

Life styles and domestic energy consumption: a pilot study

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Abstract

The contribution of households to CO₂ production is still increasing. To alter patterns of energy consumption for example with respect to commuter traffic, using the freezer, and warming the house, changing life styles related to domestic energy consumption is considered. In our study, we have operationalized life style as *means-end chains*, that link perceived benefits of a particular behavior to basic values that people pursue. In this paper, preliminary results are presented of the study that is aimed at empirically establishing the feasibility of the concept of life style in relation to domestic energy consumption.

1. INTRODUCTION

Domestic consumption of energy contributes considerably to CO₂ production in the Netherlands. The proportion of CO₂ produced by households has increased strongly over the last 30 years, a tendency which is unlikely to change in the future without policy modifications. To promote sustainable development, a substantial reduction is required in domestic energy consumption. A promising approach to alter patterns of energy consumption may be to change life styles related to domestic energy consumption.

Various authors [1, 2, 3] suggested that individuals' separate consumption behaviors constitute a more or less coherent pattern. It has been supposed that a person's particular acts of consumption are guided by basic values [4]. Values are consumers' mental representations of important end states they are trying to achieve in their lives [5]. These values guide individual choices with respect to consumption, causing characteristic differences or similarities between individuals. If this conception is correct, its implication would be that the focus of change must be *patterns* of energy consumption, rather than separate consumption behaviors. Attempts to change these energy consumpti-

on patterns may eventually lead to change in particular energy consumption behaviors that make up the complete pattern [6].

The concept of coherent patterns of consumption within individuals is consistent with the concept of life styles, put forward by Weber [7]. According to Weber, individual tastes and preferences in behavior conform to socially determined structures. He maintained that groups of citizens can be distinguished by their socio-economic and status position. That is, persons sharing a similar status position, enjoy equal prestige in society, and are characterized by a common life style. Weber defines *life style* as a collection of explicit and expressive modes of behavior or behavioral preferences, in which consumption of material goods plays a dominant role.

1.1 An alternative conceptualization of life style

In this study, the concept of life style is operationalized as so called *means-end chains*. This operationalization stems from economic psychological theories applied to marketing [8]. It is used to link products to individuals, according to the product's attributes that the individual considers valuable. According to the conception of means-end chains, people consider a particular product attractive, because it has attributes that implicate particular desirable consequences. In turn, these consequences are desired, because they serve to realize basic values which an individual considers of vital importance to pursue. Individuals can be classified according to differences and similarities in their means-end chains.

This innovative operationalization of life style as means-end chains meets several of the criticisms with respect to the traditional concepts of life style. First, it is a domain specific approach: it recognizes that a person's life style may differ between different behavioral domains. Second, it does not limit itself to observable behaviors, but also includes a person's attitudes, socially determined normative beliefs, and basic values.

To end this theoretical part, we formulate the research question of this study: is it possible to describe domestic energy consumption adequately in terms of life styles?

2. METHOD

In order to trace means-end chains, we interviewed thirty-four consumers about their household energy behavior regarding six behavioral domains, namely commuter traffic, heating the house, lighting the living room, using the freezer, using the washing-machine, and using the washing-dryer. Every respondent has been interviewed on three of the six behavioral domains, according to a predetermined scheme. In the first part of each interview, we determined the common household context of the respondent, namely household situation, residential situation, and employment situation. Subsequently, we determined the context variables that were specific to a particular domain of energy consumption. For example, in the case of commuter traffic, the distance to work, the means of transport, and receipt of allowance were recorded. This part of the interview was ended by asking for the perceived benefits of the behavioral domain.

In the second part of each interview, we used the *laddering* depth-interview method, that is used in consumer behavior research to trace means-end chains of products [8]. In our study, we have replaced products by perceived benefits of the behavioral domain. This implies that the attribute level in the means-end chain will be skipped. The laddering interview consists of determining *why* the most important perceived benefits are so important to the respondent. At best, each means-end chains ends at value level. In Figure 1, an example of one of our interviews on using the freezer

is depicted. The perceived benefit of using the freezer is the functional consequence *always food in stock*. Through a number of steps, this means-end chain ended on the value level *gives me a feeling of hospitality*.

