

Lifestyles, and Risk Perception Consumer Behavior

Lennart Sjöberg & Elisabeth Engelberg

In this article, the concept of lifestyle is traced to its early roots in personality psychology and in marketing. In the latter field, many commercial marketing firms have made strong claims as to the explanatory power of lifestyle dimensions, often based on procedures which have been kept secret, but researchers have seldom been able to verify such claims. In spite of this, the approach is very popular, has wide credibility and is often given very favorable media coverage. Probably because of this, it is often considered as a very important and promising approach by administrators working with the regulation of risk and risk communication. It may also be credible in some quarters because it affords a way of 'explaining' risk perception as being non-rational. In this paper, we give results from an empirical study of nuclear waste risk perception which is related to a basic risk perception model and three approaches to lifestyles: Kahle's List of Values, a Swedish adaptation of the 'Agoramétrie' approach suggested by a group of French researchers, and Dake and Wildavsky's Cultural Theory dimensions. It was found that nuclear waste risk perception could be modeled successfully with risk attitudes and perception data (basic model about 65% of the variance explained), but that lifestyle dimensions added virtually nothing to the explanatory power of the model. Lifestyle dimensions in isolation only explained a minor part of the variance.

Risk perception has been an important research topic since the 1970s (Sjöberg, 1979). The reason is probably that risk is believed to be a crucial factor in policy attitudes and decisions. There are several problematic aspects to risk management, e.g., the often observed gap between experts and the public when it comes to socially and economically important hazards, such as those associated with nuclear technology. Another type of hazard of much current concern is food risk and genetically modified organisms, a third would be cellular telephones and the 'electrosmog' debate. Much of the important work on risk perception was summarized in a volume edited by Slovic (2000).

Correspondence to: Professor Lennart Sjöberg, Center for Risk Research, Stockholm School of Economics, Box 3557, 113 83 Stockholm, Sweden. Tel.: +468 7369570; Fax: +468 307225; E-mail: Lennart.Sjoberg@hhs.se

Given that perceived risk is an important topic, one of the more urgent concerns for researchers is that of explaining why people—be they experts, members of the public or politicians and administrators—perceive risks the way they do. It has long since been realized that ‘objective’ risk is not a sufficient explanation of perceived risk, not even for experts (Sjöberg, 2002), and at times the two differ widely. The present paper is concerned with lifestyles as an approach to understanding risk perception. We review work on the concept, which has been developed mainly in marketing and applied to consumer behavior.

Lifestyle is a concept of much current interest in several quarters (Lundgren, 1996). In marketing, it has been used for decades and several commercial applications, which will be discussed in this article, are available. In risk regulation and risk communication, it seems that the concept also is quite attractive to many practitioners. There could be many reasons for this popularity. Four are particularly salient:

1. Lifestyle is a powerful concept in the explanation of public perception of risk and reactions to risk, as well as in consumer behavior more generally.
2. Lifestyle is a concept which is well in line with common-sense notions as to the explanation of behavior. It is *a priori* highly credible. The typological approach is congenial with folk psychology. People tend to believe in such phenomena as the effectiveness of subliminal advertising (Rogers & Smith, 1993), in spite of lack of support in research on the topic.
3. Lifestyles make for good reading in the media and therefore can be assured of extensive media coverage—largely uncritical.
4. Lifestyles profit from habits of ‘hypothesis testing’ (Shaver, 1993; Schmidt, 1996; Thompson, 1999). Researchers tend to ignore the explanatory power of their concepts and equate high power with non-randomness of effects. Since few concepts yield genuinely random effects research can easily be rigged to produce ‘statistically significant’ results which are then marketed as substantially important. As an example, Shim and Bickle reported that their data on psychographics differentiated among segments in the female apparel market, but they gave only results of significance testing (Shim & Bickle, 1994).

Let us develop the last point somewhat. Much research, perhaps a major share of it, takes its starting point in theory or in some concept of special interest, such as a personality dimension. Hypotheses are derived which typically state that there is *some* effect of a dimension on behavior. Statistical hypothesis testing is then the preferred and quite congenial mode of proceeding. If an effect is detected as sufficiently strong to be established as non-random, the investigator is satisfied. The finding may then catch on as being established and frequently it is seen as theoretically and practically important on such a basis alone. This is very misleading, because only in very rare circumstances, such as parapsychology, is it sufficient to establish non-randomness to make an important point. In almost all other cases the significance of a finding is of

marginal interest if it is not demonstrated that there is some substantial explanatory power in the concept.

In this kind of work there is little concern about alternative explanations of behavior, and whether the proposed concept adds substantially to what is already known. It is, however, easy to establish a statistically significant effect—if the sample size is large enough even a very small effect can be established as non-random.

It has been demonstrated repeatedly that substantial explanatory power usually can only be found with concepts which are ‘proximal’ to the dependent variable, i.e. concepts which are closely related in their contents. ‘Distal’ variables with very different contents rarely explain more than a few percentage points of variance, and almost never add anything beyond a model based on proximal variables and demographics; see Sjöberg (2003a, 2003b, 2003c) for a discussion of this point in the context of risk perception). A prime example is that of personality, which is apparently perennially fascinating to many psychologists but rarely adds anything very substantial to prediction (Schmidt & Hunter, 1998). Table 1 gives an overview of the explanatory power of different types of variables. See also Sjöberg (1998a, 1998b, 1998c).

In the line of the general results of Table 1, how much is to be expected from lifestyles? Lifestyles have been seen as promising to explain consumer behavior, and, more recently, environmentally relevant behavior. It seems intuitively likely that lifestyles should be very important in accounting for that kind of behavior. If they were to be found to be so, this might in turn be of great practical interest, since it is well known that individual behavior accounts for a very important share of human environmental impacts (Sjöberg, 1989).

The purpose of the present paper is to discuss the explanatory value of lifestyles, on the basis of work in social psychology and marketing. We present some current versions of the concept and approaches to its measurement and discuss its scientific and practical value and its application to risk perception. Most of the empirical work

Table 1 The efficiency of behavior predictors

Predictor	Typical amount of variance explained, percent of total
Physiological indicators	0–5
Lifestyles	0–5
Attitudes, general	0–5
Knowledge, information	0–5
Demographics	5–10
Personality, non-intellectual	5–10
Intelligence	10–20
Risk perception	10–20
Attitudes, specific	About 50
Intentions, specific	More than 50

has been carried out on consumer behavior and many examples will be cited from this literature. We also present results from research on nuclear waste perception.

Language and Definitions

Terms such as attitudes and lifestyles have technical meanings in social psychology, but they are also used in everyday language. We therefore begin with giving some explicit definitions and comment on the difficulties of communication that can arise in discussions about lifestyles and risk perception.

The term *attitude* will be used here to denote *the valuation of a concept or an object*, i.e. to which extent the object or concept is judged to be good or bad in a general, global, meaning. Current usage of the term in social psychology has converged on that meaning (Eagley & Chaiken, 1993). How good would it be for Sweden to stay as a member in the European Union? How good is it to have an official state church? How good is the Swedish nuclear power program? Attitude in this sense can be studied with the help of one or a few judgment scales.

The object or concept judged can be more general or specific, but usually it is rather specific. In this way attitude is different from *value* (Schwartz, 1992) which is a judgment, similar to the one used in the measurement of attitudes, of a general or abstract concept. Examples of such concepts are freedom and equality.

Lifestyle is a term which can have at least three different meanings:

1. The values that a person expresses with reference to a limited number of basic dimensions (freedom, justice, equality, etc.).
2. A group or cluster of attitudes, opinions, interests and activities. In this case the investigator usually includes a theoretical mixture of very different concepts which are supposed to serve as a basis for classifying or segmenting a population. The segmentation should in its turn be possible to use in marketing products or influencing habits. As an example, see a recent review of how the tobacco industry uses consumer segmentation in order to increase sales (Ling & Glantz, 2002).
3. Actual 'patterns of behavior', e.g., lifestyles characterized by substance abuse or an active leisure time involving sports, work in political organizations, etc.

In this paper we will use the term lifestyle in the first mentioned meaning, unless otherwise stated. It should be stressed that labeling different groups of variables with the term lifestyle does not guarantee that they are in fact related. In particular, there is no guarantee that lifestyles in the first two senses mentioned above are related to lifestyle in the third, behavioral sense.

As pointed out above discussions about current social and behavioral problems have often been carried out using a natural rather than a scientific language. This is particularly the case when the participants come from different disciplines, some of them being perhaps administrators, technicians or natural scientists. Every specialist of course knows what he or she talks about when using one's discipline's special

terms. For example, a social psychologist knows the meaning of the word attitude and a marketing researcher knows what is meant by lifestyle. But when a social psychologist is discussing attitudes with non-psychologists discourse is concerned not only—and perhaps not even mainly—with attitudes in the technical and restricted sense which the psychologist wants to use, and perhaps presumes that other people also use. It will rather be concerned with something larger and considerably less clear. Therefore, the discussion tends to be more confusing than clarifying.

Another problem is that attitudes are often confused with emotions. However, it is important to differentiate between emotions and judgments (Sjöberg, in press). Certainly people can react affectively in connection with a discussion about judgments of a concept which is considered very important but that does not mean that emotion and judgment are the same thing. If you sit in a chair at your dentist's clinic, you probably feel that the situation is unpleasant (emotion) but the treatment you get is something you consider to be important (judgment, evaluation) and positive for your health. That is why you sit in that chair. You have made a judgment that subjecting yourself to treatment by the dentist is positive for you.

Data on emotional experiences in connection with the kind of behavior that is analyzed can provide improvements in predictive ability (Allen, 1992) but that still does not mean that emotions are identical with evaluations or attitudes.

Attitudes can express stable personal evaluations (Fazio, 1981). At the same time it is known that individuals in general are not particularly stable or consistent in their behavior across situations (Snyder, 1979). This inconsistency may be explained by the recent conception of attitude directing behavior at a cognitive or intellectual level, as well as an affective. A 'cool system' at the cognitive level gears action in a strategic and goal-oriented manner. A 'hot system' at the level of affect is largely under stimulus control and thus dependent on the appropriate context to initiate behavioral responses (Metcalfe & Mischel, 1999). This means that behavior may to some extent be monitored by cognition, but the hot system may generate idiosyncratic responses that are triggered by the immediate situation. Behavior may therefore show inconsistencies depending on whether it is cognition- or affect-based. There is a certain measure of stability when it comes to intellectual factors but the variation in intellectual and social behavior is considerable (Mischel, 1968, 1973).

Research has shown that there is seldom a strong and direct relationship between general attitudes and actions (Ajzen, 1977; Olsen, 1981; Sjöberg, 1982; McGuire, 1985). The weak relation between attitudes and action is particularly clear when it comes to attempts to try to influence attitudes by means of communication.

If it is to be possible to predict behavior, for example energy conservation, on the basis of attitudes, the specificity in the measurements of attitudes and behavior must correspond (Ajzen, 1977; Sjöberg, 1982). The relation between general attitude measures and a specific behavioral criterion cannot be expected to be particularly strong. The attitude-behavior problem is partly solved either by making attitude measures more specific or by pooling a large number of behavioral criteria to a composite criterion for environmentally relevant behavior. See Sjöberg (1982) for an

application to attitudes and relevant behavior with regard to developing countries and aid to such countries.

Ajzen & Fishbein (1980) have formulated a theory of reasoned action. According to this theory behavior depends directly on intentions which in turn are dependent partly upon attitude and partly on subjective norms. Attitudes and norms, in their turn, have the form which was originally suggested by Fishbein (1963), *viz.* summed products of beliefs and values, see also Sjöberg (1999a, 1999b, 1999c).¹ Vallerand *et al.* (1992) tried this model and they found considerable support for it in a structural analysis, especially when they added a relationship between norms, beliefs and attitudes. Vallerand *et al.* gave a detailed discussion of the model and their work is also informative as a methodological demonstration. At the same time it must be remarked that their work was rather little developed at the side of behavior with an only a few *hypothetical* choices as criteria.

