Means-End Chains - A Means to Which End?

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This paper describes the development of the means-end chain concept in consumer behaviour research, starting from the original proposal by Gutman in 1982. A lack of theoretical development – as opposed to a refinement of methodology – is argued to be the main reason why the concept, after an initial wave of interest, is today not well-rooted in consumer behaviour research, even though it is widely used in applied research. It is suggested to re-interpret the concept drawing on three established bodies of literature, namely human values, quality perception, and goal pursuit. This reinterpretation leads to three goals for research that could establish means-end chains as a useful theoretical concept in consumer behaviour research.

Keywords
Means-end chains, human values, quality perception, laddering, goal pursuit

1. Introduction

“A means-end chain is a model that seeks to explain how a product or service selection facilitates the achievement of desired end states” – this is the way in which Jonathan Gutman defined means-end chains in his 1982 Journal of Marketing article, a paper widely regarded as the starting point of means-end research in the consumer behaviour area. Since then, it has become a commonly used tool in commercial market research, and has also been widely used in applied academic consumer research. For example, in the food area it has been used to investigate why people buy organic food or abhor genetically modified food, in tourism research it has been used to detect major motives behind choice of holiday destinations, and in architecture it has been used to investigate why people seek out certain neighbourhoods and avoid others. But in what is usually regarded as the core of academic consumer research – the type of research presented at ACR conferences and published in the major consumer behaviour and marketing journals – interest subsided quickly after an initial flurry of publications. Reynolds/Olson, in the preface to their 2001 reader on the subject, complained that “although many marketing researchers and some academic scholars are familiar with the means-end approach to understanding consumers, only a few regularly incorporate the means-end approach into their research programs.” (Reynolds/Olson 2001).

Looking at Gutman’s definition, the means-end chain model deals with one of the fundamental aspects of consumer behaviour – namely what motivates a consumer to buy a particular product. And when a model dealing with such a fundamental question is popular in practice and applied research, but ignored or given up on by the core academic research community, there is reason to wonder. Are the practitioners misled, using an approach that has not been able to prove its usefulness – as measured by academic standards – in explaining consumer behaviour? Have they, for example, once again fallen for the irresistible charm of hidden underlying buying motives, whereas most purchases in reality have quite mundane reasons without an underlying great theme, as Cohen/Warlop (2001) have argued?

If so, one would think that the academic community has an obligation to inform practice that they are on the wrong track. Or has the academic consumer research community too quickly given up on an idea that is promising and useful, but that turned out to be difficult to deal with in research that can live up to academic standards?

The purpose of the present paper is to look at the status of means-end research and to look at its potential future in consumer behaviour research. After reviewing the concept and tracing its roots, the achievements and deficits of means-end research since the Gutman article from 1982 will be briefly described. After that, a proposal for a theoretical reinterpretation of the concept will be made, leading to the question which ends the means-end chain...
concept could help to achieve in the consumer research area.

2. The Concept and Its Roots

The basic idea of the means-end chain model is simple: A means-end chain is a subjective link between product attributes, consequences of these product attributes for the consumer, and the consumers’ life values. Fig. 1 shows a simple example: a low fat cheese is desired by the consumer because this is known to imply fewer calories, with the personal consequences of slimming and social acceptance, which in turn are linked to the attainment of the life values of self-confidence and self-esteem.

By understanding these subjective links, we gain insight into which product attributes consumers prefer, and why they prefer them. The simplicity is deceptive though, as the basic idea can be – and has been – interpreted from different theoretical angles: as model of cognitive structure (because it states how people link cognitive categories to each other, Grunert/Grunert 1995), as a model of motivation (because it states what motivates preferences for certain product attributes, Cohen/Warlop 2001), as a model of preference and choice (because the point of departure is a desire to explain why consumers prefer one product over another, Costa et al. 2007; Le Page et al. 2005) and as a model of discourse (because it models the reasoning that consumers apply when explaining and justifying preferences, Bagozzi/Dabholkar 2000). And this may be a first reason for the popularity of the approach in practice and the scepticism of consumer researchers: while the means-end model captures many of the central questions of understanding consumers, it has been difficult to embed it firmly in an established theoretical context.

