) the main effect of "think/feel" on the average number of steps (FL) within these levels is found to be significant as well, such as the within-condition regression weights.

The same results obtain under the analysis of variance design.

The more detailed analysis at the levels of concrete attributes, abstract attributes and functional consequences respectively, reveals :

- strong support for the subhypothesis that concrete attributes are to a larger extent present for "think" products (L1 and F1 in table IV). This effect was only marginally supported in the previous analysis.
- significant effects of "think/feel" on the presence (L2) and frequency of occurrence (F2) of abstract attributes. These were established in the ANOVA as well.
- significant effects on the presence (L3) and frequency of occurrence (F3) of functional consequences both in terms of main effects and effects from individual deviations from the condition mean. Again, these results coincide with the previous findings.

For hypothesis 2 on the self knowledge orientation of the ladders of "feel" products, the same pattern of results as established in the "think/feel"-ANOVA emerges :

- a) a significant effect of "think/feel" on the average presence of the self knowledge related levels (LH) is observed,

b) the effect on the average number of steps (FH) within these levels turns out to be significant as well.

The additional evidence for the hypothesis based on the tests at the separate levels of abstraction is stronger than that obtained previously :

- significant main effects of "think/feel" on the presence (L4) and frequency of occurrence (F4) of the level of psychosocial consequences are established, as well as significant within-condition regression coefficients with the hypothesized sign,
- the effect on the presence (L5) and frequency of occurrence (F5) of instrumental values is significant, whereas nonsignificant results were observed previously.
- strong significance is obtained for the presence and frequency of occurrence (L6,F6) of terminal values, an effect that is established at the 5% level only in the "think-feel" analysis of variance

Hypothesis 3 that ladders of "think" products start at lower levels of abstraction is strongly confirmed in the regression analysis. The hypothesis was only marginally supported previously.

Finally, and in analogy to the findings of the "think/feel" analysis of variance, hypothesis 4 that ladders of "feel" products reach the value level more often is confirmed in the regression analysis.

Thus, the introduction of involvement in the analysis appears not to alter or weaken the "think/feel" effects. Hence, hypothesis 7 is supported.

Hypothesis 8 postulates that ladders of more highly involved individuals are more oriented towards the value end. This was operationalized by testing the effect of involvement on the presence and frequency of occurrence of the levels related to self knowledge, in general, and by studying the effect at each level separately. We observe that involvement has a main effect on the number of steps within the levels related to self knowledge. Within-condition regression weights are significant as well. Both are in the predicted direction, i.e. a larger number of steps under high involvement is noted. The first part of the hypothesis is thus confirmed.

In terms of the presence of the value level and of the highest level reached we note that significant individual involvement effects emerge which are in the right direction, but no main effects. The proposition that high involvement implies the attainment of the value level is less substantially supported. This finding might be attributed to several causes :

- 1) reaching the value level occurs as an artifact of the laddering methodology, rather than as a reflection of "true" involvement. In some cases it is possible that subjects are able to verbalize relations between the product (or its consequences) and values

which are typically not activated. Moreover, the technique may lead subjects to construct inferences about the value-relatedness that did not previously exist in memory.

- 2) attainment of the value level is not the sole indicator of involvement, the importance of the values reached and the strength of the association between product knowledge and values needs to be introduced in order to decide on the appropriate involvement level (Peter & Olson, 1987). We omitted the measurement of the importance of the values and their strength of association and are consequently uncertain about their centrality for the subject. Therefore, it is impossible to make conclusive statements about the congruence between measured involvement and value-attainment.
- 3) our measure of involvement is limited, as only perceived risk and importance within the context of the purchase situation are considered. Other components (e.g. pleasure and sign value) are not explicitly included, even though the level of values may be reached because of a high score on these facets of involvement. Moreover, a subject who is not involved in terms of the purchase of the product can go up the ladder to the value level because of involvement with the product usage situation for instance, a topic that is dealt with very often during the depth interview.

The reality probably consists of a combination of these explanations. On the one hand, value-attainment is not necessarily equivalent to high involvement, although certainly a partial indicator, and on the other hand involvement as measured in our data is probably not reflecting the total level of involvement.

