A hard look at hard laddering

A comparison of studies examining the hierarchical structure of means-end theory

Joan M. Phillips
School of Business Administration, Loyola University Chicago, Chicago, Illinois, USA, and
Thomas J. Reynolds
Strategic Research, Development and Assessment, Wilson, Wyoming, USA

Abstract

Purpose – This paper aims to outline the fundamental assumptions regarding the laddering methodology (Reynolds and Gutman), examine how some "hard" laddering approaches meet or violate these assumptions, provide a review and comparison of a series of studies using "soft" and "hard" laddering approaches to examine the hierarchical structure of means-end theory, and assess if the discrepant conclusions from this series of studies may be attributed to violations of the fundamental assumptions of the laddering methodology.

Design/methodology/approach – A series of published empirical works using "hard" and "soft" laddering approaches, which aim to examine the hierarchical structure of means-end theory (Gutman), are reviewed and compared to integrate research findings and to examine discrepancies. Discrepant conclusions, which appear to be attributable to violations of the assumptions underlying the laddering methodology, are explored through a reanalysis and reclassification of the content codes.

Findings – The paper validates the case for laddering and the care needed to gauge how conclusions can be affected when violations of fundamental assumptions of the laddering methodology occur.

Research limitations/implications – Means-end chain research and, more specifically, the laddering methodology are in need of investigations that assess the importance of its underlying assumptions. Additional work validating both the "hard" and "soft" laddering approaches is also needed.

Practical implications – Results of means-end research are more interpretable and less ambiguous when the fundamental assumptions of the laddering methodology are met. In practice, means-end theory benefits managers by providing a useful structure to aid in the interpretation of laddering data.

Originality/value – This paper outlines the fundamental assumptions regarding the laddering methodology to provide methodological guidelines for laddering researchers. This paper also reviews the academic literature examining the hierarchical structure of means-end theory and explores how violations of the fundamental assumptions of the laddering methodology may impact research findings.

Keywords Qualitative research, Interviews

Paper type Literature review

Introduction

Laddering (Reynolds and Gutman, 1988) is a qualitative research technique that has been used extensively within marketing to uncover the deep drivers of consumer decision-making (Reynolds and Olson, 2001; see Reynolds and Phillips, 2008, for an integrative review). The laddering method is derived from means-end theory, which is premised on the belief that individual behavior is driven by personal values (Gutman, 1982). Basically, means-end theory posits that attributes (A) derive their relative

Both authors contributed equally to this project; order of authorship is alphabetical.

Qualitative Market Research: An International Journal
Vol. 12 No. 1, 2009
pp. 83-99

1352-2752
DOI 10.1108/13522750910927232

importance from satisfying (functional and psychosocial) consequences (C), which in turn, derive their importance from satisfying higher-order personal values (V). Therefore, means-end theory conceptualizes a top-down process underlying the evaluation of products and services as it is the higher-level values that give meaning and importance to the lower-level attributes. The objective of laddering interviews is to obtain a hierarchical network of meanings (i.e. ladders and/or means-end chains (MEC) consisting of attributes, consequences, and values) using a bottom-up process of questioning that begins with questions about lower-level attributes and ends with questions to uncover the higher-level values.

The laddering interview begins by eliciting from the respondent a personally meaningful distinction, typically an attribute, which the respondent uses to discriminate among alternatives. Certainly, the sample of respondents must be relevant to the research objective as the laddering methodology would not be appropriate if no attributes were meaningful or distinctive. There are several questioning techniques that can be used to elicit key distinctions (see Reynolds *et al.*, 2001, for several examples of elicitation questioning techniques). Once elicited the laddering interviewer then probes the distinguishing attribute with some version of the "why is that important to you?" question.

For example, consider a laddering study conducted by a tennis resort. In response to a customer survey, the resort is considering changing its tennis courts from a hard surface to clay to better appeal to its aging customer base. The marketing manager wants to determine the "drivers" that will motivate the resort's customers who prefer clay courts so as to develop effective communications. Such a laddering interview might begin by asking the respondent, "Why did you give clay courts a higher preference rating than hard courts?" The customer's response, "Clay courts play slower", is then probed by asking the respondent. "Why is a slower playing court important to you"? The interviewer similarly probes each subsequent response until a complete MEC, consisting of an attribute, a functional consequence, a psychosocial consequence, and a value, is obtained.

To illustrate, Figure 1 shows two MEC from a hierarchical value map (HVM) constructed from individual ladders obtained from our sample of tennis resort customers.

These MECs are interpreted as the reasons why the attributes "soft" and "slow" of the clay court surface are important to this customer group. In the first MEC, it provides customers with a sense of quality of life; in the second, it provides customers with a sense of self-esteem. These personal values – quality of life and self-esteem – are interpreted as the customers' motivating decision drivers for choosing a tennis resort with clay courts.