A particular term, unique for the marketing literature, is 'psychographics' in which the notion of lifestyle is often embedded. The term stands for psychological traits that marketers tie to consumption. These are measured by questionnaires resembling personality inventories, but include a wide range of items measuring attitudes and issues concerning lifestyle preferences.

Psychographics may give a greater insight into why some products are purchased, and not only what distinguishes buyers of a product from non-buyers. For instance, there is little demographic distinction between males who buy shotgun shells and those who do not in some regions of the United States. This may, however, be amended by asking respondents to judge a statement like the following: 'I would do better than average in a fistfight' (Wells, 1975).

Although the categorization of consumers on psychographical dimensions was first introduced over 30 years ago, it remains as one of the least understood concepts in marketing (Heath, 1995). There are a number of plausible reasons for this. Psychographic data are difficult and costly to obtain. In similarity to classification systems, such as the VALS (see below), it is difficult to assess both reliability and validity concerning psychographic data (Gilbert & Warren, 1995). Another feature of both psychographics and classification systems is that they are appropriate for explaining behavior at the group level as opposed to the individual level. In this respect, they basically represent a reductionist approach to explaining behavior. That is, individuals are reduced to the relatively few characteristics that are common to consumers in a particular group or segment.

Furthermore, when concepts such as psychographics and lifestyle are used to denote rigid categorizations, they do not provide us with a tool to understand the impact of social processes and change. Influences within society and culture, such as recessions, political turmoil, and technological innovations, to mention only a few, shape values, attitudes and hence style of living over time. Although people are embedded in similar social relations, due to socialization through similar parents, peer groups, and education, people do not necessarily share similar cultural and social understandings to the same extent any longer (Holt, 1997). The post-modern

society actually challenges people to construe their own identity through their own choices of ideology, aesthetic forms of expressions and social activities. This rather intense search for one's social sense of belongingness is in stark contrast to the agricultural era when the individual was basically born into a given occupation and social class.

Risk Perception

In this paper we deal with risk perception in a perspective of social conflict over risks and societal activities. The perspective will mainly be psychological, cp. Sjöberg (1989). Some authors have criticized psychological work on risk perception for being too much concerned with individuals. It is claimed that the really important risk perception to study is the one held by managers or administrators and politicians (Sjöberg 1996a, 1996b) who make the important decisions about risks, see e.g., Clarke (1989). While it is clearly true that it is important to study such influential groups we believe that a study of public opinion is also essential.

Risk research has one of its early origins in a wish to understand public risk perception. In turn, this goal was seen as important because people did not perceive some socially important technologies as safe, in spite of experts' assurances that they were. It has even been claimed that the present society is extremely safe, and that public concern about risk is absurd:

How extraordinary! The richest, longest lived, best protected, most resourceful civilization, with the highest degree of insight into its own technology, is on its way of becoming the most frightened. (Wildavsky, 1979)

Wildavsky concluded that low-level risks should be ignored, in order to promote a more rational risk policy. But, of course, they are not ignored by the public who does not even accept that they are small. The target of public concern varies over time but there is no evidence that it is decreasing. Yet, Wildavsky's argument is still being heard (Sunstein, 2002).

Wildavsky and Douglas (1982) suggested a theory to explain risk perception with reference to its social functions, and they rejected the notion that risks are perceived because they exist. Extensive empirical research has failed to support this theory (Sjöberg, 1996a, 1996b, 1997a, 1997b). We will deal with their theory in more detail in a later section. Meanwhile, we mention a few comparisons of risk perception in different countries. The same risks have been judged by people in the USA, Hungary, Japan, the Soviet Union, Norway and Poland (Englander *et al.*, 1986; Teigen *et al.*, 1988; Goszczynska *et al.*, 1991). The samples have been convenience samples and there are little or no data available on representative samples.² In most cases the subjects have been university students; see the review by Boholm (1998).

In a study of risk perception in Brazil and Sweden (Nyland, 1993), the results imply that perceived risk is highest in Brazil with data from the USA as slightly lower. While

the levels differed among countries, the rank order of the risks was rather much the same. For example, a sample of slum dwellers in Sao Paulo, Brazil, ranked 100 risks much the same as a group of students in a graduate engineering school in Stockholm. In a way, the results support Wildavsky's exclamation above. People in the USA must surely be living a safer life than those in the slum of a Brazilian metropolis. Still, they are almost as risk averse or even more. But do such data really support Cultural Theory of risk perception? We return to the issue in a later section.

Other comparative research, such as comparisons of work motivation in different countries (Hofstede, 1980, 1983), may give insights which can be related to comparative results on risk perception. Perceived job risks, seldom studied in connection with work motivation, have been found to be an important factor in job satisfaction and work motivation (Zaccaro & Stone, 1988; Björklund, 2001). Hofstede's four dimensions of culture are partly similar to lifestyle dimensions related to risk perception.

Environmental Problems, Behavior and Lifestyles

The environment is often influenced in a negative manner by the behavior of single individuals and households. The problem can concern energy consumption, how wastes are treated, what kind of transportation is chosen, etc. The size of environmental damage caused by individuals can be discussed and should of course be related to the influence that other actors, e.g., industry, have on the environment, but it is definitely responsible for a non-trivial share of the problems of the environment. It can therefore be seen as a strategically important question what environmentally destructive behavior depends upon and how it can be influenced (Sjöberg, 1989; Stern, 1992).

According to a common point of view it is the lifestyle of individuals which is the root of these problems. As pointed out above, the term is used in very different ways and this can perhaps not be criticized. However, the logical basis of conclusions is often fragile. For example, in a study of electricity consumption it was found in a family which was extreme in its consumption of energy that the reason mainly was that two teenage daughters spent several hours in the shower each day. It was therefore, according to the researchers, the lifestyle which was the explanation of energy consumption in this case. But there were no data relating the behavior of excessive showering to anything else; neither behavior, values nor attitudes. It was only assumed that the extreme behavior in the shower was the expression of something more general. This could have been true, but it needed verification. The extreme behavior might simply reflect an extreme concern about cleanliness, and nothing else.

But is it not very reasonable to assume that an extreme behavior is the expression of more stable and general behavioral tendencies, basic values, etc.? According to common sense that may be so, but common sense is not particularly sound when it comes to conclusions about psychological problems. It has been shown in many

investigations that people make systematic errors when they try to understand and explain the behavior of other people. Other people are attributed stereotypical tendencies of behavior. The extent to which their behavior is dependent on personality traits is greatly exaggerated, at the same time as causes of one's own behavior are seen as reactions to situational factors. This very well-documented phenomenon has been called the fundamental attribution error (Ross & Fletcher, 1985). It is also assumed that values are causes of behavior but this is by no means self-evident, as shown by some reflection. There could be common factors which explain both values and behavior, for example strong emotions such as anger. Particularly when extreme groups are discussed such considerations are reasonable.

An Example: Energy Attitudes and Energy Saving

In this section we give an illustration of the type of results obtained in psychologically oriented research about one type of environmentally relevant behavior, *viz.* energy consumption.

An initial problem is that of communication and campaigns. Energy conservation campaigns have not succeeded as well as could have been expected (Stern, 1981; Ester, 1982). This is true even if the adaptation to energy efficient behavior has turned out to be cost-effective (Ross, 1981). Even if a lack of energy consciousness is not primarily a question of lack of information, it is true that information can be lacking in certain cases. A study showed that individuals are not conscious of which actions are effective in saving energy (Kempton, 1985). It is possible that increased information in this respect could lead to changed attitudes and changed behavior. Even if people are involved in and conscious about energy problems there is no strong relationship between energy-related attitudes and conservation (Becker, 1981; Stern, 1981; Crosseley, 1983). Researchers have only found some very weak relationships between the experience of a threatening energy crisis in the world and the attitude to energy saving (Gallup Organization Inc., 1977; Farhar, 1980). In spite of the fact that 40–60% of the population believe that there are serious and long-term energy problems (Olsen, 1981) this fact does not seem to be sufficient to promote the acceptance of energy conservation policies (Industridepartementet, 1983; Midden, 1983). Certain traces of a relationship can sometimes be discerned. Ilstad (1981) and Ilstad & Lund (1983) found that the extreme groups with regard to attitude also differed in the expected direction when it came to energy consumption.

A Swedish sample was asked an open question about their personal motives for conserving energy (Industridepartementet, 1983). The answers were distributed as follows:

67%	own economy
33%	Sweden's economy
4%	national political independence
19%	environmental values concerning the conservation of natural resources

Interestingly, it was found in another study that when these alternatives were given in a questionnaire the three last mentioned alternatives were accepted by 80% of the respondents. Biel *et al.* (1989) argued that the responses obtained were the expression of social desirability or lip service. However, answers to open ended questions may reflect what the respondent comes to think of at the moment and that may not, in turn, necessarily be his or her most basic values or attitudes.

A general interest in energy problems influences, as mentioned above, internalized personal norms which promote certain types of cheap energy improvements but not more expensive investments (Black, 1985). Research has also shown that energy use both in the summer and the winter are more closely associated with the desire to have a comfortable and healthy environment than with attitudes to energy use and energy conservation (Darley, 1981; Black, 1985; Bernström *et al.*, 1997; Viklund, 2004). Hence, it is clear that the variance of energy consumption behavior of consumers can only partly be explained by the variance in attitudes. Yet, attitudes are more important in the prediction of energy conservation than background variables (Karns, 1983).

The largest share of the variance in energy consumption can be explained by differences in social habits (Palmborg, 1987). Edén (1987) claimed that attitudes and values play a smaller role for energy consumption than variations in what he called external factors. The home, he said, must be seen as a whole and must not be studied independent of society at large. This sounds reasonable but it is somewhat unclear, and not a good argument in favor of his conclusion. Morality is another aspect which influences energy savings and which is closely related to attitude formation. To have a comfortable indoor climate seems, however, as pointed out above, to be the most important factor in household energy consumption (Becker, 1981).

Research on energy consumption and conservation shows that attitudes are rarely much affected by campaigns, that attitudes have a moderate predictive value, and that behavior is frequently not in line with expressed attitudes. Could lifestyles offer a way out from this dilemma? We return to this possibility in a later section.

Attitudes and Behavior Change

The previous section emphasized a negative message: the difficulty of influencing attitudes and behavior. Here, we will discuss what possibilities actually exist, in spite of the difficulties.

Most media messages can have a certain influence on opinions and attitudes even if this does not imply behavior change (Condelli, 1984; Syme, 1987). This fact is particularly evident when it comes to desirable behavior involving a notion that people should abstain from something—for example to decrease indoor temperature. Prices and legislation seem in such cases to have a larger effect. One example of guidance of behavior by means of legislation is the Swedish energy policy with reference to the construction of new homes. State loans to construction are awarded only if certain measures for energy conservation are observed.

More efficient means of communication could perhaps change the picture (Ester, 1982) and create more correspondence between attitude and behavior. However, most media users find it quite difficult to influence attitudes.³ This difficulty can be partly explained by the fact that people are on their guard when someone tries to influence their attitude and behavior. Another explanation could be that the political decision-makers often base energy conservation programs on the assumption that people are rational and try to minimize energy expenses and maximize income by choosing the most cost-effective alternatives. Yet, it is by no means always true that people are rational decision-makers—on the contrary, they behave most of the time in violation of economic man models (Kahneman, 2000).

There is abundant support that persuasive communication has little impact in attempting to make consumers alter their consumption behavior. Although consumers know in detail about the economically deleterious effect of much modern consumption, they do not, on the whole, adjust their behavior accordingly. The hedonic reward, gained from easy and ready access to the comfort of heat and light, reduces the incentive to change consumption behavior on rational grounds. Behavior could possibly, therefore, be changed if some salient satisfaction was to be conditioned to a more cautious use of energy. For instance, frequent feedback on the amount saved as a result of a decrease in personal consumption could provide that kind of reward. The reward *per se* remains, however, with a different content—a little less heat and light in exchange for a little more money to spend on other things. The quarterly bills from the gas and heating companies could be a possible messenger of such feedback (Foxall, 1994).