Besides these conceptual arguments, there is a more technical account for the result : our data were gathered within the range of low involvement products and consequently less suitable to discover main involvement effects. The finding of the effects at the level of individual deviations of the condition mean is therefore an important indicator of the possibility to investigate involvement effects.

The study of the interaction of involvement and "think/feel" on the levels of product knowledge, reveals significant effects for the presence and frequency of occurrence of concrete and abstract attributes. The detailed evidence on these knowledge components provides substance to the proposition made in hypothesis 9. Under high involvement the deviation between "think" and "feel" effects are strengthened (see figure 2a, 2b, 2c). In ladders for high involvement "feel" products, abstract attributes are to a greater extent present, to the detriment of concrete attributes. The reverse is true for ladders for high involvement "think" products. The effects for functional consequences, however, are insignificant. Hence, at the product knowledge level, hypothesis 9 is only partially supported by the data.

figure 2 about here

The "think/feel" distinction becomes more pronounced under high involvement (cfr. figure 2f) in terms of the frequency of occurrence of the higher order levels.

More careful analysis reveals that this finding is completely due to an increase in the difference between "think" and "feel" effects on the presence and in particular on the frequency of occurrence of the level of psychosocial consequences (cfr. figure 2d and 2e). The finding does not imply that under high involvement "think" products reach the value level even less. It rather clearly indicates that under high involvement the level of psychological consequences is less present in ladders of "think" products. This result can be verified through the transitions between the product knowledge related levels and the higher order levels for ladders in the high involved "think" quadrant. This analysis reveals that the link with the values is established directly from the level of functional consequences. Of all transitions leading to the value level, 55% start at the level of functional consequences. Hence, the transition to psychosocial consequences, which still function as the entry to self knowledge in the low involvement quadrant (of all transitions leading to the value level, 49% start from psychosocial consequences and only 26% from the functional consequence level), is omitted for high involving "think" products.

Likewise, the case of high involving "feel" products is considered and compared with the results of less involving "feel" products. Here, only minor differences are observed. In both cases, of all transitions leading to the value level, the large majority starts from the level of psychosocial consequences (58% and 66% for low and high involving products, respectively).

In all, we provided evidence that under high involvement the differential effect of "think/feel" on the knowledge structure is accentuated. A "think" product behaves more according to the theory : a heavier emphasis is put on concrete attributes and functional performance gains importance as it is directly linked to values. Similarly, under high involvement a "feel" product performs more "feellike" : the characteristic sequence of abstract attributes, psychosocial consequences and terminal values is more pervasively present.

It can be concluded that the introduction of involvement in the analysis did not alter significantly the previously established main effects for the "think/feel" distinction. Interaction effects of involvement with "think/feel" arose and point to the

necessity of researching the "think/feel" distinction under the condition of high involvement in more depth.

V. Discussion

This study contributes to the establishment of the validity and reliability of the laddering technique. The method to proceed was to test structural differences in the laddering results against expectations taking into account the theoretical established distinction between "think" and "feel" products and involvement. Reliability was assessed by studying the interviewer's impact.

The results indicate that the theoretically founded distinction between "think" and "feel" in cognitive structures was adequately measured. When involvement is introduced into the analyses, expected effects on knowledge structure emerge. As such, laddering can be considered a valid measurement method for the structural properties of consumers' knowledge representation. Partial evidence is provided for the validity of laddering as a measure of involvement : the measurement approach used in laddering (value attainment) correlates significantly with an involvement measurement extensively validated in the literature (Ratchford, 1987). The evidence is partial, as the correlation was established at the level of individual variation only. Moreover, the unexpectedly high frequency with which values were attained in the low involvement domain emphasizes the need for measurements additional to the laddering outcomes to establish the true involvement level. Measures such as the importance of the values mentioned and the strength of association, reflecting whether the knowledge is easily accessible, between product and value may be helpful. The study refutes the often expressed criticism on the substantial influence that the interviewer's subjectivity may have on the final results. In this study, the interviews were done by two interviewers and the interviewer effect does not emerge as a significant factor in the analysis of variance. Hence, no systematic differences between the interviewers in structural aspects of the ladder can be detected. This finding contributes somewhat to the reliability issue. Future research should investigate whether persistence of the ladders in time exists.