The result of moving the respondent up the "ladder of abstraction" through the hierarchical levels, beginning with a discriminating attribute to functional

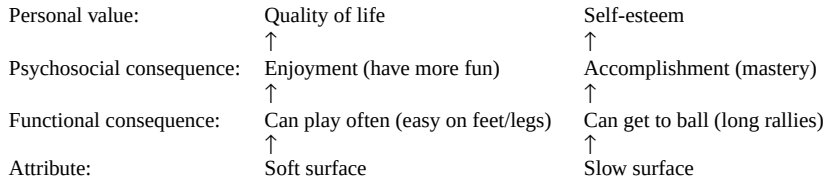


Figure 1.
Two means-end chains (MEC) from a HVM

consequence to psychosocial consequence to value, is a complete MEC. The number of meanings, or rungs on the ladder, typically ranges from four to six. The interviewer's task is to ensure that there are meanings at each of the four levels (i.e. attribute → functional consequence → psychosocial consequence → value). These individual ladders are then aggregated via established procedures into a HVM, or consumer decision map (CDM), which is thought to graphically represent the reason an attribute derives its importance (see Reynolds and Gutman, 1988, for a sample transcript of a laddering interview and for detailed procedures on constructing a HVM). The HVM is a standardized, easy-to-interpret, structurally-based presentation of the aggregated laddering interviews that makes the results of means-end research actionable for marketing managers (Whitlark and Allred, 2003).

Recently, there has been a blurring as to the definitions of what are ladders and what are MECs, and as to the qualitative approach used to obtain personally meaningful ladders (see Reynolds, 2006, for a detailed discussion). Indeed, the quantifying, or "hardening", of "soft" qualitative approaches is a longstanding concern of qualitative researchers. Several of the empirical laddering/MEC studies published in academic journals refer to "soft" and "hard" laddering approaches (Reynolds and Phillips, 2008), terms first introduced by Grunert and Grunert (1995). In fact, Reynolds and Phillips (2008) report that approximately 25 percent of laddering studies published in academic journals use some form of a "hard" laddering approach. This is of particular concern because, as with precoded and open-ended survey questions, it is possible that "hard" and "soft" laddering approaches will yield different results and researchers using different approaches may not draw the same conclusions when investigating a similar research question.

Our objective, therefore, is to review the fundamental assumptions underlying the laddering methodology and examine how some established "hard" laddering approaches may meet or violate these assumptions relative to the traditional "soft" approach. To this end, we review and compare a series of five empirical studies – three using the traditional "soft" laddering approach and two using a "hard", "check-the-box" survey developed from a "soft" laddering prestudy. This particular set of studies was chosen because each study has a similar research objective (to assess the hierarchical structure of means-end theory), but the collective conclusions differ. We explore the discrepant conclusions and examine if the discrepant conclusions from this body of work that uses both "soft" and "hard" laddering approaches may be attributed to violations of the underlying assumptions of the laddering methodology. In addition, we present the results of a reanalysis and reclassification of the concept codes from one of the studies that violate the laddering assumptions. We conclude with a discussion of the implications of our findings for laddering research, call for future research that examines the validity of both "hard" and "soft" laddering approaches, and note that additional research is needed to validate the hierarchical structure underlying means-end theory.

Laddering

Fundamental assumptions of the laddering methodology

The fundamental assumptions underlying this popular research methodology are that the ladders (corresponding to MECs) obtained from a respondent result in a hierarchical network of meanings, from attributes (A) to functional consequences (F) to psychosocial consequences (P) to personal values (V), if the following conditions are met:

(1) The ladders are derived from personally meaningful choice- or preference-distinctions, which result in a summary HVM or CDM, respectively.

(2) The ladders are obtained by engaging the respondent to think carefully about each response. This is achieved by tailoring the "why is that important to you?" follow-up question to the respondent's prior response. In addition, laddering interviewers must have the questioning skills to avoid redundancy or circularity in the respondent's answers (see Reynolds and Gutman, 1988, for detailed interviewing guidelines).

(3) The collective responses result in a complete ladder consisting of verbatim responses at all four levels of abstraction (A, F, P, V). Interviewers need to make sure that all levels of meaning are obtained in a given ladder. That is, no level of abstraction should be skipped or missed.

(4) In the laddering analysis the appropriate concept codes are developed, thereby nesting similar meanings under the same code/concept.

(5) The names of the concept codes accurately reflect the respective level of meaning (A, F, P, and V).

Following the development and naming of appropriate concept codes, the procedure for constructing a HVM includes summarizing the concept codes to generate an implication matrix by counting the number of times each concept code precedes (directly and indirectly) every other code. Determining which linkages are "significant", and therefore represented in a HVM or CDM, requires the determination of a cutoff level for the pairwise implications. To determine the cutoff level, one evaluates the percentage of implications accounted for at the various cutoff levels, with a rule of thumb that approximately 70 percent of the implications should be represented in a typical solution (see Reynolds and Gutman, 1988, for detailed procedures).

Laddering approaches: soft versus hard

Consumer (cognitive and decision) research has followed the traditional "soft" laddering approach outlined above, where ladders, representing MECs, are generated from individual respondents using established interviewing protocols to uncover the deep drivers (i.e. personal values) of consumer decision-making from which marketing managers develop customer oriented strategies (Parry, 2002; Reynolds and Olson, 2001; Wansink, 2003). The challenges associated with this "soft" approach include geographic constraints, the time and cost of interviewing and coding, as well as finding qualified interviewers (Reynolds and Phillips, 2008; Veludo-de-Oliveira *et al.*, 2006).