Naturally, a message which comes from a trustworthy source leads to larger attitude changes than the same message coming from a non-trustworthy source (Archer, 1984). The trustworthiness of a source increases with its level of education, social status and status of occupation (Hass, 1981). When conservation programs are designed it is thus important who is perceived to be behind them. It is likely that different consumer groups such as different age-groups, income-groups and educational-groups experience different trustworthiness with the same source. For example, it has been found that certain specially designed energy conservation programs have been more successful in reaching the elderly than other programs (Berry, 1988). Attitudes are of course influenced by many others aspects except information. Disasters such as the Chernobyl accident have influenced the attitudes towards nuclear power (Krohn, 1987; Sjöberg & Drott, 1987).

Lifestyles

We now turn to a review of research about lifestyles and we will put a certain emphasis on energy consumption in this respect too. We will also be concerned more generally with consumer behavior because marketing researchers have designed the concept of lifestyle and use it extensively.

The concept of lifestyle has met with much interest in marketing since it was first suggested in the middle of the sixties (Lazer, 1963; Alpert & Gatty, 1969; Wells & Tigert, 1971). It seems to have been inspired by the writings on lifestyles and personality by Adler (1962). Indeed, it was preceded by attempts (Evans, 1959; Westfall, 1962), largely failures, to relate consumer behavior to personality dimensions (Kassarjian, 1971). It was also preceded by the 'motivation research' movement in marketing (Dichter, 1960), which attempted, and also failed, to apply psychoanalysis to consumer behavior and marketing. The failure is not surprising in view of the theoretical (Macmillan, 1991; Grünbaum, 1993) and empirical (Eysenck, 1985) weakness of the very foundations of psychoanalysis,⁴ see also Sjöberg (1990, 2000a, 2000b, 2000c). A close scrutiny of the empirical claims made by Freud strongly suggest them to be largely fraudulent (Crews, 1996, 1998; Scharnberg, 1993a, 1993b; Benésteau, 2002).

An early example of lifestyle application to consumer behavior is given by Bass *et al.* (1969) who reported considerably better predictive power (in predicting purchase behavior) from attitudes and interests than from demographics. Wells (1975) described five types of what he called psychographic analysis:

- profiles based on general lifestyles;
- product specific psychographic profiles;
- profiles based on personality dimensions;
- market segmentation on the basis of general lifestyles;
- market segmentation on the basis of product specific dimensions.

During the last few decades it has been rather popular and probably quite profitable to suggest new methods and dimensions of psychographic analysis; about 25 systems are known (Robinson & Shaver, 1985) and an original suggestion by Rokeach described below has remained popular. The lifestyle concept is partly based Maslow's (1954) theory of motivation which has been found repeatedly to be empirically untenable (Wahba & Bridwell, 1976; Neher, 1991; Watson, 1996; Sjöberg, 1999a, 1999b, 1999c). Rokeach (1968–1969, 1973, 1974, 1979, 1989) suggested a system of value dimensions which has been the basis of much of the practical applications. Rokeach's idea was to study rank orders in importance of 18 terminal and 18 instrumental values.⁵ Examples of his terminal values are freedom, equality and salvation and examples of his instrumental values are honesty and cleanliness. He assumed that these values determine the attitude to specific objects or concepts and also behavior. He cited as support for his assumptions data on statistically significant relationships, but he gave no information about the strength of the relationships or more specifically about the relation to attitudes and concrete behavior. The latter relationships seem to have been considered by him as self evident on the basis of the fact that he could show that certain special groups rank ordered value-dimensions in different ways. For example, policemen tended to put freedom in the first place while unemployed black men put equality in the first place (Rokeach, 1968–1969).

On the basis of several varieties of questionnaires typologies of different contents have been designed (Swiners, 1979; Valette-Florence, 1989), *viz.* in the United States and France:

CCA:	14 social groups
COFREMCA:	9 socio-cultural groups
IPSOS:	6 psychological types
Yankelovitch, Skelly and White:	6 types
Leo Burnett:	19 groups
Needham:	10 groups
SRI:	9 types

Valette-Florence (Valette-Florence, 1989, 1994) summed up the criticism of the lifestyle concept:

1. a lack of theoretical basis;
2. exaggerated statements about precision;
3. different conclusions when using different systems;
4. very weak ability to predict consumer behavior.

To this one could add that many important actors do not publish their items and not even their statistical methods (Valette-Florence, 1989)! Valette-Florence pointed out that CCA present their result in two dimensions (probably on the basis on hundreds of questions) but do not explain how they were able to reach such a simple description. One cannot but agree with his skeptical attitude.

Rokeach's theory has been very successful in attracting attention. There are several critical points, however. For example, Jones *et al.* (1978) found that only one-third of Rokeach's values were among the most often mentioned ones when people were asked to make a free list of values. In the Swedish context, some of the values seem less relevant. In Sweden it is probably Zetterberg's (1977) suggestion of a conceptual scheme which is best known. This scheme seems to be stimulating speculative interpretations. An application example will now be described.

A Swedish example: lifestyles and energy consumption. In a study of energy consumption the Zetterberg scheme was used (Berg, 1989). A start was made in Zetterberg's eight lifestyles, *viz.*

- work oriented
- family oriented
- socially oriented
- nature oriented
- religiously oriented
- societal orientation
- consumption orientation
- entrepreneurs

The authors added to this set of concepts the following three types:

- agrarians
- materialists
- market oriented

Unfortunately no statistical analyses of the relationships between energy behavior and lifestyles were reported but on the basis of the rather cautious formulations used by the authors and some reservations in the text it seems as if there have been no clear relationships detected. In such a case the result would be in accordance with other research on lifestyles.

In a later report continued research is described by the Östersund group (Olsson, 1991). As far as we can see there is nowhere in the two reports any account of how the original grouping of lifestyles and energy characters was constructed. When it comes to lifestyles reference is made to Zetterberg but how their own three additions, see above, were constructed is not clear. The four 'energy characters' are suggested to be:

- the moralist
- the competent traditionalist
- the yuppie
- the collectivist

But regarding these characters it is only said that 'they used to be mostly a theoretical construction but that they can now be given an expanded and deeper description' (p. 23, our translation). According to the authors 'our so-called energy characters is a better way to understand the real motives behind energy consumption and energy conservation for different groups' (p. 25, our translation). The description mentioned here is simply the relationship between energy characters and other variables. However, no measures are given of how strong these relationships were. The authors only report descriptive data on means in the different segments. Other types of validation were instead attempted. Male respondents to a questionnaire (response rate 37%) were asked if they could assign themselves to any of the energy characters. The respondents claimed that they could do so in 79% of the cases.

The question of lifestyle is often treated in a rather confusing manner. The concepts presume that there in fact *are* general constellations of habits, values and attitudes. A typical quotation:

It is still important to point out energy habits are a part of a whole lifestyle. (Edén, 1987, p. 32)

But empirical data indicate that energy habits in fact are rather specific, see for example Klingberg and Similä (1984) about energy conservation actions taken by owners of one-family houses. If the habits are the expression of lifestyle variability it has so far not been possible to measure it. Gaunt (1985) did find that shower habits were the best predictor of energy consumption, followed closely by indoor-

temperature. Shower habits can perhaps be said to express a lifestyle but having done so nothing of interest has been said about them. Such habits have not thereby been explained or even related to any other behavior or any other factor.

Lifestyles and Behavior

There is international research about the relationship between lifestyles measured in one way or another and behavior, in particular consumer behavior. Kapferer and Laurent (1981) reported in an early paper that lifestyles explained much less than demographic variables and less than 10% of behavior. Valette-Florence (1991, 1994; Valette-Florence & Jolibert, 1990) considerably expanded on their analysis. He used Rokeach's value dimensions, COFREMCA/CCA's lifestyle classification,⁶ and measures of involvement in the product (Laurent, 1985), the latter differentiated in stable and temporary components. The products were cooking oil and quality wine. Valette-Florence found traces of improvements of prediction of consumer behavior only by instrumental values and involvement, not by lifestyles, and even those variables had a very modest effect, hardly visible at all.

Giannelloni (1991) analyzed the relationships between attitudes to environmental protection, age, education and values. He found that values had some influence on attitudes, and also that different sets (individual or social) of values were related to environmental attitudes (Giannelloni, 1992). The influence was, however, hardly noticeable beyond the effects which could be established on the basis of age and education.

Kapferer and Laurent's work from 1981 is still important. They studied how much of the variance of consumer behavior could be explained by two lifestyle classifications (COFREMCA/Demoscopie and CCA) and by demographic information. Table 2 gives the results in terms of explained variance in linear prediction. The table shows very clearly that the employed lifestyle systems had only very marginal relationships with consumer behavior. The results are typical for what other researchers have found in other application areas.

Kahle *et al.* (1986) compared the SRI-system VALS with Kahle's (1983, 1991) list of values LOV with reference to 73 criterion variables and found better explanatory value with LOV than with VALS, but Novak & MacEvoy (1990) pointed out that they had included demographic variables in LOV (age, sex, civil status, race, education, social group, income and conservativeness). Novak and MacEvoy instead compared VALS and LOV both *without* demographic variables included in the prediction equations, and *with* such variables included, concerning 64 consumer behavior criteria. They found that VALS was better than LOV only, but demographic variables clearly were best of all. If the demographic variables were used together with VALS and LOV they obtained a marginal improvement (from 4.0 to 4.8 explained variance) of the same size in both cases.

This is undeniably an interesting result. The simple LOV scale gave a modest improvement beyond demographic variables. At the same time one must note once

Table 2 Explained variance of consumer behavior with regard to different products, partly on the basis of two lifestyle systems, partly with the aid of straightforward demographic background data. Data from Kapferer and Laurent (1981)

	Cofremca/ Demoscopie	CCA	Demographicinformation
Hairspray	0.82	0.00	4.16
Shampoo	2.24	0.47	24.16
Balsam	0.68	0.13	3.66
Hairdo	0.04	0.00	2.57
Cleaning lotion	1.67	0.23	5.55
Face cream	2.59	0.00	6.98
Body lotion	0.00	0.54	2.36
Cleansing cream	2.28	0.00	5.46
Toothpaste	0.65	0.12	4.32
Cold cream	0.31	0.00	1.20
Eye cosmetics	2.32	0.00	7.94
Nail-varnish	1.86	0.50	6.35
Lipstick	0.66	0.11	4.72
Sun lotion	2.76	0.12	7.83
Depilatory	1.66	0.50	2.45
Deodorants	0.94	0.00	6.02
Shower soap	0.08	0.02	1.93
Bath accessories	0.45	0.06	6.18
Eau de Cologne	0.42	0.19	1.81
Napkins	0.92	0.65	24.05
Tampons	2.50	0.00	7.47
Eau de toilette	1.10	0.00	6.67

more that the share of explained variance stopped at a very low level.⁷ It can be added that VALS has been criticized because it has never been shown on what grounds the method is claimed to be valid (Kahle *et al.*, 1986).

It can be added that both Rokeach's system and LOV utilize rank-ordering of a number of value dimensions. Rank-ordering is time-consuming and impractical in surveys because many respondents do not understand how to do it or do not pay sufficient attention to the instructions. It is more practical to use judgments of each value dimension separately (Munson, 1979). Rankin and Grube (1980) found that such judgments had a larger predictive value than rank-orders. Admittedly, there is a risk that judgments become contaminated by systematic response biases, such as social desirability and acquiescence, but it is an empirical question which method is least affected by bias factors. Greenleaf (1992) has reported an interesting methodology for correcting for response bias.

Homer and Kahle (1988) used LOV, as well as measures of attitudes and behavior, and tested the hypothesis of a causal flow from value to attitudes to behavior. They found good agreement between this model and their data. Yet, the value dimensions gave little in addition to attitudes when it came to the prediction of behavior. At least in this case the value dimensions in fact had a certain predictive ability with reference to behavior even if this predictive ability was wholly absorbed by the attitudes.