The roots of the means-end chain model are various. Gutman, in the 1982 article, mentions a range of earlier publications in the marketing area that allude to similar ideas. These early expressions of the basic idea can best be framed as a way in which the dominant consumer research paradigm of the time – the information processing approach – tried to come to terms with the issue of motivation, which had been discredited by the psychoanalytically inspired wave of motivation research in the fifties and sixties (Cohen/Warlop 2001). The – at the time – fashionable information processing approach only dealt with how consumers process information, but not with the question why they were interested in processing information on a particular product or product attribute. The early papers can be viewed as attempts to build the issue of motivation into the cognitive models.

In doing so, research on human values was a major source of inspiration. Human values are by definition a motivator, and there was a solid body of research in social psychology one could draw upon (especially the work of Rokeach, see for example Rokeach 1968; 1973). The problem was that values, which are motivators across a wide range of life circumstances and choice situations, were only weakly related to phenomena like brand preferences and product choice (Vinson/Scott/Lamont 1977). There was a conceptual gap between abstract values and concrete product preferences, and the means-end chain model was an attempt to fill that gap.

The other major source of inspiration was George Kelly’s personal construct theory (1955). Kelly’s work is often viewed as a cognitive theory of personality, and his theory was an attempt to adopt an information processing view to issues in clinical psychology that traditionally had employed a Freudian approach. There are thus some parallels to those consumer researchers trying to get beyond ‘motivation research’ in the consumer area, only that Kelly preceded them by some 20 years. Kelly’s main premises are that people construe the world by interpreting the events they are confronted with through a hierarchical system of bipolar constructs, which allows them to make predictions on the outcome of these events. The hierarchical system of bipolar constructs is idiosyncratic and can be modified by communication (like in a therapeutil session). Means-end chains, in the consumer behaviour area, can be viewed as the idiosyncratic hierarchical system that allows consumers to anticipate the outcome of buying products and services.

In its adoption in consumer research, the means-end chain model has been tightly linked to a specific method for measuring means-end chains, which also was adopted from personal constructs psychology. The ladering interview method, which is the by far most common method used in means-end research, was first described in a dissertation by Hinkle (1965) that was never published, although copies are accessible on the grey market. Hinkle developed the method for therapeutic purposes, as a way of eliciting patients’ idiosyncratic hierarchical systems of bipolar constructs in a specific life domain, with the aim of identifying ways in which
such a system could be changed in a way that could solve a personal problem. The basic elements of the method are still the same today in current applications of laddering (Reynolds/Gutman 1988; van Riel/Baalmer 1997; Wansink 2003). At the most concrete level, respondents generate a personal meaning construct (e.g., “I prefer active holidays”), which becomes the bottom of a ladder. The interviewer then asks “Why?” or “Why do you prefer active holidays?”, which prompts the respondent to generate a second, more abstract construct, such as being physically fit as opposed to physically feeble. The second construct also provokes a “Why?” question, and the process continues until the ladder has reached a level of abstractness beyond which it is impossible to continue. Laddering is still widely used in personal construct research (Costigan et al. 2000). In marketing research, laddering usually starts with the elicitation of product attributes that are relevant for the respondent when making a choice in a given product category, and the series of “Why?” questions then starts with the question of why the attribute(s) are of importance to the respondent when making a choice (see Grunert/Grunert 1995; Reynolds/Gutman 1988).

3. Achievements and Deficits

As noted, there has been a close link between the theory and method in the means-end area, sometimes to such an extent that the means-end approach and the use of the laddering method have been equated. Still, in this short review of achievements and deficits it will be attempted to distinguish methodological from theoretical achievements and deficits.

The basic structure of the laddering-based methodology has remained the same over the years (see Fig. 2). Data collection consists of two phases, a first phase eliciting attributes and a second phase where attributes are extended to ladders by a series of prompts. In the example of Fig. 1, the attribute ‘low fat’ could for example be elicited by asking the respondent which attributes are important for her when buying cheese. Based on that, the respondent would be asked why it is important for her to buy cheese that is low in fat, generating the answer that this implies a cheese with lower calories. This in turn would lead the interviewer to ask why it is important to the respondent to buy cheese which is low in calo-