In contrast, several market researchers have suggested various "hard" laddering approaches (ter Hofstede *et al.*, 1998; van Rekom and Wierenga, 2007; Walker and Olson, 1991) that most often use a "paper-and-pencil" questionnaire, or survey, format. While some laddering researchers may consider all "paper-and-pencil" survey formats to be "hard" in that they are more restrictive of the respondent's speech relative to the traditional "soft" approach (Grunert and Grunert, 1995, p. 216), clearly, the "hardness" of survey-based laddering approaches varies. In the "softest" of "hard" laddering approaches respondents are asked to write their answers to the "why is that important to you?" questions in boxes, with each level of abstraction having its own box (Botschen and Hemetsberger, 1998; Pieters *et al.*, 1998; Voss *et al.*, 2007; Walker and Olson, 1991; Phillips *et al.*, 2008). This method is similar to "thought listing" tasks

widely used in consumer and advertising research, and is akin to verbal protocols used to capture respondents' cognitive processes (Ericsson and Simon, 1993; Sudman *et al.*, 1996). Relative to "harder" laddering approaches this procedure is probably best able to capture the respondent's strategic processing (Grunert and Grunert, 1995; Sorensen and Askegaard, 2007). However, the challenge with this approach is that, because the values level may be too abstract for most people, respondents may not reliably reach this highest level of abstraction on their own (i.e. without the probing of a trained interviewer; Whitlark and Allred, 2003). When this occurs respondents may provide redundant responses that circulate between functional and/or psychosocial consequences.

Among the "hardest" of "hard" laddering approaches is ter Hofstede *et al.*'s (1998) Association Pattern Technique, where the respondents are asked to "check boxes" from a list of attributes, consequences, and values obtained from a priori laddering. More recently, van Rekom and Wierenga (2007) used a similar survey format, but asked respondents to indicate if directional connections exist between predetermined concept codes.

An advantage of "hard", precoded "check-the-box" approaches is that researchers can generate a HVM (or CDM) directly from the survey questionnaire eliminating the need to record, transcribe, and code verbatim responses to the "open-ended" questions used in more qualitative, or "softer" approaches. Thus, "hard" laddering approaches can offer the researcher considerable efficiencies in terms of time and cost savings over the traditional "soft" laddering approach, as well as broader geographic reach (ter Hofstede *et al.*, 1999).

As with all precoded survey questionnaires, however, these "hard", "check-the-box" laddering approaches limit the cognitive effort and subsequent involvement of respondents and can lead to more superficial responses as respondents are asked to "recognize" rather than "recall" personally meaningful associations (Bradburn *et al.*, 2004, p. 159). Indeed, several experiments have shown that the distribution of responses to surveys using free-response formats and precoded formats differ considerably (Schuman and Presser, 1996; see also Pew Research Center, 2004, for a recent example). Respondent involvement, implicit to the laddering process, also suffers as "[p]recoding makes the task easier and more passive for respondents because they can sit back and respond to fairly complex questions without having to search their memories and organize their own thoughts" (Bradburn *et al.*, 2004, p. 159). Further, the paired-comparison methods, such as those used by van Rekom and Wierenga (2007), can become unwieldy and result in respondent fatigue when a large number of items needs to be compared (Bradburn *et al.*, 2004, p. 171).

Therefore, these "hard", "check-the-box" laddering approaches seem to violate the first three assumptions underlying the laddering methodology: (1) initiating the ladder with a personally meaningful distinction, (2) having respondents think carefully in their generation of each higher-level meaning, and (3) completing a ladder comprised of four levels, which has become the standard for laddering research (Olson and Reynolds, 2001). In addition, these "hard" laddering techniques may also violate assumptions (4) and (5) as the precoded response alternatives (i.e. code descriptions) used in "hard" laddering surveys may not reflect the appropriate level of meaning, and each response alternative may be interpreted differently by different respondents (Bradburn *et al.*, 2004, p. 159; Sudman *et al.*, 1996).

Although traditional "quantitative" market research studies (e.g. attitude and satisfaction surveys) have generally benefited from using precoded questionnaires due to reductions in error associated with both interviewing and field-coding (Bradburn *et al.*, 2004), the objectives of traditional means-end/laddering "qualitative" studies often differ from these "quantitative" studies. Indeed, it is the fluidity of the "soft" laddering interview protocol that allows for the collection of rich, qualitative, and personally meaningful ladders from individual respondents and the resultant MECs and HVMs that, once interpreted, guide marketing strategy. Thus, it is unlikely that the "hardest" laddering approaches will yield the same findings (i.e. HVMs) as those obtained from the traditional "soft" laddering approach.

Comparison of laddering studies examining the hierarchical structure of means-end theory

Although authors generally agree that the connection between concepts (i.e. A, F, P, V) uncovered by the laddering method are valid and do exist in the consumer's mind, several have questioned whether the respondent's actual cognitive, or semantic, structure matches the linear hierarchical concrete-to-abstract assumptions of means-end theory (Bagozzi and Dholakia, 1999; Cohen and Warlop, 2001; Grunert and Grunert, 1995). To this end, there is now a collection of four articles that report the results of five studies that have attempted to assess the validity of the hierarchical structure underlying means-end theory using the laddering methodology[1]. This collection of articles was chosen because while these five studies share a similar research objective, they also provide the opportunity to examine and compare various "hard" and "soft" laddering approaches.