Kamakura and Mazzon (1991) have explored a model which utilizes the full information about rank-orders of values in LOV (traditionally only information about the highest rank was used) and which makes it possible to estimate the number of latent segments. Their predictive validities were on the same level as Novak and MacEvoy reached with simpler methods, i.e. a little less than 5% on the average. Kamakura and Novak (1992) developed this system further, and showed that they could improve on the predictability of LOV by means of a highly simplified system of four latent segments, in good agreement with the system of values suggested by Schwartz and Bilsky (Schwartz, 1987; Schwartz & Bilsky, 1990), see also Gendre *et al.* (1992).

Lastovicka *et al.* (1990) published a study which had a number of new aspects. They posed the question whether different methods lead to the same classification segments—for example if there are convergent results with interview data and questionnaires. They found convergence with their own method for measurement of alcohol consumption and traffic behavior but not with VALS. The article is interesting also because they used an unusual method of factor analysis of data which are generated by the use of several different parallel methods for measuring the same concept (Browne, 1984).

Horn (1991) gave an interesting review of the practical application of lifestyles in marketing by the advertising agency DDB Needham. This agency every year collected new data with the help of a mail questionnaire which is asserted to attract the response rate of 80% and posed about 1000 questions to a sample of about 4000 respondents.⁸ Many questions are repeated every year. This agency was definitely of the view that product specific psychographic profiles is the most useful approach but even for such specific variables, they seldom reached more than 10% explained variance at the level of individual respondents. According to Horn they were not so troubled by this low validity since their application was on the level of aggregates. However, while it is certainly true that correlations increase when they are computed on aggregate data this gives only an illusion of control.

Another attempt to study lifestyles and energy consumption has been reported by researchers at EPRI, Palo Alto, California. They have carried through the construction of a brief questionnaire which can be used to classify consumers in six categories:

- lifestyle simplifiers
- resource conservers
- pleasure seekers
- appearance conscious
- hassle avoiders
- value seekers

The researchers at EPRI hoped in this way to identify variables which give a better prognosis of energy consumption and related variables than demographic variables, personality and general values. The positive aspect of this approach is that it is

directly adapted to energy consumption and is the basis of computer-based decision aids (EPRI, 1989, 1989).

Lifestyles and Risk Perception: Empirical Analysis

We now turn to our own empirical work on lifestyles and risk perception. Three themes are pertinent in this section, differing with respect to how lifestyles are conceptualized.

1. Lifestyles as measured by the Dake–Wildavsky scales (Wildavsky & Dake, 1990).
2. Lifestyles as measured by a Swedish adaptation⁹ of the ‘Agoramétrie’ model (Durand *et al.*, 1990), by Zetterberg.
3. Lifestyles as measured by Kahle’s LOV.

The questionnaire included a number of questions measuring:

- Perceived nuclear waste risk, personal and general, three items of each. They were used to form two indices which were the main dependent variables used in the present analyses.
- Zetterberg’s 25 items, according to him measuring ‘Agoramétrie’ dimensions.
- Kahle’s List of Values, nine items for ranking and nine items for rating. These were analyzed separately.
- Dake–Wildavsky items, six in all, two for each of the hierarchic, individualistic and egalitarian dimensions.

The main data set used in this analysis was collected by means of a mail questionnaire, concerned with nuclear waste risks. The questionnaire was sent to a random sample of the Swedish population ($N = 1700$), 65% response was obtained. A full report on the study is available elsewhere (Sjöberg & Drottz-Sjöberg, in press); here we report only the results on the lifestyle instruments.

There were 1099 respondents in all, but a third of them had been given a slightly different version of the risk judgment task and were excluded (pair-wise). The N values of the correlation coefficients were on the average about 800.

Before proceeding with the analyses we discuss Agoramétrie and Cultural Theory somewhat more in detail, in the latter case also data bearing on the issue of the validity of the theory.

The ‘Agoramétrie’ Approach

Durand *et al.* (1990) suggested an approach to values which emphasizes social conflicts. They and others have found a two-dimensional structure on the basis of judgments of agreement with statements formulated to reflect the various conflicts. Two dimensions were interpreted: compromise versus dramatization and movement versus stability.

The position of the two axes chosen by the French team is open to discussion. For example, they would suggest common psychological contents of the two attitude statements supporting (a) 'Hashish on free sale', and (b) 'More nuclear power plants'. Two oblique dimensions which could be termed radical-conservative and belief in authority versus distrust of authority seem to make more sense psychologically. Worry over the environment and a critical attitude towards technology then come out as tied most directly to the attitude to authority. In turn, such a finding would be well in line with the moderately strong explanatory power of confidence in experts when it comes to the perceived risk of nuclear waste (Sjöberg, 2004a, 2004b). Note also that the French experience with Agorametrie (Barny & Brenot, 1991; Pages *et al.*, 1991) does not indicate any very strong correlations between risk perception and lifestyle dimensions.

The Swedish adaptation uses a set of three questions, which include a total of 25 items. The respondent is asked to pick a few of the most desired items in each question, measuring interests and wishes. In our application we changed the response format to one of rating: Each of the 25 items was rated by the respondents. The data have been subjected to factor analysis but results were unclear. Instead, we use the single items as predictors in the regression analyses to be reported. This insures that all information is retained in the analyses, in contrast to a factor score approach.

Lifestyles Measured According to Cultural Theory

Wildavsky and Dake (1990) proposed, in line with the earlier work of Douglas and Wildavsky (1982a, 1982b), and based on Cultural Theory (Thompson *et al.*, 1990), that risk perceptions should be understood in a functional framework: they have the function to support a lifestyle. People express, in their risk perceptions, cultural biases which in turn 'defend' different patterns of social relations. In their model, social relations are conceptualized in a small number of major distinctive patterns, the most important being hierarchical, egalitarian and individualist.¹⁰ The cultural biases are expressed not only in terms of risk perceptions, of course, but also in terms of broad systems of ideology, which form clusters of beliefs. Briefly, the hierarchical ideology supports the establishment, promotes trust in expertise and abhors social deviance. Individualist ideology, on the other hand, gives priority to individual achievements and stresses that people should have material rewards for their work. Subscribers to egalitarian beliefs, finally, are deeply distrustful of the institutions and their experts, which are seen as motivated by selfishness and greed, and as obstacles to a society characterized by brotherhood and equality.

In this model, egalitarians stand out as being the most suspicious of technology and hence likely to rate its risks as high while the other two types of ideologies would be associated with a lenient attitude to technology risks, and with fear of social deviance (hierarchists) or war and economic hardship (individualists).

Wildavsky and Dake reported results based on data from two samples. Ideologies were defined on the basis of attitude items and correlated with risk ratings. They found, on the whole, moderately strong support for their model. Egalitarians gave high ratings of technological risk, hierarchists high ratings of risks of social deviance and individualists of war risks.

The results reported by Dake and Wildavsky have not been replicated in other studies. Renn *et al.* (1992) tested Cultural Theory on small data sets obtained from student samples. They found only weak relationships between risk perception and the cultural orientations. Slovic *et al.* (1992) performed a large scale study of perceived health risks in Canada and included some items measuring Cultural Theory concepts. Systematic relationships were found, but they were weak. Sjöberg and Drottz-Sjöberg (1993) tested six items based on Cultural Theory and found that they could explain less than 10% of the variance of perceived nuclear risk. For reviews of empirical work on Cultural Theory and risk, see Sjöberg (1996a, 1996b, 1997a, 1997b) and Boholm (1996).

In a previous paper (Sjöberg, 1991) the Dake–Wildavsky scales were translated to Swedish¹¹ and administered to a group of 145 students who applied to the Stockholm School of Economics. This was a group which mostly consisted of high achievers in high school. The scales for egalitarian, individualistic and hierarchic attitudes were used without items that explicitly mentioned industry and technology, since we felt that any correlations with risk ratings and those items would be due to a semantic overlap.¹² Cronbach's alpha values for the egalitarian, individualistic, hierarchical and fatalistic attitudes were 0.734, 0.528, 0.336 and 0.605, respectively. These values are not impressive and too low to be acceptable. The number of items of the different scales, in the same order, was 14, 11, 7 and 11. The mean scores¹³ were 3.32, 3.25, 3.70 and 2.01. Hence, these subjects were about equally likely to endorse items from the first three dimensions but tended to reject fatalism as an orientation. The standard deviations of the scores were 0.48, 0.39, 0.51 and 0.44.

The subjects were divided at random into two groups which rated the same risks¹⁴ but defined either as risks to people in general or as personal risks. The risk ratings were correlated with the attitude scores. The correlations were not very impressive. Of 216 correlations, only 24 were significant at the 0.05 level. There were some interesting trends, however:

1. The correlations between attitudes and risk ratings were higher for personal risks than for general risks.
2. There was no trend that risks due to technology/industry were more strongly correlated with egalitarian attitude than other risks. For example, the risk of being struck by lightning gave the highest correlation of all risks with the individualistic attitude.
3. On the basis of the signs of the correlations, there was a tendency for egalitarian and fatalistic attitudes to correlate positively with risk ratings, while individualistic and hierarchic attitudes correlated negatively. This trend was quite clear although

the correlations were very small and not at all comparable to the results reported by Dake and Wildavsky.

Since there were no clear structural differences among the 27 risks when it came to correlations with the cultural attitudes the risk ratings were pooled to an average rating. The average rating was predicted from the four attitude scores by means of a multiple linear regression function. The squared adjusted multiple correlation was 0.040, and the beta weights for egalitarian, individualistic, hierarchic and fatalistic attitudes were, respectively, 0.165 (borderline significance, $p=0.07$), -0.084 , -0.050 , and 0.108. (None of these beta weights was significant). The corresponding Pearson correlations with average risk ratings were 0.188, -0.156 , -0.083 and 0.124. None of these correlations was significant, although the first two were almost significant at the 0.05 level.

The conclusion on the basis of the present analysis is that Cultural Theory is on the whole of little value in understanding risk perception. The data were rather special, however, and based on a non-representative sample, like most published work on Cultural Theory. We now turn to the results from a representative sample.

Analysis of Risk Perception and Lifestyles on the Basis of Data from a Representative Sample

The present section is devoted to the main empirical analysis of the present article. As noted above, extensive data were available on three lifestyle measurement systems, as well as data on perceived nuclear waste risk, personal and general. An initial question is to which extent the lifestyle items could explain the variance of perceived risk, as compared to a simple demographic approach (sex and level of education). These analyses, as all others, used linear multiple regression models. The results are given in Table 3.

It is clear that little variance of risk perception could be explained on the basis of Cultural Theory and LOV items, while the Zetterberg approach offered some hope in explaining some additional share of the risk perception variance.

The basis of comparison for the following analysis was the basic risk perception model of Sjöberg and Drottz-Sjöberg (Sjöberg & Drottz-Sjöberg, 1994; Sjöberg, 2000a,b,c). This model uses a number of powerful explanatory variables and

Table 3 Proportion of variance accounted for by demographics and lifestyle items in isolation

Predictors	General risk	Personal risk
Demographics	0.089	0.103
Cultural Theory	0.049	0.042
LOV, ranks	0.025	0.035
LOV, ratings	0.049	0.052
Zetterberg's agorametrie	0.210	0.225

accounted for 0.663 and 0.646 of the variance of general and personal risk, respectively. The explanatory variables were:

- demographics;
- attitude to nuclear power;
- 21 risk dimensions (voluntariness, new to science, etc.);
- trust in experts and authorities;
- risk to future generations;
- risk of natural background radiation;
- anxiety;
- general sensitivity to risks (non-nuclear);
- measures of perceived physical risk such as the length of time nuclear waste would be dangerous.

Although the full model was extensive and included 35 explanatory variables, only few of these had substantial impact. In the following, all have, however, been retained, and form the basis to which each of the four sets of lifestyle items is added. Table 4 gives the share of variance added by each these sets of items.

It is seen in the table that virtually nothing is added to the basic risk perception model by including lifestyle items. The worst result is given by Cultural Theory. LOV ratings did better than ranks. The Zetterberg items, while having some predictive value in isolation, were not able to add to the basic model—what predictive power they had was absorbed by the model.