The potential of laddering to investigate structure besides mere content suggests its usefulness to study knowledge organization. Our data suggests that, as well for "think" as for "feel" products, consequences play a central role in the knowledge structure. The importance of the consequence level is demonstrated through multiple indicators such as its overall presence, its frequency of occurrence and the number of transitions to and from this level. Hence, the more abstract product knowledge levels

are most prevalent in knowledge organization. We speculate that this implies that knowledge evolves out of the consequence level and that activation spreads from the consequences downwards to the attributes and upwards to the values. Differential activation patterns were established for "think" and "feel" products in the product related knowledge part of the ladders. However, investigation of the transition probabilities reveals that once the level of psychosocial consequences is reached no difference in degree of activation of the subsequent value levels occurs. Hence, self knowledge is organized similarly for the different types of products. It is plausible that components of the self are linked to each other invariantly, as they constitute a (relatively) permanent knowledge basis. These results extend to the cognitive structure only ; it is of course possible that differences occur in terms of content as well. "Feel" products might lead to other values than "think" products. Differences in the way the link with values is established are feasible. An exploratory inspection of the content suggests that for "feel" products outcomes, which can be immediately attributed to the product, are linked to values. For "think" products, outcomes which are induced by, but not specific to the product (e.g. saving time, money) lead to values. A more extensive content analysis is required to investigate these tentative hypotheses concerning content.

Additional support for the validity of laddering as a measure of knowledge organization is offered by the observed effects of involvement on the structural ladder properties. Although involvement was not systematically manipulated and in general rather low, the existing variance in involvement mainly has an influence on the frequency of occurrence of the central knowledge components and on the relations between them. When involvement is higher, salient knowledge components are elicited more often than under low involvement conditions. Therefore, we assume that in high involvement situations the important knowledge components are tightly linked to each other.

Besides providing insight in the organization of knowledge, the structural properties of the ladders may be helpful in identifying where product meaning lies. Whereas the entire ladder is assumed to reflect knowledge about the product, meaning can be situated at one (or more) particular level(s) of abstraction. From a means-end chain perspective, a product acquires meaning to the extent that it is perceived as instrumental in achieving wants, goals and values. As such, product meaning consists of knowledge about the relationship between the product and the self and is therefore situated at the consequence and value level. Product meaning is an important construct because the motivation to buy a product originates from its meaning to the consumer. The strongest motivational power stems from values which are very important to the individual. Even though every product (through its consequences)

will be related to values to some extent, this value-relatedness will not often be consciously experienced by consumers. The frequency of elicitation of a specific relation between the product and the self in the laddering interviews is assumed to be in concordance with the probability that this relation is activated in daily consumption situations. Based on the findings, we conclude that the meaning for "think" products is mainly situated at the functional consequence level. The link with values is less frequently activated. For "feel" products, product meaning consists more often of psychosocial consequences, related to values. The observation in our data that the clearest difference between "think" and "feel" products occurs at the level of consequences supports the idea that this is the identity or meaning level for these products.

Hence, the results of the laddering interviews not only reveal the expected differences in knowledge representation but also support the "think/feel" distinction with respect to the motives for buying these products.

This study contributes to the establishment of empirical evidence for the "think/feel" distinction as well. Until now, in the existing literature, the "think/feel" distinction is primarily based on theoretical assumptions for which empirical evidence is lacking. The determination of effects on knowledge organization and representation, product meaning, and motivation caused by the "think/feel" nature of products proves the, both at the theoretical and at the practical level, the distinction to be useful. At the theoretical level, a more detailed picture of differences in buying motives and cognitive structure emerges. The literature suggests that one of the main differences between "think" and "feel" products lies in the satisfaction of utilitarian versus value-expressive, emotional needs, respectively. According to our findings, it must be concluded that both "think" and "feel" products may be instrumental in satisfying affective, self-related needs, but that the link between "feel" products and these needs is more often activated than for "think" products. As already stated before, it is found that the clearest "think/feel" distinction is situated at a less abstract level, namely the consequences linked to the product.