A summary of these four articles examining the hierarchical structure of means-end theory is presented in Table I. First, note that the studies reported in three of these articles (Reynolds *et al.*, 1985; Reynolds and Jamieson, 1985; Jolly *et al.*, 1988, respectively) use the traditional "soft" laddering approach while the studies reported in one article (van Rekom and Wierenga, 2007) primarily use a "hard", "check-the-box" survey developed from a "soft" laddering prestudy. Note, also, how each study meets the assumptions underlying the laddering methodology. Next, note the research objectives; while the first three studies (Reynolds *et al.*, 1985; Reynolds and Jamieson, 1985; Jolly *et al.*, 1988, respectively) assess the hierarchical structure of means-end theory by examining whether higher levels of abstraction (i.e. consequences and values) are more predictive of preference than lower levels (i.e. attributes), the van Rekom and Wierenga (2007) studies assess the hierarchical structure underlying means-end theory by testing whether the relationships between the different levels of concept codes are asymmetrical. Finally, note the different conclusions drawn; the first three studies (i.e. Reynolds *et al.*, 1985; Reynolds and Jamieson, 1985; Jolly *et al.*, 1988, respectively) collectively report findings that are supportive of the hierarchical structure of means-end theory while the van Rekom and Wierenga (2007). Studies report findings that are not supportive. In the next sections we examine these studies in more detail.

Studies supportive of the hierarchical structure of means-end theory

The first set of studies that attempted to assess the hierarchical structure of means-end theory examined whether higher-level meanings are more predictive of preference than

Table I.
Summary of literature assessing hierarchical structure of means-end theory

	Reynolds *et al.* (1985)	Reynolds and Jamieson (1985)	Jolly *et al.* (1988)	van Rekom and Wierenga (2007)					
Research domain	Convenience restaurants	Retail store image	Performance appraisal	Choice of employer		On-the-job motivation			
Sample	Heavy users	Student shoppers	Nursing managers	Students seeking employment		Employees at a software house			
Number of respondents	35	20	22	20	136	25	146		
Laddering approach	Soft	Soft	Soft	Soft	Hard/c-t-b	Soft	Hard/check-the-box		
Laddering assumptions met?				Prestudy 1	Study 1	Prestudy 2	Sub 1	Sub 2	Sub 3
1. Elicited personally meaningful distinctions	Yes	Yes	Yes	Yes	No	Yes	No	No	No
2. Engaged respondent to think carefully about response	Yes	Yes	Yes	Yes	No	Yes	No	No	No
3. Obtained complete ladders – verbatims at all each level of abstraction (A, F, P, V)	Yes (A, C, V)	Yes (A, C, V)	Yes (A, C, V)	No	No	Not reported	No	No	No
4. Codes developed through a content analysis that reflects a common underlying meaning	Yes	Yes	Yes	No	No	Not reported	No	No	No
5. Summary codes named to reflect the meaning at the appropriate level of abstraction	Yes	Yes	Yes	No	No	Not reported	No	No	No
Research objective	Assess relationship between hierarchical ladder concept codes (A, C, V) and preference and perceptual differences			Identify codes for hard study	Assess asymmetry	Identify codes for hard study	Assess asymmetry of relationships between ladder concept codes		
Analytical technique	Cognitive differentiation analysis (CDA) (Reynolds and Sutrick, 1986; Reynolds *et al.*, 1987)			Network analysis (Bagozzi *et al.*, 1996; Pieters *et al.*, 1995; Snijders, 1991)					
Conclusion regarding hierarchical structure of means-end theory	*Supportive* Higher levels of abstraction (i.e. consequences and values) were more predictive of preference; lower levels of abstraction (i.e. attributes) were more predictive of differences			*Not supportive* Relationships between ladder concept codes were not asymmetrical					

are lower levels (Jolly *et al.*, 1988; Reynolds *et al.*, 1985; Reynolds and Jamieson, 1985) and the collective results are generally supportive. Procedurally, all three of these studies elicited ladders from each respondent using the traditional "soft" approach, then had the respondents rank order the relevant concept codes with respect to their preferences for each of three levels (A, C, and V), which became the ordinal independent variables[2]. The two sets of dependent variables were gathered using a pairwise comparison methodology to gather both preference and perceptual distance data. Importantly, by using the pairwise comparison methodology, as would be used typically in multidimensional scaling research, the potential bias created from recalling a preference order when producing the sort-by-level ranking judgments was greatly minimized. Additionally, the relative importance of each of the A, C, and V levels of abstraction was directly assessed by the respondent using a seven-point scale. The primary research question of issue of these studies assessed the validity of the hierarchy structure with respect to the higher levels of the MEC being more closely associated with preference[3]. Secondarily, the fit of the respective hierarchical levels with regard to the two different forms of judgments were contrasted to gain an understanding of the underlying psychological processes. And thirdly, the question of whether respondents could actually assess the relative importance of these A, C, and Vs with respect to preference was investigated.

The identical conclusions for all three of these studies were:

(1) The higher the level (A, C, or V), the greater the level of fit to the preference distance judgments, meaning that the higher levels consistently correlated more highly with preference.

(2) The lower the level of abstraction, the greater the level of fit with perceptual distance judgments, meaning that the psychological process underlying perceptual distance judgments reflects attribute-level differences.