It is clear from these results that

- lifestyle items had little or nothing to add to the understanding of risk perception, just as they have been found to add very little to the understanding of consumer behavior;
- risk perception can be explained quite well by a very different approach, the Basic Risk Perception Model, cp. a recent study on extensive data on nuclear waste (Sjöberg, 2004a, 2004b).

But still, can it be concluded that lifestyle items are totally *unrelated* to risk perception? By no means—they just have a weak relation and add little, but some items can easily be demonstrated to have a systematic relationship, on the average.

Table 4 Proportion of variance accounted for by demographics and lifestyle items in addition to the basic risk perception model of Sjöberg and Drottz-Sjöberg (1994). $N = 800$

Predictors	General risk	Personal risk
Cultural Theory	0.005	0.004
LOV, ranks	0.006	0.009
LOV, ratings	0.018	0.022
Zetterberg's agorametric	0.010	0.010

Such a relationship is also easily demonstrated to be statistically significant if the sample is large enough. Hence, it is clear that one can rather easily find some items which fit the theory fairly well. Other items, for obscure reasons, do not work at all.

Discussion

As a final comment on Cultural Theory, it is also doubtful that the model is a useful explanation of risk perception if the data on cultural comparisons are considered. Widely different groups, such as well to do and high achieving Swedish students in a graduate engineering school on the one hand, very poor slum dwellers in Brazil with little or no education on the other, have been found to give similar rankings of risks (Nyland, 1993). The rank order correlation between the two sets of mean risk ratings was 0.745. We find it hard to believe that those two groups have very similar cultural beliefs. Indeed, Brazil and Sweden are very different countries. Still, there seems to be a commonality of humankind which may account for the similar reactions. This commonality may partly reflect the *real* risks in the environment, which surely to a large extent vary in level for the two groups, but not necessarily in rank order. It could also be a question of mass media coverage. The transition from communism to open democratic societies in such countries as Romania and Bulgaria carried with it both heightened risk perception and strongly increased coverage of domestic risk issues in the media (Sjöberg *et al.*, 2000).

The results of the Swedish data on 27 rated risks suggest that *all* types of risks correlate with the cultural attitudes, and the pattern of correlations suggests that perceived control could be the factor responsible for these results. In other words, people who espouse a strongly egalitarian or fatalistic attitude may have in common that they perceive that they have little control over risks and threats. Individualists may perceive that they do have control while hierarchists may perceive that there are benevolent forces in the environment which have control and will protect them.

Cultural Theory did not give very impressive results in this attempt at a cross-cultural validation on Swedish data, but the trends that did appear were roughly in agreement with the Dake–Wildavsky findings, only very much weaker. This is in good agreement with other research (Sjöberg, 1998a, 1998b, 1998c). Why is it that these data show so small correlations between perceived risk and cultural orientations?

Several explanations have been suggested. Maybe the first group, students, was in some way special and did not include enough variability. But the second data set, giving very similar results, was obtained by means of a probability sample of the whole population. Or maybe the translations from English to Swedish were not good enough. This seems to be very far-fetched since the items are written in clear, straightforward language, using simple concepts. We have also worked with the brief version of six items distributed to a very different group of older people and obtained

very similar results. In addition, we translated the 53 item to Portuguese and obtained data from 102 high school teachers in Brazil (work in progress). The results were quite similar to the Swedish ones.

The original results as published by Dake and Wildavsky (1990) show correlations between perceived risk and attitude score *only for risks where significant correlations had been obtained*. This could contribute to capitalizing on chance.

The other two lifestyle approaches did slightly better than Cultural Theory, but not much. General value dimensions tend to be very little useful for the prediction of specific data such as the perception of specific risks (Sjöberg, 1997a, 1997b). When it comes to consumer behavior, it is likely that consumer behavior is too specific to be explainable on the basis of very general concepts (Jonesa *et al.*, 2003).

In this section we also mention briefly research on the adoption of technology, such as computers and new communication systems. This is, in a sense, the opposite of risk reactions with reference to technology. Trachtman *et al.* (1991), to take an example, studied the adoption of a new telecommunications technology, which failed largely due to (a) a lack of clearly perceived benefits, and (b) egalitarian values among teachers (the system was not made universally available). The picture provided by this case study is that of rather rational reactions to new technology, in line with the notion, espoused by us, that the perception of technology risk is largely driven by real risk. In our work, we have found that the substitutability of a new technology is a crucial factor, more important than perceived risk (Sjöberg, 2003a, 2003b, 2003c).

There have been two lines of research which provided the basis for the present conclusions about lifestyles: risk perception and consumer behavior. Risk perception and consumer behavior are of course different phenomena, although perceived risk may be increasingly important in motivating consumers to opt for 'environmentally friendly' products (McDaniel & Rylander, 1993). Yet, the weak links that have been found between more or less general value dimensions and more concrete, specific behavioral items illustrate, once more, the validity of the assertions based on Table 1: *In the prediction of specific behavior, 'proximal' variables constitute the only known efficient basis* (Sjöberg, 2003a, 2003b, 2003c). Older work on correlations and semantic relatedness confirms these findings on risk perception (Sjöberg, 1980).

The Functions and Future of Lifestyles

If it is true that present lifestyles measures do not correlate to any noticeable extent with behavior one might ask why they are being used. One reason may be that mass media now and then report about lifestyles and almost always without any critical comments. The readers are given the expression that important results have been obtained and there is no hint that one should adopt a critical or skeptical attitude and ask for evidence. A third reason which may be more interesting has to do with the lifestyle concept being an example of categorical thinking exemplified in other contexts with prejudice. It is tempting to conceive of the world as being populated by

a small number of human types. It is more unnatural and difficult to deal with a continuous variation. In psychology typologies were popular about fifty years ago. A fourth reason, which is the most likely one, is that there is a large and lucrative market for lifestyle consultancy.

It is sometimes asserted that lifestyle data can be used to plan mass-communication campaigns. Perhaps that is a possibility. If so, the question is why. In popular psychology there is often a similar argument made for a host of test methods which are considered to be useful for personality measurement (Rorschach, TAT, graphology etc.)—in spite of the fact that extensive research has shown that the methods lack validity.¹⁵ It is likely that a good deal of this *experienced* validity (different from real validity) of tests depends on the so-called Barnum-effect (Guastello, 1990, 1989; Prince, 1990). Statements based on tests are simply to a large extent containing generally shared stereotypes and clichés ('he becomes stressed if he has too much to do'), which make a scientific and solid impression. Lifestyles relate in a similar manner to prejudices and unbased common-sense notions. In addition, it is well-known that people tend to be over-confident in their predictions (Fischhoff, 1980; Sjöberg, in press). Experts are quite prone to be affected by this type of bias, possibly because they have such rich knowledge structures and are tempted to exaggerate the importance of weak or even irrelevant cues (Mahajan, 1992).

One could wonder, however, whether there is a good alternative, based on empirical results, to lifestyles or related approaches. In recent marketing literature, alternative methods of segmentation on the basis of lifestyle have been put forth. Perhaps such efforts have been prompted by the acknowledgment of how blunt traditional segmentation procedures really are. Perhaps such efforts are seen as acute in view of the elusive character of the new generation described as, amongst other things, 'resistant to advertising' and 'individualistic' (Wolburg & Pokrywczynski, 2002).

For instance, Schindler and Holbrook (2003) argued that nostalgic preferences should be considered a psychographic characteristic, because such preferences could be of potential importance in guiding the use of consumer segmentation. They based their proposition on tentative results suggesting that influences and experiences during late teens and early twenties play a significant role in determining subsequent preferences for fashion and entertainment products. Peltier *et al.* (2002) pointed to the possibility afforded by the new computer technology to capture individual-level data on customers. In drawing on such data, it is possible to target consumers in a fashion that will best match their purchasing needs. It is quite apparent that the lifestyle concept is less prominent in new approaches such as these.

Lawson and Todd (2002) even argue for a return to basics in sociological theory. They refer to Weber's original discussion of status as a 'style of life' that is related to the possession of economic resources and power. As industrialism arose, a change in the organizational principles of society followed. In order to make the necessary accommodation to different economic conditions, a change in ways of living will

always follow. Hence, the authors suggest that segmentation in terms of lifestyle should (Lawson & Todd, 2002) be based on social stratification.

Armstrong (1992) studied the prediction of consumer behavior by experts and novices. He asked academics, practitioners and students to guess the outcome of research designs that had been previously published, and found that no group performed better than chance. In fact, academics performed statistically *worse* than chance! The implication seems to be that consumer behavior really is very hard to predict *both* on the basis of naive belief systems (students), experience (practitioners) and research experience and acquaintance with the literature (academics).

As shown in the present article, the same is not the case with risk perception, however. Risk perception can be quite well accounted for by the type of models suggested here, and lifestyles add virtually nothing to the explanatory power of the models. The concept of risk perception was, however, enunciated already in 1960 by Bauer to be an important factor underlying consumer behavior (Bauer, 1960). In building on Bauer's theoretical framework, it has recently been shown that variables pertaining to risk perception, rather than lifestyle or psychographics, were proven to be useful to include in a method for segmentation (Mitchell, 1998).

One can ask, of course, what in turn accounts for the variability in such explanatory concepts as fear of background radiation and general risk sensitivity (Sjöberg, 2000a, 2000b, 2000c). Such questions may turn out to be much harder to answer. Scientific development involves, of course, all the time new questions being asked, on the basis of results and insights that have been gained.

Yet, we wish to raise, as a final note, the possibility that lifestyles may in fact have something to do with risk perception. Several lines are worthy of following in this work:

1. So far, lifestyles have only been related to perceived risk, which is only one and perhaps not the most important risk perception dimension. In particular, demands for risk reduction need to be measured separately, as well as probabilities of harm and perceived consequences (Sjöberg, 1993, 1999a, 1999b, 1999c). Another interesting dimension is worry over risks (Sjöberg, 1998a, 1998b, 1998c), still another is concern.
2. Lifestyles can be measured in many ways, and some of them are more promising than others. The ones tried here certainly did not seem to be very promising, but others might well be. In previous work, we have found that *interests* were strongly correlated with perceived risk (Drottz-Sjöberg & Sjöberg, 1991; Sjöberg, 2003a, 2003b, 2003c). It would therefore be a natural step to develop this theme further. Another possibility is that of 'New Age' beliefs which have been found to have a stronger relationship to risk perception than Cultural Theory dimensions (Sjöberg & af Wählberg, 2002).
3. Even if models such as the present Basic Risk Perception Model account for most of the true variance of risk perception, further analysis may reveal the existence of causal factors which have not, at this point, been included in the model. Recent

analyses have shown the existence of such systematic residuals, even with very powerful models (Sjöberg, 2004a, 2004b).

Acknowledgements

This study was supported by a grant from the Swedish Council for Planning and Coordination of Research and by the Bank of Sweden Tercentary Fund.