The "think/feel" distinction is also useful for marketing practice. Positioning of "think" and "feel" products can be established by emphasizing the functional or psychosocial consequences they produce, respectively, because these are the aspects which are most closely linked to the product in the consumer's mind. In advertising, the relation between tangible, physical attributes and functional consequences has to be made clear for "think" products while for "feel" products, psychosocial consequences may be presented as caused by abstract attributes. As such, learning of the advertised message will be facilitated as the presented information corresponds to already existing knowledge about "think" and "feel" products.

Although the laddering methodology has proven to be a valuable technique for studying knowledge structure, product meaning and buying motives, we would like to mention some important aspects of cognitive structure on which only limited or no information is obtained through laddering interviews.

In the first place, laddering provides information about the presence or absence of knowledge components and relations between them. The strength of association between components also is an important characteristic of cognitive structure because it determines the accessibility of the knowledge involved. In its basic form laddering does not allow the identification of the strength of association at the individual level. Additional measurements are required. It seems possible, for instance, to consider the integration of latency time, an indicator of association strength (Fazio, Powell & Williams, 1989), in laddering interviews. It is also worthwhile to investigate in more detail the functionality of an aggregate measure of association strength and the usefulness of a construct such as transition probabilities to account for this.

As laddering is proposed as a measure of involvement, information on the strength of value-relatedness of the product is necessary. Celsi, Olson, and Walker (1990) suggest that the number of means-end associations linking a product to values is one of the indicators of involvement. In addition, the centrality or the importance of the values related to the product has to be taken into account. This requires that subjects rate the importance of the elicited values and that this task be systematically included during the laddering interview. We assume, however, that the existence of multiple relationships with central values is not a necessary prerequisite for being highly involved. High involvement may be caused by the existence of a strong association between one particular knowledge component and an important value. For instance in our data a strong, immediately activated link between functional consequences and values seemed to imply the presence of a well organized knowledge structure and hence, high involvement. Again, the ability to adequately and reliably measure strength of association between knowledge components is necessary to test this hypothesis.

A final point of reflection concerns the type of knowledge the laddering methodology allows to reveal. Examination of the data obtained through laddering interviews for a whole range of products lead us to the assumption that three types of "knowledge" can be elicited. First, consumers may reproduce readily available, conscious knowledge. Second, due to the high effort subjects devote to answering some of the questions, "latent" knowledge, which is rarely experienced consciously in daily situations, can be verbalized. Third, it is possible that consumers construct knowledge which did not exist previously and that they make new inferences during the interview.

We can easily envision some tentative guidelines to decide on the type of knowledge using the concept of involvement. It seems plausible that under low involvement conditions "latent" and "constructed" knowledge are present to a larger extent in the ladders than in high involvement situations. Even though links with self knowledge components are weak or even non existent the majority of the subjects will do the best they can to answer all the questions. If necessary, they will be able to elicit "latent" knowledge or they may even construct new linkages between concepts. When involvement is high, the probability of revealing "reproduction" knowledge increases as the relation of product knowledge and the self is strong and well organized.

However, laddering itself does not allow to differentiate between these types of knowledge. As we expect the nature of the knowledge to have an effect on different aspect of consumer behavior (for example the probability that the knowledge is used when making a choice) it might be desirable to be able to identify the type of knowledge involved. This requires the development and testing of adequate measurements.

In spite of the current limitations, the laddering methodology and the means-end chain theory have proven to be a valid approach to gain insight in the structural properties of knowledge organization and representation, product meaning, and the motivation to buy or use a product. Analysis of the content of the ladders is one of the following steps that can be taken in order to provide further evidence for the validity of the technique.