(3) The traditional rating scale method for evaluating the relative importance of the levels was systematically biased, when compared to the derived measures of goodness-of-fit with respect to preference.

This consistent finding suggests that respondents cannot accurately assess the relative importance of higher-level content meanings with respect to their own preference structure, which has significant marketing research implications. In sum, however, the critical "hierarchical" assumption explicit to means-end theory, namely, that the higher levels of meaning are more closely related to preference was consistently supported.

Studies not supportive of the hierarchical structure of means-end theory

van Rekom and Wierenga (2007) report that laddering results are likely an artifact of the data collection methodology, artificially pushing respondents up the hierarchical levels of abstraction. Their two studies examined the hierarchical structure of means-end theory using a "hard", "check-the-box" laddering survey developed from a "soft" laddering prestudy. They suggest that the hierarchical structure upon which means-end theory is based should be investigated by assessing the degree of asymmetry between ladder concept codes. That is, their research is framed by asking the question, is concept A a means to concept B, for all combinations of concepts, with particular attention to the symmetrical reversal, is concept B a means to concept A. They interpret the hierarchical structure underlying means-end theory as being

supported if a respondent would say, for example, A is a means to B, but not the reverse. And conversely, if the response data is symmetrical, that is, A is a means to B and B is a means to A, then they conclude that the hierarchical structure of means-end theory is in question.

Procedurally, van Rekom and Wierenga's (2007) investigation using the network analysis perspective on testing the hierarchical structure underlying means-end theory involved two steps:

(1) Conducting a preliminary "soft" laddering study to obtain a common set of concept codes along with a HVM.

(2) Selecting a subset of these codes to be used in a "hard", "check-the-box" survey framework with a separate group of respondents, and then collecting pairwise implication comparisons with respect to each of a reduced set of concept codes.

Each concept code, then, is presented in the context of being the "means" to implying the "end" of the other concept codes. Their research involved two domains:

(1) Why respondents prefer a particular employer?

(2) What motivated the respondent in his/her current job?

The results of both studies yielded a low degree asymmetry between the concept codes used in the "hard" laddering survey, which leads the authors to conclude that MECs are not necessarily hierarchical. This finding leads them to suggest an alternative analysis method using network data representations[4].

Exploring discrepant conclusions

To better understand these discrepant conclusions, we first explore if the different conclusions from this series of studies may be attributed to violations of the underlying assumptions of the laddering methodology. We use these five laddering assumptions as our framework to gain insight into the thoroughness of the data collection and analysis processes of these studies.

We begin with a look at the first three laddering studies that investigated the relationship between the hierarchical ladder concept codes and preference (Reynolds *et al.*, 1985; Reynolds and Jamieson, 1985; Jolly *et al.*, 1988, respectively) and found support for the hierarchical structure of means-end theory. As summarized in Table I, all three of these studies satisfy laddering assumptions (1)-(5).

Next, we examine the first study (i.e. choice of employer by students seeking employment) of the research conducted by van Rekom and Wierenga (2007). As summarized in Table I, both assumptions (1) and (2) are satisfied in their initial "soft" laddering prestudy that they used to identify concept codes to be used in their "hard", "check-the-box" survey. With regard to assumptions (3)-(5), consider Figure 2 that depicts the HVM from this prestudy pertaining to choice of employer by students seeking employment. From this HVM, it is apparent that assumptions (3)-(5) are not met.

To explicate, several MECs represented in the HVM are very short, containing only two concept codes. This suggests that some ladders are incomplete, meaning representative verbatim concepts were not obtained for each of the four levels of abstraction (i.e. A, F, P, V). Thus, there is a likely failure with respect to laddering assumption (3).

The codes presented appear in many cases to be closely related concepts that would be grouped together by experienced coders. For example, the concept codes

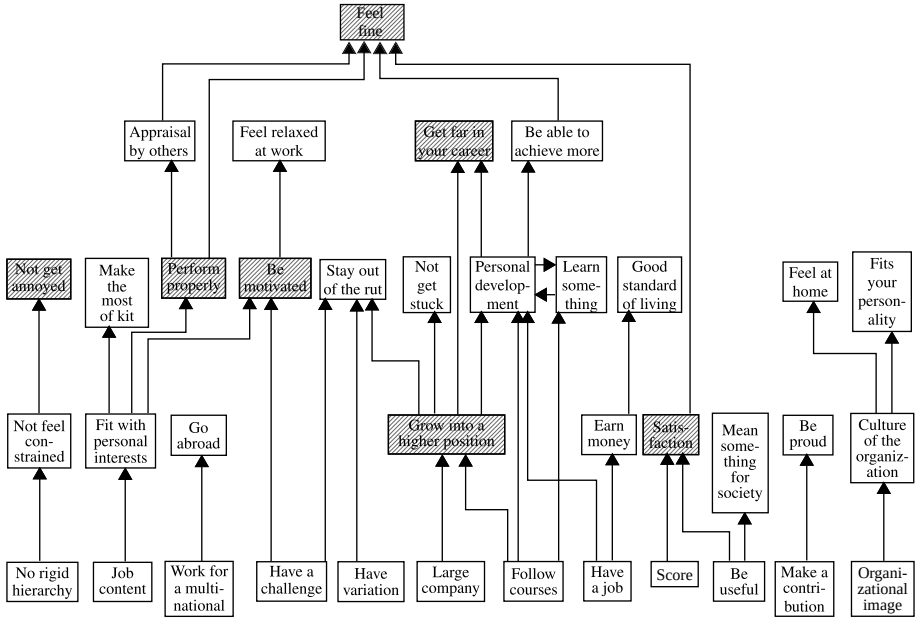


Figure 2.
HVM from van Rekom and Wierenga (2007) study 1: choice of employer

Note: Shaded boxes refer to the concepts used in the quantitative survey
Source: van Rekom and Wierenga (2007)

"Be able to achieve more" and "Go far in your career" appear to be closely related; so do "Not feel constrained" and "Stay out of the rut". Thus, there exists a likely failure with respect to assumption (4).