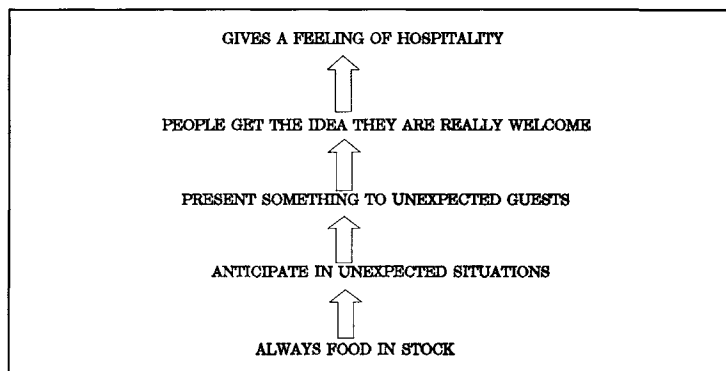


Figure 1. Example of a means-end chain on using the freezer

2.1 Analysis

The initial task of the analysis is to make a content-analysis of all elements from the laddering interviews [8]. All responses were divided as functional consequences, psychosocial consequences, instrumental values, and terminal values. This process resulted in a codebook of thirty-eight codes. Next, all individual ladders were rewritten in these number codes. In this case, we have made our data suited for the data-analysis.

In order to detect groups of individuals with common characteristics, we have made use of a tandem use of correspondence analysis and cluster analysis [9]. This results in a graphical representation, which contains both the consequences and values, and the clusters of respondents.

2.2 Research questions

To answer our research question whether domestic energy consumption can be described adequately in terms of life styles, we have made the following operationalization:

1. Is it possible to group means-end chains concerning a particular behavioral domain with regard to energy consumption, and are the groups interpretable as life styles concerning energy consumption?
2. Is it possible to group common context variables and context variables that are specific to a particular domain of energy consumption behavior?
3. Do groups of means-end chains regarding a particular behavioral domain of energy consumption overlap with groups of common context variables and with groups of context variables that are specific to that behavioral domain?

3. PRELIMINARY RESULTS

Currently, we merely have preliminary results at our disposal. We have enlarged our sample, but we have not assimilated it in the present results. Due to lack of space, we will only discuss the results of one of the six behavioral domains, namely commuter traffic.

In Figure 2, the results of the data-analysis on the means-end chains on commuter traffic is depicted. It shows both the consequences and values (the name codes), and the clusters of respondents (the numbers). The closer a respondent is situated near a name code, the more that name code applies to that respondent. In the case of commuter traffic, the cluster analysis resulted in three clusters. We can see that two large clusters (n=7 and n=6) and one very small cluster (n=1) were formed. Respondents in the first cluster, which were mainly cyclists, emphasized in the laddering interviews the healthy fresh air, physical movement, saving money, feeling pleasantly and at ease, and a better environment. Respondents in the second cluster, which were mainly motorists, emphasized saving time, ambition, being independent of external factors, freedom, functionality, and safety. The respondent in the third cluster, who travels by train, emphasized the atmosphere and the possibility to relax and dream.

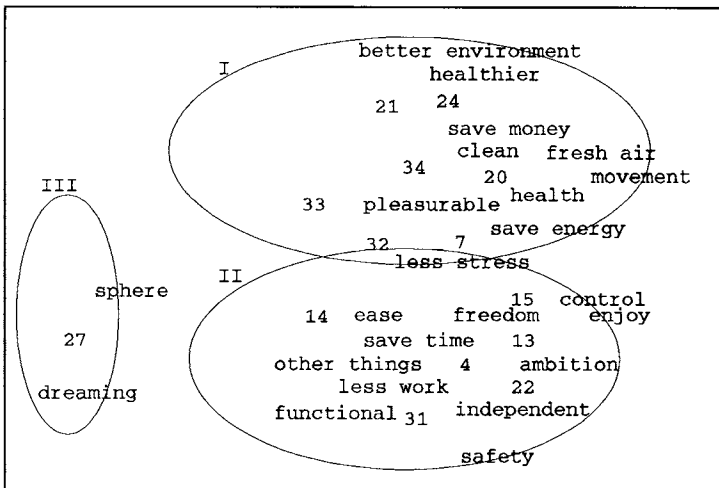


Figure 2. Clusters of the means-end chains on commuter traffic

When considering the common context, three clusters were formed, mainly on the basis of the respondents' education, working situation, income, age, size of the house, and the presence or absence of school attending children. When considering the specific context, one large cluster and three small clusters were formed, mainly on the basis of distance to work, means of transport, the amount of travel-expenses, and receiving of a pay for expenses.