ries....and this process of prompting with “Why?” questions would continue until the value level is reached. The sequence of answers constitutes a ‘ladder’, and typically 2–5 ladders are generated per respondent in a laddering interview. Analysis of the data consists of three phases: the raw ladders are coded into a smaller set of categories, which then form the basis for the computation of an implication matrix. This is a symmetric matrix with the categories that result from the coding process defining both the rows and the columns, and the information in the cells are frequencies of how often a certain category succeeds another across the set of ladders (for example, still following Fig. 1, how many respondents said that selecting a cheese with low fat implies fewer calories). In the last step, this implication matrix is turned into a hierarchical value map, which has been the most common way of presenting and interpreting laddering data. A hierarchical value map is simply a graph showing those links between attributes, consequences and values where the frequency of that particular link in the implication matrix surpasses a cutoff level chosen by the researcher. Choice of the cutoff level is not guided by a statistical rationale, but by a subjective trade-off between loss of information and complexity of the resulting graph. This basic setup, described by Reynolds/Gutman in 1988, is largely still followed today.

There have been investigations and developments with regard to details of the methodology. Various elicitation techniques have been experimented with, and a few studies have attempted systematic comparisons (Bech-Larsen/Nielsen 1999; Steenkamp/van Trijp 1997). The repertory grid technique, adopted from Kelly and incorporated into Hinkle’s original version of the laddering method, proved to be cumbersome in consumer research and did not always elicit attributes that seemed to drive consumer preferences, and various alternatives, with and without use of concrete product stimuli, have been used. Also effects of framing the elicitation task in terms of specific choice or consumption situations has been looked at (Nielsen/Bech-Larsen/Grunert 1998; Woodside 2004), an idea already developed by Gutman in 1982 and later forgotten. As for the laddering interview itself, Grunert/Grunert (1995) introduced the distinction of hard vs. soft laddering, designating the degree to which the interview is pre-structured in accordance with the hierarchical means-end model. A range of studies have compared hard and soft laddering or various versions of hard

Figure 2: The Basic Paradigm of Conducting Means-End Research
laddering, though the results do not clearly favour one method over the other (Botschen/Thelen 1998; Langbroek/De Beuckelaer 2007; Russell et al. 2004).

There has been some progress in analyzing the coded data. The hierarchical value map derived from the implication matrix is a rather crude tool without any underlying statistical theory. One of the major problems, the largely arbitrary selection of cutoff levels based on eyeballing the complexity of the resulting map, has been addressed by proposing different cutoff levels for different levels of abstraction (Leppard/Russell/Cox 2004). A range of other techniques for analyzing the implication matrix have been proposed, some including alternative ways of deriving visualizations of the data, for example by correspondence analysis and multidimensional scaling (e.g., Aurifeille/Valette-Florence 1995; Kaciak/Callen 2006; Valette-Florence 1998), others avoiding visualization altogether (Chou/Wong 2009).

Laddering is a qualitative technique used on small samples. For validation of the results in larger samples, the Association Pattern Technique (APT) has been developed (ter Hofstede et al. 1998). It essentially consists of two empty matrices, one linking attributes and consequences and another linking consequences and values, where respondents are asked to tick those cells where they believe there is an association. The data can be interpreted in terms of response probabilities, and can be used as input both for the derivation of hierarchical value maps and for analytical techniques aimed at market segmentation (ter Hofstede/Steenkamp/Wedel 1999). Other techniques for large-scale quantification of means-end structures have been proposed, but have been less widely adopted.

A certain amount of work has gone into the development of managerial models aimed at making means-end data useful for the development of advertising strategy and the development of new products. The MECCAS model (see Fig. 3) aims at formulating and testing advertising strategy with means-end information as input (Reynolds/Craddock 1988; Reynolds/Whitlark 1995), and it seems that this indeed can be a useful way of bringing consumer research into the work of advertising agencies and affecting consumer persuasiveness (Bech-Larsen 2001; Jaeger/MacFie 2001). Likewise, the means-end approach has been used as point of departure for the formulation of management models to be used in new product development (Costa/Dekker/Jongen 2004; Søndergaard 2005; Søndergaard/Harmsen 2007).