The highest level concept code, "Feel fine" is in all likelihood not a value, given it has not appeared (at the values level) in any of the 100 + studies reviewed by Reynolds and Phillips (2008), nor would it be classified as one of Rokeach (1973) instrumental or terminal values. Thus, there exists a likely failure with respect to assumption (5).

Lastly, with regard to the "hard", "check-the-box" survey used in study 1, none of the five laddering assumptions were met (Table I), nor were these assumptions satisfied in the three "hard", "check-the-box" sub-studies conducted in study 2 (i.e. on-the-job motivation by employees at a software house).

In sum, our review of the output from the prestudy laddering example presented in Figure 2 highlights the differences that can occur when laddering assumptions are not followed. To further explore these differences, in the next section we report on a reanalysis and reclassification of the concept codes from van Rekom and Wierenga's (2007) HVM presented in Figure 2.

Reanalysis and reclassification of van Rekom and Wierenga's (2007) concept codes

Two experienced laddering coders, each having coded more than 1,000 ladders across multiple categories, were independently given the 37 concept codes from Figure 2 and asked to develop their own set of codes (27 and 24 concept codes were the result). The coders then reviewed their concept codes together, as is standard practice for developing an estimate of coder reliability, and came to agreement on a final set of 25 codes. This final set of concept codes is presented in Figure 3. The phrases in italics presented with the

"Choice of an employer" 37 Codes (Step I: Italics added)		Translation/Recoding 25 Codes (Step II: Recoded)	Expert Coders (Step III: Coded) #1	#2	#3	Final Code Level
VALUES		[V=4]				
be able to achieve more		Accomplishment	v	v	v	V
get far in your career		Accomplishment				
feel fine (*about yourself*)		Self-esteem	v	v	v	V
mean something for society		Benefits society	v	v	p	V
PSYCH-SOCIAL CONSEQUENCES		[P=7]				
personal development	→	Personal development	p	p	p	P
learn something		Personal development				
satisfaction (*feel satisfied*)		Personal satisfaction	p	p	p	P
not get annoyed *(-)*		Personal satisfaction				
make a (useful) contribution		Make a useful contribution	p	p	p	P
be useful		Make a useful contribution				
appraisal of others		Professional acceptance	p	p	p	P
be proud (of position)	→	Be proud of position	p	p	p	P
be motivated	→	Be motivated	p	p	p	P
have a challenge	→	Have a challenge	p	p	f	P
FUNCTIONAL CONSEQUENCES		[F=7]				
not get stuck *(-)*		Opportunity to grow	f	f	f	F
stay out of the rut		Opportunity to grow				
make the most of it		Opportunity to grow				
(*can*) grow into higher position		Opportunity to grow				
not feel constrained		Opportunity to grow				
have variation (*in work activities*)	→	Have variation	f	f	f	F
good standard of living		Achieve good standard of living	f	f	f	F
perform properly		Able to perform properly	f	f	f	F
earn money	→	Earn money	f	f	f	F
go abroad	→	Go abroad	f	f	f	F
fits your personality		Position fits your personality	f	f	f	F
ATTRIBUTES		[A=7]				
fit with personal interests	→	Fits with (my) personal interests	f	a	a	A
feel relaxed at work		Positive work environment	a	f	a	A
have a job	→	Have a job	a	a	a	A
score		Have a job				
large company	→	Large company	a	a	a	A
feel at home	→	Feel at home	a	a	a	A
job content	→	Job content	a	a	a	A
no rigid hierarchy	→	No rigid hierarchy	a	a	a	A
culture of the organization	→	Culture of the organization	a	a	a	A
organizational image	→	Organizational image	a	a	a	A
follow courses		Follows my coursework	a	a	a	A
work for a multinational	→	Work for a multinational	a	a	a	A

Notes: Original van Rekom and Wierenga (2007) 37 codes were [Step I] translated (italics added) and (Step II) recoded into 25 codes. In Step III code levels were assigned by expert coders. For the 25 the codes the inter-coder correspondence was (#1 v. #2: 23) (#1 v. #3: 22) (#2 v. #3: 22)

Figure 3.
Reanalysis and reclassification of van Rekom and Wierenga's (2007) study 1 concept codes

original concept codes represent the coders' interpretation of the respective meanings. The new code names jointly developed by the coders are presented in the second column along with the codes that were nested into the more general designations. Note that approximately half of the code names were changed to fit the levels of abstraction they represented. The arrows between columns one and two indicate where the code names remained exactly the same. As shown in Figure 3, there are substantial differences between van Rekom and Wierenga's (2007) prestudy 1 (Figure 2) and the coding experts – both in the number of concept codes and their summary name designations.