When looking at the overlap between the clusters of the means-end chains, the common context, and the specific context, we notice that two groups of respondents are clustered together every time. This means that they show a strong correspondence in their means-end chains, and that they have a common and specific context that is very identical. Due to lack of space, we will not go into the content of these groups with an overlap in the means-end chains and context.

4. DISCUSSION

In this article, we only discussed the results of the analysis on commuter traffic. The other behavioral domains - warming the house, lighting the living room, using the freezer, the washing-machine, and the washing-dryer - were left out of consideration in this contribution. In each domain, we found different clusters of similar means-end chains, and different clusters of similar demographic and relevant contextual variables, which partly overlap with clusters based on means-end chains. So, the preliminary results of this study offer indications that different groups of individuals can be distinguished with respect to a single domain of domestic energy consumption, based on the consequences attached by each individual to that particular behavior and the basic values he or she attains by that behavior. However, as yet no definite conclusions can be drawn about the relationship between on the one hand the consequences and values of a particular energy behavior, and on the other hand the relevant context of their living circumstances. It is difficult to conclude whether or not the similarities in classification of respondents on the basis of their means-end chains and on the basis of context variables constitute a causal relationship.

Another unresolved issue concerns the relationship between structures of consequences and values with respect to one domain of domestic energy consumption and another. For example, are a person's positively valued consequences and related values with respect to his or her mode of commuting related to positively valued consequences and values with respect to heating the house, or are they unrelated?

Further analyses of the data will have to provide answers to these questions. First, additional data will be collected in order to obtain information about means-end structures with respect to each domain of domestic energy consumption from approximately 35 respondents. This will provide a sound basis for further establishment of the reliability and validity of clusters of consequences and associated values regarding various domains of domestic energy consumption. Further, by means of discriminant analysis, we will explore the relationship between clusters of valued consequences and associated values, and clusters of general (demographic) and domain specific context variables. That is, we will examine how respondents clustered in a particular group on the basis of appreciated consequences and values differ from respondents clustered in a second group, with respect to general and domain-specific context variables.

5. REFERENCES

- 1 A. Mitchell, *The Nine American Lifestyles*, New York, Warner Books, 1984.
- 2 H. Ganzeboom, *Leefstijlen*, in *Jaarboek '90-'91 Nederlandse Vereniging van Marktonderzoekers*, Haarlem, De Vrieseborch, 1989.
- 3 P.A.F. de Bruijn and R.J.T. Custers, *Voorwaarden voor Consumptieverandering*, 's Gravenhage, SWOKA, 1993.
- 4 M.J. Rokeach, *The Nature of Human Values*, New York, The Free Press, 1973.
- 5 J.P. Peter and J.C. Olson, *Consumer Behavior and Marketing Strategy*, 3rd edition, Hollywood, Irwin, 1993.
- 6 C.A.J. Vlek, *Leefstijlen, gedragsverandering en energiebesparing: een conceptuele en methodologische beschouwing*, in K. de Paauw, A. Perrels, en A. van Veenendaal (eds.), *Leefstijl en energie: van intentie naar actie?*, Petten, ECN2, 1994.
- 7 M. Weber, *Wirtschaft und Gesellschaft*, Tübingen, 1972.
- 8 T.J. Reynolds and J. Gutman, *Laddering Theory, Method, Analysis, and Interpretation*, *J. of Advertising Research*, 28 (feb/mar) (1988), 11-31.
- 9 P.E. Green, C.M. Schaffer and K.M. Patterson, *A reduced space approach to the clustering of categorical data in market segmentation*, *J. of the Market Research Society*, 30 (3) (1988), 267-288.