Notes

- [1] Sjöberg & Montgomery (1999) showed that the apparently good fit of expectancy models of attitude is misleading and that beliefs and values do not have the static character assumed in such models.
- [2] There is a trend towards more ambitious sampling. However, the field is still struggling with methodological problems. In a comparison of Japanese and US data (Hinman, 1993), a response rate of some 35% was accepted for the Japanese data. Response rates in the range 20–30% have been accepted in other work. See the methodological discussion by Sjöberg and Drottz-Sjöberg (2001).
- [3] McGuire (1985) has pointed out that advertising industry which was worth about 50 billions dollars per year hardly could document anything else than very marginal effects on attitudes and consumer behavior.
- [4] Yet, there is probably wide-spread belief in the marketing profession and the public that psychodynamic concepts and theory can be used to devise very effective advertising, e.g., by using more or less covert sexual themes.
- [5] A dimensional analysis is given by Vinson *et al.* (1976).
- [6] This is an AIO (Activities Interests Opinions) approach, differentiated from value systems according to Rokeach or Kahle's (1983) LOV (List of Values), a modernized and shortened version of Rokeach's list. CCA refused to show their questions to Valette-Florence who could only work with the classification which they presented. Commercial reasons apparently dictate much secrecy among those who market systems of segmentation based on life styles. Kahle (1991) points out that this is true also of SRI's (Stanford Research Institute) life style methodology, VALS II, which is being kept secret. The COFREMCA/CCA system is a commercial system which is common in France and is being exported to various European applications in the form of 'Euro-Socio-Styles'. Some Swedish advertising agencies seem to be skeptical about life styles but when some of them are bought by foreign firms they may be changing some of their routines and start to use life style systems developed internationally. Media attention is often more or less certain when it comes to new lifestyle approaches, thereby creating a market demand.
- [7] Even with such a low level as a few percent of explained variance it can still be possible that there is a certain practical value of segmentation, cp. (Novak, 1992); on the other hand the theoretical gain for understanding social phenomena is very marginal.
- [8] Horn does not explain how they were able to obtain 80% response rate with a questionnaire using 1000 questions. The attempts by CCA to develop a European system led, according to Valette-Florence (1989), to a questionnaire of 300 pages and a data base including 7000 variables. One gets the impression that energy has replaced theoretical analysis in this work. It is not clear whether the questionnaire used by CCA should be responded to in its entirety by each respondent.
- [9] These items were made available to us by Demoskop.
- [10] Cultural Theory suggests that there are two more 'cultures': fatalists and hermits.
- [11] We are grateful to the late Karl Dake for providing us with these scales.

- [12] However, we did run all analyses with those items included as well. There were no important differences as compared to the results that are presented here.
- [13] The scores were computed as means of ratings of items which had been responded to.
- [14] There were some variations also in the rating scales themselves, but for the present purpose they were all converted to a common 0–5 scale before proceeding with the analyses reported here.
- [15] Great economic profit is reaped from these methods. Rorschach was recently exposed as a failure on several empirical grounds, yet at least one million people are tested worldwide every year (Wood *et al.*, 2003).

References

- Adler, A. (1962) *Understanding Human Nature*, Allen & Unwin, London.
- Ajzen, I. & Fishbein, M. (1977) 'Attitude-behavior relations: A theoretical analysis and review of research', *Psychological Bulletin*, vol. 84, pp. 888–918.
- Ajzen, I. & Fishbein, M. (1980) *Understanding Attitudes and Predicting Social Behavior*, Prentice-Hall, Englewood Cliffs, NJ.
- Allen, C. T., Machleit, K. A. & Kleine, S. S. (1992) 'A comparison of attitudes and emotions as predictors of behavior at diverse levels of behavioral experience', *Journal of Consumer Research*, vol. 18, pp. 493–504.
- Alpert, L. & Gatty, R. (1969) 'Product positioning by behavioral life styles', *Journal of Marketing*, vol. 33, pp. 65–69.
- Archer, D., Pettigrew, T., Constanzo, B., Iritano, I., Walker, I. & White, L. (1984) *Energy conservation and public policy: The mediation of individual behavior*. Paper presented at the Summer Study on Energy Efficiency in Buildings, American Council for Energy-Efficient Economy, Washington, DC.
- Armstrong, J. S. (1992) 'Prediction of consumer behavior by experts and novices', *Journal of Consumer Research*, vol. 18, pp. 251–256.
- Barny, M.-H. & Brenot, J. (1991) 'La perception des situations a risques', *Preventique. Prevention et gestion du risque*, pp. 11–19.
- Bass, F. M., Pessemier, E. A. & Tigert, D. J. (1969) 'Complementary and substitute patterns of purchasing and use', *Journal of Advertising Research*, vol. 9, pp. 19–27.
- Bauer, R. A. (1960) 'Consumer behavior as risk taking', in *Dynamic Marketing for a Changing World*, ed. R. S. Hancock, American Marketing Association, Chicago, IL, pp. 389–398.
- Becker, L. J., Seligman, C., Fazio, R. H. & Darley, J. M. (1981) 'Relating attitudes to residential energy use', *Energy and Behavior*, vol. 13, pp. 590–609.
- Benéteau, J. (2002) *Mensonges Freudien. Histoire D'une Désinformation Séculaire*, Paris, Mardaga.
- Berg, M., Söderström, S.-A. & Wolvén, L.E. (1989) *Livsstilar och energikonsumtion—en studie av attityder, kunskaper och beteenden* (No. 1989:4): Högskolan i Östersund.
- Bernström, M.-L., Eklund, Y. & Sjöberg, L. (1997) *Electricity consumption and electricity saving in the Swedish households* (Rhizikon: Risk Research Report No. 27). Center for Risk Research, Stockholm.
- Berry, L. G. & Brown, M. A. (1988) 'Participation of the elderly in residential conservation programmes', *Energy Policy*, vol. 16, pp. 153–163.
- Biel, A., Svenson, O. & Dangården, B. (1989) 'Energy and the public. Country report Sweden', *Study within the work of a Technical Study Committee and Worl Energy Conference (WEC)*, pp.
- Björklund, C. (2001) *Work Motivation—Studies of its Determinants and Outcomes*, EFI, Stockholm.
- Black, J., Stern, P. & Elworth, J. (1985) 'Personal and contextual influences on household energy adaptations', *Journal of Applied Psychology*, vol. 70, pp. 3–21.
- Boholm, Å. (1996) 'The cultural theory of risk: an anthropological critique', *Ethnos*, vol. 61, pp. 64–84.

- Boholm, Å. (1998) 'Comparative studies of risk perception: A review of twenty years of research', *Journal of Risk Research*, vol. 1, pp. 135–164.
- Browne, M. W. (1984) 'The decomposition of multitrait-multimethod matrices', *British Journal of Mathematical and Statistical Psychology*, vol. 37, pp. 1–21.
- Clarke, L. (1989) *Acceptable Risk? Making Decisions in a Toxic Environment*, University of California Press, Berkeley, CA.
- Condelli, L., Archer, D., Aronson, E., Curbow, B., McLeod, B., Pettigrew, T., White, L. & Yates, S. (1984) 'Improving utility conservation programs: Outcomes, interventions and evaluations', *Energy*, vol. 9, pp. 485–495.
- Crews, F. (1996) 'The verdict on Freud', *Psychological Science*, vol. 7, pp. 63–68.
- Crews, F. (ed.) (1998) *Unauthorized Freud. Doubters Confront a Legend*. Viking, New York.
- Crosseley, D. (1983) 'Identifying barriers to the success of consumer energy conservation policies', *Energy*, vol. 8, pp. 533–546.
- Darley, J. & Benninger, J. (1981) 'Diffusion of energy-conserving innovations', *Journal of Social Issues*, vol. 37, pp. 150–171.
- Dichter, E. (1960) *A Strategy for Desire*, Doubleday, New York.
- Douglas, M. & Wildavsky, A. (1982a) *Risk and Culture*, University of California Press, Berkeley, CA.
- Douglas, M. & Wildavsky, A. (1982b) *Risk and Culture*, University of California Press, Berkeley, CA.
- Drottz-Sjöberg, B.-M. & Sjöberg, L. (1991) 'Attitudes and conceptions of adolescents with regard to nuclear power and radioactive wastes', *Journal of Applied Social Psychology*, vol. 21, pp. 2007–2035.
- Durand, J., Pages, J.-P., Brenot, J. & Barny, M.-H. (1990) 'Public opinions and conflicts: A theory and system of opinion polls', *International Journal of Public Opinion Research*, vol. 2, pp. 30–52.
- Eagley, A. H. & Chaiken, S. (1993) *The Psychology of Attitudes*, Harcourt Brace Jovanovich, Fort Worth, TX.
- Edén, M. (1987) *Framtidsbilder och lokal verklighet* (No. ACTH 1987:2): Chalmers Tekniska Högskola.
- Englander, T., Farago, K., Slovic, P. & Fischhoff, B. (1986) 'A comparative analysis of risk perception in Hungary and the United States', *Social Behavior*, vol. 1, pp. 55–66.
- EPRI (1989) *Residential Customer Preference and Behavior: Effective Residential Program Design with PULSE* (No. EM 5909). Electric Power Research Institute, Palo Alto, CA.
- EPRI (1989) *Residential Customer Preference and Behavior: Market Segmentation Using CLASSIFY(TM)* (No. EM 5909). Electric Power Research Institute, Palo Alto, CA.
- Ester, P. A. & Winett, R. A. (1982) 'Toward more effective antecedent strategies for environmental programs', *Journal of Environmental Systems*, vol. 11, pp. 201–221.
- Evans, F. B. (1959) 'Psychological objective factors in the prediction of brand choice: Ford versus Chevrolet', *Journal of Business*, vol. 32, pp. 340–369.
- Eysenck, H. J. (1985) *The Decline and Fall of the Freudian Empire*, Penguin Books, Hammonds-worth.
- Farfar, B. C., Unsel, C. T., Vories, R. & Crews, R. (1980) 'Public opinion about energy', *Annual Review of Energy*, vol. 5, pp. 141–172.
- Fazio, R. H. & Zanna, M. P. (1981) 'Direct experience and attitude-behavior consistency', in *Advances in Experimental Social Psychology* (vol. 14), ed. L. Berkowitz, Academic Press, New York.
- Fischhoff, B. & Slovic, P. (1980) 'A little learning. Confidence in multiple-cue judgment', in *Attention and Performance* (vol. 8), ed. R. Nickerson, Erlbaum, Hillsdale, NJ.
- Fishbein, M. (1963) 'An investigation of the relationships between beliefs about an object', *Human Relations*, vol. 16, pp. 233–240.
- Foxall, G. R. (1994) 'Environment-impacting consumer behavior: A framework for social marketing and demarketing', *Perspectives on Marketing Management*, vol. 4, pp. 27–53.

- Gallup Organization Inc. (1977) *Belief that the Energy Situation is Very Serious Declines* (The Gallup Report No. 1).
- Gaunt, L. (1985) *Bostadsvanor och energi. Om vardagsrutinernas inverkan på energiförbrukningen we elvärmda småhus* (Meddelande No. M85:14). Statens Institut för Byggnadsforskning, Gävle.
- Gendre, F., Dupont, J.-B. & Schwartz, S. (1992) 'Structure du questionnaire de valeurs de Schwartz', *Revue Suisse de Psychologie*, vol. 51, pp. 128–134.
- Giannelloni, J.-L. (1991, October 14–15). *Do Personal Values Explain the Attitude Towards the Protection of the Environment?* Paper presented at the Workshop on Value and Lifestyle Research in Marketing, European Institute for Advanced Studies in Management, Brussels.
- Giannelloni, J.-L. (1992) 'The effect of age, level of education and personal values on the attitude towards the protection of the environment: A structural test', *Les Cahiers du CERIAM, Série Recherche, Université de Savoie*, vol. 92R02.
- Gilbert, F. W. & Warren, W. E. (1995) 'Psychographic constructs and demographic segments', *Psychology and Marketing*, vol. 12, pp. 223–237.
- Goszczyńska, M., Tyszka, T. & Slovic, P. (1991) 'Risk perception in Poland: A comparison with three other countries', *Journal of Behavioral Decision Making*, vol. 4, pp. 179–193.
- Greenleaf, E. A. (1992) 'Improving rating scale measures by detecting and correcting bias components in some response styles', *Journal of Marketing Research*, vol. 29, pp. 176–188.
- Grünbaum, A. (1993) *Validation in the Clinical Theory of Psychoanalysis: A Study in the Philosophy of Psychoanalysis*, International Universities Press, Madison, CT.
- Guastello, S. J. & Rieke, M. L. (1990) 'The Barnum effect and validity of computer-based test interpretations: The human resource development report', *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, vol. 2, pp. 186–190.
- Guastello, S. J., Guastello, D. D. & Craft, L. L. (1989) 'Assessment of the Barnum effect in computer-based test interpretations', *Journal of Psychology*, vol. 123, pp. 477–484.
- Hass, R. G. (1981) The effects of source characteristics on cognitive responses and persuasion, in *Cognitive Responses in Persuasion*, eds R. E. Petty, T. M. Ostrom & T. C. Brock, Erlbaum, Hillsdale, NJ, pp. 141–172.
- Heath, R. P. (1995) 'Psychographics', *American Demographics*, vol. 17, pp. 78–79.
- Hinman, G. W., Rosa, E. A., Kleinhesselink, R. R. & Lowinger, T. C. (1993) 'Perception of nuclear and other risks in Japan and the United States', *Risk Analysis*, vol. 13, pp. 449–456.
- Hofstede, G. (1980) *Culture's Consequences: International Differences in Work-Related Values*, Sage, Beverly Hills, CA.
- Hofstede, G. (1983) 'National cultures in four dimensions', *International Studies of Man and Organization*, vol. 13, pp. 46–74.
- Holt, D. B. (1997) 'Poststructuralist lifestyle analysis: Conceptualizing the social patterning of consumption in postmodernity', *Journal of Consumer Research*, vol. 23, pp. 326–350.
- Homer, P. M. & Kahle, L. R. (1988) 'A structural equation analysis of the value-attitude-behavior hierarchy', *Journal of Personality and Social Psychology*, vol. 54, pp. 683–686.
- Horn, M. I. (1991, October 14–15). *How Life-style Research is Conducted at DDB Needham*. Paper presented at the Workshop on Value and Lifestyle Research in Marketing, European Institute for Advanced Studies in Management, Brussels.
- Ilstad, S. (1981) *Energibesparing we husstellet. En intervju-undersokelse*, Tapir, Trondheim, Norway.
- Ilstad, S. & Lund, I. (1983) *Energibesparing we husstellet. En intervju-undersokelse*, Tapir, Trondheim, Norway.
- Industridepartementet (1983) *Information som styrmedel. SOU 1983: 34*, Statens Offentliga Utredningar, Stockholm.
- Jones, R. A., Sensenig, J. & Ashmore, R. D. (1978) 'Systems of values and their multidimensional representation', *Multivariate Behavioral Research*, vol. 13, pp. 255–270.
- Jonesa, M. A., Reynolds, K. E., Weunc, S. & Beatty, S. E. (2003) 'The product-specific nature of impulse buying tendency', *Journal of Business Research*, vol. 56, pp. 505–511.