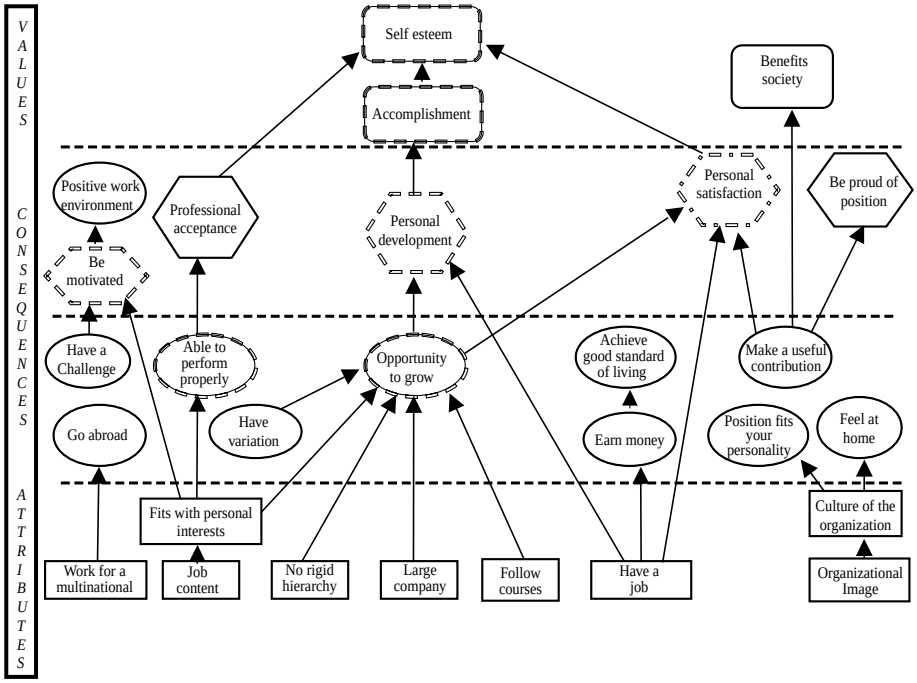
The question of interpreting the concept codes with respect to level of abstraction was investigated by having three experienced laddering interviewers (minimum of 500 ladders) assign level designations to the 25 revised concept codes. The results are presented in the third column of Figure 3, with the differences between concept codes assigned boxed. Note the relatively high correspondence between coders (#1 vs #2 with 23 matches; #1 vs #3 with 22 matches; and #2 vs #3 with 22 matches), which suggests a high degree of commonality of meanings can be achieved when the appropriate level-specific phraseology in developing concept code names is utilized.

The final determination of the respective level for each concept code, presented in the far right column, was made on the basis of agreement between two of the three level assignments. These assignments were then used to construct a revised HVM presented in Figure 4 using the linkages shown in Figure 2. The respective levels of the concept codes are noted in the new HVM shown in Figure 4 and are depicted by different geometric shapes.

Although the completeness of the ladders in the dataset remains a critical issue, when compared to the original HVM (Figure 2), the revised version (Figure 4), developed by expert judgment with respect to concept code classifications and naming, provides a more viewer-friendly and theoretically sound representation of the laddering data. This simple reanalysis suggests that when basic laddering assumptions and protocols are followed, namely, coding and HVM construction, the output is more readily understandable. Yet, it is not possible to predict how the "soft" laddering prestudy, had it met all five assumptions, might have impacted the results of the "hard" laddering survey.

Discussion

"Hard", "check-the-box" laddering approaches that use a survey framework to develop MECs may violate the assumptions underlying the laddering methodology as this approach does not provide the desired level of respondent involvement and consistent meanings of concept codes across respondents when contrasted to the traditional "soft" laddering approach. In addition, as with comparisons of responses to precoded and open-ended survey questions, data obtained from studies using a "hard", "check-the-box" approach will likely differ from data obtained using the traditional "soft" laddering approach. Perhaps, recent technological innovations (i.e. voice-over-internet) that address the time, cost, and geographic limitations of traditional face-to-face "soft" laddering, while also satisfying the laddering assumptions, may eliminate the need for "hard", "check-the-box" approaches (Phillips *et al.*, 2010; Reynolds and Phillips, 2008). When the fundamental assumptions of the



Notes: Laddering expert-revised (collapsed codes with four level assignments denoted by the shapes) Hierarchical Value Map (HVM). Dotted lines for codes indicate those that were used in the van Rekom and Wierenga (2007) quantitative survey. Quantitative survey code "Not get annoyed" from original study was collapsed into the revised code of "Personal Satisfaction", as was "Learn something" into "Personal development" and "Grow into higher posi.tion", "Get far in career" and "Stay out of the rut" into "Opportunity to grow"

Figure 4.
Revised HVM after reanalysis and reclassification of van Rekom and Wierenga's (2007) concept codes

laddering methodology are adhered to, specifically with respect to developing concept codes and HVM construction, the result is more interpretable and less ambiguous.