The developments described above have strengthened the methodological basis of studies employing the means-end model for descriptive purposes, aiming to provide input to practical problems in the areas of communication and product development (e.g., food quality: Fotopoulos/Krystallis/Ness 2003; Lind 2007; Nielsen/Bech-Larsen/Grunert 1998; cultural differences: Botschen/Hemetsberger 1998; Grunert/Beckmann 1999; Valette-Florence 1998; service quality: Pieters/Botschen/Thelen 1998; store image: Mitchell/Harris 2005; Wagner 2007). What we have seen much less is research where means-end chains are put into the context of a theory-based nomological network, investigating how means-end chains come about or change due to external factors, or how means-end chains affect other mental constructs or overt behaviour. There has been a limited range of studies linking means-end knowledge to dependent variables like brand preference (Reynolds/Gengler/Howard 1995), attitudes (Bagozzi/Dabhokar 1994; Graeff 1997), choice opportunity attractiveness (Grunert/Bech-Larsen 2005), or self-reported choice (LePage et al. 2005). These studies have shown that the explanation of the dependent variable – attitude, choice opportunity attractiveness, self-reported choice – improves when adding predictors measuring perception of how the attitude or choice object is perceived to lead to consequences or facilitate the attainment of values. In addition, studies have compared means-end knowledge of buyers and non-buyers (e.g., Fotopoulos/Krystallis/Ness 2003) or buyers at different types of outlets (de Ferran/Grunert 2005). But the studies have been few and their theoretical embeddedness was mostly thin.

And this is probably the main reason for the relatively low status of the means-end model in consumer behaviour research: beyond its original formulation and the theoretical roots attached to them (and described above),
there has been little progress theoretically. In Gutman’s (1982) original treatment, there was no doubt about the theoretical status of the means-end chain model: knowledge of a consumer’s means-end chains together with knowledge on characteristics of a choice situation should allow predicting choice. But as mentioned, studies linking means-end data to choice have been few, and those that exist have not been very explicit about the theoretical mechanism by which properties of a means-end chain affect choice. There are at least two fundamental problems in specifying such a mechanism. First, a means-end chain is a cognitive construct that forms part of a person’s overall organization of knowledge and experience in memory. Not all knowledge and experience affects choice – it depends on which parts of the overall cognitive structure will be made salient in the choice situation. This dependency was clearly stated already in the Gutman (1982) paper, but the mechanisms that allow establishing regularities linking characteristics of the situation to characteristics of means-end chains elicited in the situation have not been developed. Secondly, since the means-end chain explains the valence of a product attribute, is knowledge of the attributes and their valence not enough to predict choice, as in any multi-attribute model? While it may be of interest to understand why a certain attribute has a positive or negative valence, based on its linkages to consequences and value, this information is not necessary to understand choice, unless the consequences and values contribute to the choice process also in other ways than valencing the attributes. The few studies that exist linking means-end data to product preference or choice (Bagossi/Dabholkar 1994; Gruenef 1997; Grunert/Bech-Larsen 2005; Le Page et al. 2005; Reynolds/Gengler/Howard 1995; ter Hofstede/Steenkamp/ Wedel 1999) do indeed suggest that such ‘other ways’ exist, as it seems that both consequences and values contribute to explaining preference or choice in ways that go beyond attributes. But how?

This lack of theoretical development of the means-end chain model is probably the major reason why it has not taken off more than it has in consumer behaviour research. Means-end chains could be the meeting point of many central constructs in consumer behaviour theory, with potential links to decision-making, attitude formation, motivation, cognitive structure, goal formation, involvement and more. Instead, it has become a concept that has remained isolated from most bodies of theory in the area. Either the concept should be dismissed, or it is in need of theoretical reconstruction.

4. Elements of a Theoretical Repositioning

In Gutman’s original formulation, means-end chains were meant to be part of a broader theory that would pull stored knowledge, motives, and situational factors together with the aim to explain consumer choice behaviour. In its ensuing development, the means-end chain concept was stripped from its theoretical context and mainly used as a heuristic device to obtain consumer understanding. A theoretical repositioning should start from Gutman’s point of departure, because the basic idea is surprisingly modern. Means-end chains should be viewed not as a model set aside from other cognitive constructs, but as a building block of cognitive structure in the mind of the consumer. Just as any part of cognitive structure, means-end information can be activated due to goal formation and situational priming, and when activated it can be used in attitude formation and decision-making. When used in this way, means-end chains can become a bridging concept that can link together streams of research that currently do not have a lot of interfaces, and that could develop more potential because of these linkages. The streams of research referred to are human values and purchase motives, quality perception, and goal pursuit.