- Kahle, L. R. (1983) *Social Values and Social Change: Adaptation to Life in America*, Praeger, New York.
- Kahle, L. R. (1991, October 14–15). *Conceptual and Methodological Issues in Consumer Value Research*. Paper presented at the Workshop on Value and Lifestyle Research in Marketing, European Institute for Advanced Studies in Management, Brussels.
- Kahle, L. R., Beatty, S. E. & Homer, P. (1986) 'Alternative measurement approaches to consumer values: The list of values (LOV) and values and life style (VALS)', *Journal of Consumer Research*, vol. 13, pp. 405–409.
- Kahneman, D. (2000) 'New challenges to the rationality assumption', in *Choices, Values and Frames*, eds D. Kahneman & A. Tversky, Cambridge University Press, New York, pp. 758–774.
- Kamakura, W. A. & Mazzon, J. A. (1991) 'Value segmentation: A model for the measurement of values and value systems', *Journal of Consumer Research*, vol. 18, pp. 208–218.
- Kamakura, W. A. & Novak, T. P. (1992) 'Value-system segmentation: Exploring the meaning of LOV', *Journal of Consumer Research*, vol. 19, pp. 119–132.
- Kapferer, J. N. & Laurent, G. (1981) 'Une analyse des relations entre les classifications socio-culturelles et de style de vie et l'achat de produits courants', *Comptes-rendu des journées de l'IREP*, pp. 205–223.
- Karns, D. A. & Khera, J. P. (1983) 'Consumer attitudes and home-heating conservation behavior: A multiattribute longitudinal model', *Journal of Economic Psychology*, vol. 4, pp. 57–70.
- Kassarjian, H. H. (1971) 'Personality and consumer behavior: a review', *Journal of Marketing Research*, vol. 8, pp. 409–418.
- Kempton, W., Harris, C., Keith, J. & Wehl, J. (1985) 'Do consumers know 'what works' in energy conservation?', *Marriage and Family Review*, vol. 9, pp. 115–133.
- Klingberg, T. & Similä, M. (1984) *Energisparstöd till småhusägare* (Meddelande No. M84:6). Statens Institut för Byggnadsforskning, Gävle.
- Krohn, W. & Weingart, P. (1987) 'Commentary: Nuclear power as a social experiment: European political 'fallout' from Chernobyl meltdown', *Science Technology and Human Values*, vol. 12, pp. 52–58.
- Lastovicka, J. L., Murry, Jr., J. P. & Joachimsthaler, E. A. (1990) 'Evaluating the measurement validity of lifestyle typologies with qualitative measures and multiplicative factoring', *Journal of Marketing Research*, vol. 27, pp. 11–23.
- Laurent, G. & Kapferer, J. N. (1985) 'Measuring consumer involvement profiles', *Journal of Marketing Research*, vol. 22, pp. 41–53.
- Lawson, R. & Todd, S. (2002) 'Consumer lifestyles: A social stratification', *Marketing Theory*, vol. 2, pp. 295–307.
- Lazer, W. (1963) 'Life style concepts and marketing. Towards scientific marketing', *Proceedings of the American Marketing Association*, pp. 130–139.
- Ling, P. M. & Glantz, S. A. (2002) 'Using tobacco-industry marketing research to design more effective tobacco-control campaigns', *Journal of the American Medical Association*, vol. 287, pp. 2983–2989.
- Lundgren, L. J. (ed.) (1996) *Livsstil och miljö. Fråga, forska, förändra*, Naturvårdsverket, Stockholm.
- Macmillan, M. (1991) *Freud Evaluated: The Completed Arc*, North-Holland, Amsterdam.
- Mahajan, J. (1992) 'The overconfidence effect in marketing management predictions', *Journal of Marketing Research*, vol. 29, pp. 329–342.
- Maslow, A. H. (1954) *Motivation and Personality*, Harper & Row, New York.
- McDaniel, S. W. & Rylander, D. H. (1993) 'Strategic green marketing', *Journal of Consumer Marketing*, vol. 10, pp. 4–10.
- McGuire, W. J. (1985) 'Attitudes and attitude change', in *Handbook of Social Psychology* (vol. 2), eds G. Lindzey & E. Aronson, Random House, New York, pp. 233–346.
- Midden, C. J. H. & Ritsema, B. S. M. (1983) 'The meaning of normative processes for energy conservation', *Journal of Economic Psychology*, vol. 4, pp. 37–55.

- Mischel, W. (1968) *Personality and Assessment*, Wiley, New York.
- Mischel, W. (1973) 'Toward a cognitive social learning reconceptualization of personality', *Psychological Review*, vol. 80, pp. 252–283.
- Mitchell, V. W. (1998) 'Segmenting purchases of organisational professional services: A risk-based approach', *The Journal of Services Marketing*, vol. 12, pp. 83–92.
- Munson, J. M. & McIntyre, S. H. (1979) 'Developing practical procedures for the measurement of personal values in cross-cultural marketing', *Journal of Marketing Research*, vol. 16, pp. 48–52.
- Neher, A. (1991) 'Maslow's theory of motivation: A critique', *Journal of Humanistic Psychology*, vol. 31, pp. 89–112.
- Novak, T. P. & MacEvoy, B. (1990) 'Values and life styles (VALS)', *Journal of Consumer Research*, vol. 17, pp. 105–109.
- Novak, T. P., de Leeuw, J. & MacEvoy, B. (1992) 'Richness curves for evaluating market segmentation', *Journal of Marketing Research*, vol. 29, pp. 254–267.
- Nyland, L. G. (1993) *Risk perception in Brazil and Sweden* (Rhizikon: Risk Research Report No. 15): Center for Risk Research, Stockholm School of Economics.
- Olsen, M. E. (1981) 'Public acceptance of consumer energy conservation strategies', *Journal of Social Issues*, vol. 37, pp. 108–131.
- Olsson, B.-M., Wiberg, C. & Wolvén, L.-E. (1991) *Att spara energi—Om energikaraktärer och marknadssegmentering* (No. 1991:2): Högskolan i Östersund.
- Pages, J. P., Brenot, J. & Barny, M.-H. (1991) 'Factor analysis and risk perception', in *Applied Multivariate Analysis in SAR and Environmental Studies*, eds J. Devillers & W. Karcher, ECSC, Brussels, pp. 207–245.
- Palmborg, C. (1987) 'Social habits and energy consumption in single family homes', *Energy*, vol. 11, pp. 643–650.
- Peltier, J. W., Schibrowsky, J. A., Schultz, D. E. & Davis, J. (2002) 'Interactive psychographics: Crossselling in the banking industry', *Journal of Advertising Research*, vol. 42, pp. 7–22.
- Prince, R. J. & Guastello, S. J. (1990) 'The Barnum effect in a computerized Rorschach interpretation system', *Journal of Psychology*, vol. 124, pp. 217–222.
- Rankin, W. L. & Grube, J. W. (1980) 'A comparison of ranking and rating procedures for value system measurement', *European Journal of Social Psychology*, vol. 10, pp. 233–246.
- Renn, O., Kasperson, J., Kasperson, R. & Tuler, S. (1992) *Cultural Prototypes, Signals, and Qualitative Risk Characteristics: How do People Judge the Seriousness of Risk?* Paper presented at the SRA Annual Meeting, San Diego, CA.
- Robinson, J. P. & Shaver, P. (1985) *Measures of Social Psychological Attitudes*, University of Michigan, Ann Arbor, MI.
- Rogers, M. & Smith, K. H. (1993) 'Public perceptions of subliminal advertising: Why practitioners shouldn't ignore the issue', *Journal of Advertising Research*, vol. 33, pp. 10–18.
- Rokeach, M. (1968–1969) 'The role of values in public opinion research', *Public Opinion Quarterly*, vol. 32, pp. 547–559.
- Rokeach, M. (1973) *The Nature of Human Values*, Free Press, New York.
- Rokeach, M. (1974) 'Change and stability of American value systems', *Public Opinion Quarterly*, vol. 38, pp. 232–238.
- Rokeach, M. (1979) *Understanding Human Values*, Free Press, New York.
- Rokeach, M. & Ball-Rokeach, S. J. (1989) 'Stability and change in American value priorities', *American Psychologist*, vol. 44, pp. 775–784.
- Ross, M. & Fletcher, G. J. O. (1985) 'Attribution and social perception', in *Handbook of Social Psychology* (vol. II: Special fields and applications), eds G. Lindzey & E. Aronson, Random House, New York, pp. 73–122.
- Ross, M. H. & Williams, R. H. (1981) *Our Energy: Regaining Control*, McGraw-Hill, New York.