MEC research and, more specifically, the laddering methodology are in need of investigations that assess the importance of the underlying assumptions. Summary statistics that begin to provide a basis for such investigations have been suggested (Reynolds and Phillips, 2008), including ladder completeness, coder reliability, a quasi-reliability measure for a dataset and the ability to contrast mapping solutions derived from different datasets with a quasi-validity, goodness-of-fit index. The use of these statistical measures could provide the basis to assess the different approaches for obtaining and summarizing MECs.

Validating the hierarchical structure of means-end theory is also a meaningful empirical pursuit; however, it is not possible to draw a definitive conclusion regarding the validity of the hierarchical structure of means-end theory with the current body of work as each set of studies is not without limitations. Although both sets of studies pursued a similar aim, each set operationalized the research objective quite differently. The first set of studies (Reynolds *et al.*, 1985; Reynolds and Jamieson, 1985; Jolly *et al.*, 1988, respectively) assessed the respective correspondence of the levels of abstraction to

a non-biased measure of preference and, consistent with means-end theory, collectively found that higher levels of abstraction (i.e. consequences and values) were more predictive of preference, whereas lower levels of abstraction (i.e. attributes) were more predictive of differences. That is, consumers see differences between products at the attribute level, but prefer a product because of the consequences and values that it satisfies. Although this conclusion is indeed supportive of means-end theory, these studies are limited in that they do not also assess whether the respondent's actual semantic structure is hierarchical.

The second set of studies (van Rekom and Wierenga, 2007) tried to achieve that aim by assessing the asymmetry of the relationships between a predetermined set of concept codes. The limitation of this approach, however, is that the responses to the "hard" laddering survey may not be "personally meaningful" because those respondents were not involved in the "soft" laddering process used to develop the "hard" laddering survey. That is, it is not appropriate to assess a respondent's semantic structure by having the respondent assess the hierarchy of concept codes derived from other peoples' ladders. Therefore, we note that additional work is needed to advance this stream of research attempting to empirically validate the hierarchical structure of means-end theory.

Although validating the hierarchical structure of means-end theory would make an important theoretical contribution to the consumer behavior literature, in practice MEC research focuses on the linkages between levels of abstraction and not on hierarchy (Reynolds *et al.*, 2001). Indeed, means-end marketing strategy is based on reinforcing, adding, and/or modifying nodes, linkages, perceived importance, and relative performance (Parry, 2002; Reynolds and Olson, 2001). Moreover, the specification of means-end marketing strategy does not depend on whether semantic networks are hierarchical or not (Reynolds *et al.*, 2001; Reynolds and Whitlark, 1995). As the representation of findings presented in Figure 2 clearly illustrates, HVM construction procedures provide a method for arranging laddering data in a manner that is useful for marketing managers and it does not claim to represent a natural ordering of thought processes. Rather, the means-end hierarchy "serves to standardize the presentation of values research, create a logical flow of information ranging from concrete to abstract, simplify data interpretation, and make the results actionable for marketing managers" (Whitlark and Allred, 2003, p. 35). In addition, means-end theory makes a contribution to marketing because marketing choice models tend to overstate the importance of product attributes and ignore the personal connections consumers make with products at higher levels of abstraction (Walker and Olson, 1991).

Notes

1. Scholderer and Grunert's (2005) "extended abstract" is not included in this comparison as it does not provide enough information about the procedures of their laddering studies.
2. At the time this research was conducted, three levels (i.e. A, C, V) were the standard classification system for MECs.
3. The analytical technique used to produce goodness-of-fit correlations between vectors of ordinal measures obtained from the sorting by the level of the ladder and the matrix of distances is called *cognitive differentiation analysis* and is detailed in Reynolds and Sutrick (1986) and Reynolds *et al.* (1987).
4. As the basis for suggesting a non-hierarchical network mapping approach, van Rekom and Wierenga (2007) use importance ratings to determine the centrality of concepts.

This approach is subject to question, given the prior validity findings which found a systematic negative bias with respect to the importance evaluation of values level codes (Jolly *et al.*, 1988; Reynolds *et al.*, 1985; Reynolds and Jamieson, 1985).

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About the authors

Joan M. Phillips (PhD, University of Illinois at Urbana-Champaign) is Associate Professor of marketing, School of Business Administration, Loyola University Chicago, Chicago, Illinois, USA. Her research interests include understanding how both personal values and the valence of brand attitudes impact consumer decision-making and choice. Her research has been published in *Journal of Consumer Research*, *MIT Sloan Management Review*, *Journal of Public Policy & Marketing*, *Review of Marketing Research*, *Marketing Letters*, *European Journal of Marketing*, and *Journal of Marketing Theory and Practice*. Joan M. Phillips is the corresponding author and can be contacted at: jphillips@luc.edu

Thomas J. Reynolds (PhD, University of Southern California) is Professor emeritus, University of Texas – Dallas and managing director, Strategic Research, Development and Assessment (SRDA), Wilson, Wyoming, USA. He has provided marketing strategy consulting to numerous *Fortune 500* companies in over 25 countries. His research has been published in *Journal of Consumer Research*, *Journal of Marketing Research*, *MIT Sloan Management Review*, *International Journal of Research in Marketing*, *Review of Marketing Research*, *Journal of Advertising Research*, *Journal of Public Policy & Marketing*, *Psychology & Marketing*, *European Journal of Marketing*, *Journal of Business Research*, *Organizational Behavior and Human Decision Processes*, *Psychometrika*, and *Multivariate Behavioral Research*.