Of these three, research on human values is the one that has been linked most to the means-end concept. Human values, according to one popular definition, are “concepts or beliefs about desirable end states or behaviours that transcend specific situations, guide the selection or evaluation of behaviour and events, and are ordered by relative importance” (Schwartz 1992). They are thus cognitive constructs that have a motivational component and allow integrating motivation into cognitive models. Their link to the “evaluation of behaviour and events” makes them an obvious candidate for explaining consumer choice, and the characteristic of “transcending specific situations” indicates an attractive level of generality. With their solid foundation in several decades of research in social psychology, they could fill the vacuum that motivation research left when it was discredited due to lack of scientific backing in the sixties (Cohen/Warlop 2001). Instead, there was a boom of value research in the consumer behaviour area in the eighties (e. g., Beatty et al. 1985; Kahle 1986; Kamakura/Mazzon 1991). The enthusiasm shown then has since faded, as it became clear that abstract values, while often related to specific brand choices, are relatively weak predictors of such specific behaviours, which are influenced by a host of other, likewise more specific factors. It has therefore been suggested that an intermediate construct may be lacking, and for some time the concept of a value-attitude-behaviour hierarchy (e. g., Homer/Kahle 1988) found some backing, but the link to behaviour has not been much developed theoretically. Research on human values therefore contributes mostly to the upper part of a means-end chain model: Research on human values provides theory and empirical data on typology and structure of values, and ways of measuring them, and values can transform to product-oriented purchase motives, which together with other factors directly or indirectly will impact product choice.

Although to a lesser extent, also research on quality perception has already been linked to the means-end approach (Grunert 1995; 1997; 2005; Zeithaml 1988).
Perceived quality is often viewed as a hierarchical concept, partly because there is quality uncertainty before the purchase, partly because quality is an abstract, inferred concept. When quality is uncertain (in the case of experience and credence qualities), consumers form expectations about the quality based on quality cues (the term used in the marketing literature) or quality signals (the term used in economics). Even when there is no uncertainty, quality may be an abstract construct that consumers infer from a number of more concrete product attributes. Either way quality has a hierarchical dimension where the quality – which may be multidimensional – is inferred from a number of more concrete cues, signals or attributes, and thus is structurally similar to the lower part of a means-end chain. And while much of the research on quality perception has been mainly descriptive, there have been modest attempts at theory development, applying principles of inference making and especially the accessibility-diagnosticity framework to explain how cues/signals are related to quality dimensions (Biehal/Chakravarti 1983; Cox 1967; Dick/Chakravarti/Biehal 1990; Grunert 2005).

Research on quality perception has not, however, dealt with the question on why certain qualities are regarded as attractive. Putting the concepts of values, purchase motives, quality and quality cues together into a hierarchical model of knowledge, as in Fig. 4, provides a way of viewing how consumers evaluate quality in a product taking into account vertical inferences both from quality cues to quality and from quality to purchase motives and values. It is a means-end chain reformulated in a way so that it taps into two received bodies of research knowledge.

Fig. 5 provides an example of a typical hierarchical value map emanating from a study employing laddering. In the example, consumers were asked about which attributes they would find relevant when buying fresh pork. Under the value level, the concepts at the medium level of abstraction correspond to what across many studies (see Grunert 2005) has been identified as the major elements by which consumers judge the quality of a food product: enjoyment, healthiness, and process characteristics like proper treatment of animals. At the bottom we find a range of elements that we usually would categorize as ‘attributes’. By looking at them as quality cues – something used to infer the quality of a product – the
interpretation changes slightly. Some of the elements at the bottom are clearly specific instances of the superordinate quality: ‘animals have room to move, roam around’ is, in the mind of many, probably a central element of ‘proper treatment of animals’. In other words, the concrete element partly constitutes the quality. This categorization view of attributes corresponds to the original Gutman model. However, quality cues, beyond constituting part of the quality, also serve as a basis for making inferences about the more abstract quality, beyond the concrete element. In the example, the information that animals have room to move may be used to infer that animals probably generally have been treated well, not only with regard to their living space. For some of the concrete elements at the bottom, this function as a basis for inference-making is central, and the element itself constitutes only a little part or none of the superordinate quality. ‘Date of slaughter’ is a relevant quality cue because consumers infer freshness from which they again infer expected enjoyment, but ‘date of slaughter’ is not part of the enjoyment. By reinterpreting means-end chains from the viewpoint of quality perception, we can link them to theories on inference-making about quality.