FIGURE 1 : EXAMPLE OF A LADDER FOR THE PRODUCT CATEGORY "INSECTICIDES"
(source : own research)

FIGURE 2 : THE THINK/FEEL DISTINCTION AT THE PRODUCT- AND SELF KNOWLEDGE LEVELS

FIGURE 3 : THE THINK/FEEL DISTINCTION - DETAILED EVIDENCE

	<u>A</u>	think		feel
CA		66% 0.66	$p=0.09$ $p=0.09$	54% 0.54
AA		36% 0.42	$p=0.0004$ $p=0.0005$	62% 0.70
FC		84% 1.58	$p=0.0001$ $p=0.0001$	47% 0.64
<hr/>				
PC	<u>B</u>	62% 0.92	$p=0.0001$ $p=0.0001$	83% 1.50
IV		24% 0.25	ns ns	20% 0.20
TV		36% 0.36	$p=0.05$ $p=0.05$	41% 0.41

legend :
numbers w.r.t average presence of the levels
numbers w.r.t average number of steps within the level

FIGURE 4 : INTERACTION EFFECTS BETWEEN INVOLVEMENT AND THINK/FEEL

a) presence of concrete attributes

b) presence of abstract attributes

c) frequency of occurrence of abstract attributes

d) presence of psychosocial consequences

e) frequency of occurrence of psychosocial consequences

f) frequency of occurrence of levels related to selfknowledge

TABLE I : CHARACTERIZATION OF "THINK" AND "FEEL" PRODUCTS.

	<i>"think"</i>	<i>"feel"</i>
<i>motives of buying</i>	utilitarian cognitive e.g problem removal	value-expressive affective satisfying emotional wants e.g sensory gratification
<i>mode of processing</i>	logical, rational and sequential thinking	holistic, synthetic and image-based thinking
<i>focus of concern</i>	functional performance costs/benefits tangible features	enhancement of the self subjective meanings intangible features

TABLE II : TRANSITION PROBABILITIES

	CA	AA	FC	PC	IV	TV
CA	0 0	43 14	38 75	18 7	0 3	1 1
AA		12 15	34 66	50 18	1 1	3 0
FC			32 52	56 35	7 6	5 6
PC				64 53	15 22	21 25
IV					2 7	98 93

Legend :

CA=concrete attributes, AA=abstract attributes, FC=functional consequences,
 PC=psychosocial consequences, IV=instrumental values, TV=terminal values,
 the numbers in italics are the transition probabilities for the feel products
 the numbers in bold refer to significant differences ($P < 0.0001$)

TABLE III : FREQUENCY OF OCCURRENCE OF THE DIFFERENT LEVELS OF ABSTRACTION

	"think"	"feel"
concrete attributes	0.67	0.54
abstract attributes	0.42	0.70
functional consequences	1.59	0.68
psychosocial consequences	0.92	1.50
instrumental values	0.25	0.20
terminal values	0.37	0.42

TABLE IV : RESULTS OF THE REGRESSION ANALYSIS

	LL	L1	L2	L3	L4	L5	L6	LH	FL	F1	F2	F3	F4	F5	F6	FH	SL	HL
IN		S	S							S						S		
TF	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
I*T		S	S		S*					S	S*		S			S		
DI	S	S	S	S*			S*		S	S	S*	S			S*	S*		S*
DT	S			S	S				S			S	S					

legend :

*ll=*presence at the levels related to product knowledge,
*l1=*presence at the level of concrete attributes
*l2=*presence at the level of abstract attributes
*l3=*presence at the level of functional consequences
*l4=*presence at the level of psychosocial consequences
*l5=*presence at the level of instrumental values
*l6=*presence at the level of terminal values
*lh=*presence at the levels related to self knowledge
*fl=*frequency of occurrence of levels related to product knowledge
*f1=*frequency of occurrence of concrete attributes
*f2=*frequency of occurrence of abstract attributes
*f3=*frequency of occurrence of functional consequences
*f4=*frequency of occurrence of psychosocial consequences
*f5=*frequency of occurrence of terminal values
*f6=*frequency of occurrence of end values
*fh=*frequency of occurrence of levels related to self knowledge
*sl=*starting level
*hl=*highest level reached
*IN=*involvement
*TF=*think/feel
*I*T=*interaction between involvement and think/feel
*DI=*individual deviations from the mean for involvement
*DT=*individual deviations from the mean for think/feel

*s=*significant effect, $p < 0.01$

s=*significant effect, $p < 0.05$

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