The link of means-end research to goal pursuit has been light, although means-end chains have been earlier viewed from a goal direction perspective (Gutman 1997; Pieters/Baumgartner/Allen 1995; Scholderer/Grunert 2005). Of special interest in goal pursuit research is the work by Gollwitzer (1990; 1993), who has investigated how people attain abstract, high-level goal states by breaking them down into a hierarchy of more concrete, manageable goals. A key point in this stream of research is the distinction between goal intention and implementation intention. Goal intentions specify a certain end-point that may be either a desired action or the outcome of an action. By forming goal intentions, people translate noncommittal motives into binding goals (Gollwitzer/Heckhausen/Steller 1990). Implementation intentions, on the other hand, specify specific courses of action, linked to specific situational cues, which will lead to goal attainment. By linking such lower level goals to situational cues, goal attainment becomes less of an act of will and more a behaviour that can be – almost automatically – triggered by situational cues. Research by Gollwitzer and colleagues has shown that implementation intentions are the key determinants of intention-behaviour consistency (Gollwitzer/Bargh 1996; Gollwitzer/Brandstätter 1997).

Both the original means-end model and our reformulation in Fig. 3 can easily be viewed as a hierarchical system of goals and implementation intentions. Values, purchase motives and also quality can be viewed as goals at various levels abstraction, and quality cues can be viewed as ways of implementing attainment of these goals by searching out products that are characterized by these cues. Looking at the example in Fig. 4 again, a person having the goal to live more healthily could develop an implementation plan to buy lean instead of fatty meat, and search for that cue when buying meat in the shop. In the same vein, looking for date of slaughter (if that information is available on the package) could be an implementation plan contributing to the attainment of the meal enjoyment goal. While the generation and implementation of such implementation plans will require conscious effort in the beginning, it is a behaviour that can become automatic over time, thus facilitating goal attainment.

By viewing means-end chains from this perspective, we also come closer to the question on how and when means-end knowledge becomes activated and used to direct behaviour. While values, being by definition end states that are universally regarded as desirable, will have a permanent level of activation, the more we move down in the chain the more activation of the various knowledge levels will depend on temporary pertinence and temporary external activation. Once we reformulate means-end chains as hierarchical knowledge structures and link them to mechanisms of priming and spreading activation, we can start formulating theories on how the use of this knowledge depends on situational stimuli and motivational states.

5. A Means to Which End?

The above may well appear as a theoretical exercise where some theoretical constructs are reformulated, showing once more that the same theoretical idea can appear in different guises even within the same discipline. So which end is served by means of a theoretical repositioning of the means-end model? We have two answers.

First, the reformulated means-end model can serve as a unifying framework for streams of research – human values, quality perception, goal pursuit, decision-making – that have not traditionally been linked to each other. While this is a modest end, the history of consumer behaviour research suggests that unifying frameworks can serve a very useful role in stimulating research and providing the necessary context for and linking between different research areas (think, for example, about the longevity of the simple stage model of buying suggested in the sixties by Engel/Kollat/Blackwell 1968).

The more ambitious second end is that the reformulated means-end model could serve as a more sophisticated model of cognitive structure. While it is widely accepted that consumer behaviour comes about by situational priming of the reservoir of knowledge, experience and attitudes that make up the consumer mind, analysis of cognitive structure has either been based on very simple models – as in attitude theory – or has been purely descriptive, making no other assumptions than that cognitive structure can be modelled as a network of nodes and links. But if we want to analyse how goals and situational cues interact in drawing on pre-existing cognitive structures in determining behaviour, we need a more spe-
cific model. The four types of cognitive categories in Fig. 3, together with an assumption of hierarchicity (though not necessarily of strict hierarchicity or non-redundancy) could be the building blocks in developing a model of cognitive structure that models not only the part of cognitive structure that is situationally salient, but the overall repertoire of cognitive categories that can become salient in a given situation, while retaining constraints on possible structures that allow the derivation of testable propositions. Such a model of cognitive structure should be supplemented by a spreading activation algorithm, such that assumptions on situational sensory input together with assumptions on current states of internal activation (pertinence) would lead to testable propositions not necessarily about behavioural outcomes, but at least about the set of behavioural options that will come to mind for the person whose reaction is modelled. If validated, such a model could revolutionize the analysis of how marketing stimuli – in market communication, in the shop – affect consumer behaviour.

References