- Scharnberg, M. (1993a) *The Non-authentic Nature of Freud's Observations. Vol. I. The Seduction Theory*, Almqvist & Wiksell, Stockholm.
- Scharnberg, M. (1993b) *The Non-Authentic Nature Of Freud's Observations. Vol. II. Felix Gattel's Early Freudian Cases, and the Astrological Origin of the Anal Theory*, Almqvist & Wiksell, Stockholm.
- Schindler, R. M. & Holbrook, M. (2003) 'Nostalgia for early experiences as a determinant of consumer preferences', *Psychology and Marketing*, vol. 20, pp. 275–302.
- Schmidt, F. L. (1996) 'Statistical significance testing and cumulative knowledge in psychology: Implications for training of researchers', *Psychological Methods*, vol. 1, pp. 115–129.
- Schmidt, F. L. & Hunter, J. E. (1998) 'The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings', *Psychological Bulletin*, vol. 124, pp. 262–274.
- Schwartz, S. H. (1992) 'Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries', *Advances in Experimental Social Psychology*, vol. 25, pp. 1–65.
- Schwartz, S. H. & Bilsky, W. (1987) 'Toward a universal psychological structure of values', *Journal of Personality and Social Psychology*, vol. 53, pp. 550–562.
- Schwartz, S. H. & Bilsky, W. (1990) 'Toward a theory of universal content and structure of values: extensions and cross-cultural replications', *Journal of Personality and Social Psychology*, vol. 58, pp. 878–891.
- Shaver, J. P. (1993) 'What statistical significance testing is, and what it is not', *Journal of Experimental Education*, vol. 61, pp. 293–316.
- Shim, S. & Bickle, M. C. (1994) 'Benefit segments of the female apparel market: psychographics, shopping orientations, and demographics', *Clothing & Textiles Research Journal*, vol. 12, pp. 1–12.
- Sjöberg, L. (1979) 'Strength of belief and risk', *Policy Sciences*, vol. 11, pp. 39–57.
- Sjöberg, L. (1980) Similarity and correlation, in *Similarity and Choice*, eds E.-D. Lantermann & H. Feger, Huber, Bern, pp. 70–87.
- Sjöberg, L. (1982) 'Attitude-behavior correlation, social desirability and perceived diagnostic value', *British Journal of Social Psychology*, vol. 21, pp. 288–292.
- Sjöberg, L. (1989) 'Global change and human action: psychological perspectives', *International Social Science Journal*, vol. 121, pp. 413–432.
- Sjöberg, L. (1990) 'Diagnosen otillförlitlig och utan prognosvärde vid psykodynamisk arbetsmodell. (Unreliable diagnosis with no prognostic value in using a psychodynamic model)', *Läkartidningen*, vol. 87, pp. 851–853.
- Sjöberg, L. (1991) *Risk Perception by Experts and the Public* (Rhizikon: Risk Research Report No. 4). Center for Risk Research, Stockholm.
- Sjöberg, L. (1993) *Perceived Risk vs Demand for Risk Reduction*. Paper presented at the Consequences of Risk Perceptions, Center for Risk Research, Stockholm School of Economics.
- Sjöberg, L. (1996a) 'A discussion of the limitations of the psychometric and Cultural Theory approaches to risk perception', *Radiation Protection Dosimetry*, vol. 68, pp. 219–225.
- Sjöberg, L. (1996b) *Risk Perceptions by Politicians and the Public* (Rhizikon: Risk Research Reports No. 23). Center for Risk Research, Stockholm.
- Sjöberg, L. (1997a) 'Explaining risk perception: An empirical and quantitative evaluation of cultural theory', *Risk Decision and Policy*, vol. 2, pp. 113–130.
- Sjöberg, L. (1997b) *Valet till EU-parlamentet 1995. En Socialpsykologisk Studie. (The Election to the EU Parliament in 1995. A Social Psychological Study)*, Styrelsen för psykologiskt försvar, Stockholm.
- Sjöberg, L. (1998a) 'Will and success—individual and national', in *Will and Economic Behavior*, eds L. Sjöberg, R. Bagozzi & D. Ingvar, EFI, Stockholm, pp. 85–119.

- Sjöberg, L. (1998b) 'World views, political attitudes and risk perception', *Risk—Health, Safety and Environment*, vol. 9, pp. 137–152.
- Sjöberg, L. (1998c) 'Worry and risk perception', *Risk Analysis*, vol. 18, pp. 85–93.
- Sjöberg, L. (1999a) 'Attitudes, opinions and values: models and dynamics', in *Judgment and Decision Making: Neo-Brunswikian and Process-Tracing Approaches*, eds P. Juslin & H. Montgomery, Erlbaum, Mahwah, NJ, pp. 219–242.
- Sjöberg, L. (1999b) 'Consequences of perceived risk: Demand for mitigation', *Journal of Risk Research*, vol. 2, pp. 129–149.
- Sjöberg, L. (1999c) 'Maslowmyten. (The Maslow myth)', *Folkvett*, pp. 6–16.
- Sjöberg, L. (2000a) 'Factors in risk perception', *Risk Analysis*, vol. 20, pp. 1–11.
- Sjöberg, L. (2000b) 'Projektiva test och psykodynamiskt grundade bedömningar otillförlitliga. (Projective tests and psychodynamic judgments are unreliable)', *Läkartidningen*, vol. 97, pp. 56–59.
- Sjöberg, L. (2000c) 'Specifying factors in radiation risk perception', *Scandinavian Journal of Psychology*, vol. 41, pp. 169–174.
- Sjöberg, L. (2002) 'The allegedly simple structure of experts' risk perception: An urban legend in risk research', *Science Technology & Human Values*, vol. 27, pp. 443–459.
- Sjöberg, L. (2003a) 'Distal factors in risk perception', *Journal of Risk Research*, vol. 6, pp. 187–211.
- Sjöberg, L. (2003b) 'Risk perception is not what it seems: The psychometric paradigm revisited', in *VALDOR Conference 2003*, ed. K. Andersson, VALDOR, Stockholm, pp. 14–29.
- Sjöberg, L. (2003c) 'Risk perception, emotion, and policy: The case of nuclear technology', *European Review*, vol. 11, pp. 109–128.
- Sjöberg, L. (2004a) 'Explaining individual risk perception: the case of nuclear waste', *Risk Management: An International Journal*, vol. 6, pp. 51–64.
- Sjöberg, L. (2004b) 'Local acceptance of a high-level nuclear waste repository', *Risk Analysis*, vol. 24, pp. 739–751.
- Sjöberg, L. (in press) 'The distortion of beliefs in the face of uncertainty', *International Journal of Management and Decision Making*.
- Sjöberg, L. (in press) 'Will the real meaning of affect please stand up?' *Journal of Risk Research*.
- Sjöberg, L. & af Wählberg, A. (2002) 'New Age and risk perception', *Risk Analysis*, vol. 22, pp. 751–764.
- Sjöberg, L. & Drott, B.-M. (1987) 'Psychological reactions to cancer risks after the Chernobyl accident', *Medical Oncology and Tumor Pharmacotherapy*, vol. 4, pp. 259–271.
- Sjöberg, L. & Drott-Sjöberg, B.-M. (1993) *Moral Value, Risk and Risk Tolerance* (RHIZIKON: Risk Research Report No. 11): Center for Risk Research, Stockholm School of Economics.
- Sjöberg, L. & Drott-Sjöberg, B.-M. (1994) *Risk Perception of Nuclear Waste: Experts and the Public* (Rhizikon: Risk Research Report No. 16): Center for Risk Research, Stockholm School of Economics.
- Sjöberg, L. & Drott-Sjöberg, B.-M. (2001) 'Fairness, risk and risk tolerance in the siting of a nuclear waste repository', *Journal of Risk Research*, vol. 4, pp. 75–102.
- Sjöberg, L. & Drott-Sjöberg, B.-M. (in press) 'Public risk perception of nuclear waste', *International Journal of Risk Assessment and Management*.
- Sjöberg, L. & Montgomery, H. (1999) 'Double denial in attitude formation', *Journal of Applied Social Psychology*, vol. 29, pp. 606–621.
- Sjöberg, L., Kolarova, D., Rucai, A.-A. & Bernström, M.-L. (2000) 'Risk perception in Bulgaria and Romania', in *Cross-cultural Risk Perception. A Survey of Empirical Studies*, eds O. Renn & B. Rohrman, Kluwer, Dordrecht, pp. 145–184.
- Slovic, P. (ed.) (2000) *The Perception of Risk*, Earthscan, London.
- Slovic, P., Flynn, J., Mertz, C. K. & Mullican, L. (1992) *Health Risk Perception in Canada*, Decision Research.

- Snyder, M. (1979) 'Self-monitoring processes', in *Advances in Experimental Social Psychology* (vol. 12), ed. L. Berkowitz, Academic Press, New York, pp. 85–128.
- Stern, P. C. (1992) 'Psychological dimensions of global environmental change', *Annual Review of Psychology*, vol. 43, pp. 269–302.
- Stern, P. C. & Gardner, G. T. (1981) 'The place of behavior change in the management of environmental problems', *Zeitschrift für Umweltpolitik*, vol. 2, pp. 213–239.
- Stern, P. C., Black, J. & Elworth, J. (1981) *Home Energy Conservation: Programs and Strategies for the 80's*, Consumer's Union Foundation, Mount Vernon, NY.
- Sunstein, C. R. (2002) *Risk and Reason. Safety, Law, and the Environment*, Cambridge University Press, Cambridge, UK.
- Swiners, J. L. (1979) 'Les styles de vie sont morts. Vive les styles de mort', *Strategies*, pp. 30–34.
- Syme, G., Seligman, C., Kautola, S. & Macpherson, D. (1987) 'Evaluating a television campaign to promote petroleum conservation', *Energy and Behavior*, vol. 19, pp. 444–461.
- Teigen, K. H., Brun, W. & Slovic, P. (1988) 'Societal risks as seen by a Norwegian public', *Journal of Behavioral Decision Making*, vol. 1, pp. 111–130.
- Thompson, B. (1999) 'Statistical significance tests, effect size reporting, and the vain pursuit of pseudo-objectivity', *Theory & Psychology*, vol. 9, pp. 191–196.
- Thompson, M., Ellis, R. & Wildavsky, A. (1990) *Cultural Theory, or why all that is Permanent is Bias*, Westview, Boulder, CO.
- Trachtman, L. E., Spirek, M. M., Sparks, G. G. & Stohl, C. (1991) 'Factors affecting the adoption of new technology', *Bulletin of Science, Technology & Society*, vol. 11, pp. 338–345.
- Wahba, M. A. & Bridwell, L. G. (1976) 'Maslow reconsidered: A review of research on the need hierarchy theory', *Organizational Behavior and Human Performance*, vol. 15, pp. 212–240.
- Valette-Florence, P. (1989) 'Les styles de vie en question: mythes et réalités', *Revue Française du Marketing*, vol. 125, pp. 17–26.
- Valette-Florence, P. (1991) *A Causal Analysis of the Predictive Power of Selected Life-style Indicators*. Paper presented at the Workshop on Value and Lifestyle Research in Marketing, Brussels.
- Valette-Florence, P. (1994) *Les styles de vie. Bilan critique et perspectives. Du mythe à la réalité*, Economica, Paris.
- Valette-Florence, P. & Jolibert, A. (1990) 'Social values, A.I.O., and consumption patterns: Exploratory findings', *Journal of Business Research*, vol. 20, pp. 109–122.
- Vallerand, R. J., Deshaises, P., Cuerrier, J.-P., Pelletier, L. G. & Mongeau, C. (1992) 'Ajzen and Fishbein's theory of reasoned action as applied to moral behavior: A confirmatory analysis', *Journal of Personality and Social Psychology*, vol. 62, pp. 98–109.
- Watson, T. J. (1996) 'Motivation: That's Maslow, isn't it?', *Management Learning*, vol. 27, pp. 447–464.
- Wells, W. D. (1975) 'Psychographics: a critical review', *Journal of Marketing Research*, vol. 12, pp. 196–213.
- Wells, W. D. & Tigert, D. J. (1971) 'Activities, interests and opinions', *Journal of Advertising Research*, vol. 11, pp. 27–35.
- Westfall, R. (1962) 'Psychological factors in predicting product choice', *Journal of Marketing*, vol. 26, pp. 34–40.
- Viklund, M. (2004) 'Energy policy options-from the perspective of public attitudes and risk perceptions', *Energy Policy*, vol. 32, pp. 1159–1171.
- Wildavsky, A. (1979) 'No risk is the highest risk of all', *American Scientist*, vol. 67, pp. 32–37.
- Wildavsky, A. & Dake, K. (1990) 'Theories of risk perception: Who fears what and why?', *Daedalus*, vol. 119, pp. 41–60.
- Vinson, D. E., Munson, J. M. & Nakanishi, M. (1976) 'An investigation of the Rokeach value survey for consumer application', in *Advances in Consumer Research*, ed. W. D. Perrault, Association for Consumer Research, Atlanta, pp. 247–252.

- Wolburg, J. M. & Pokrywczynski, J. (2002) 'A psychographic analysis of generation Y college students', *Journal of Advertising Research*, vol. 41, pp. 33–52.
- Wood, J. M., Nezworski, M. T., Lilienfeld, S. O. & Garb, H. N. (2003) *What's wrong with the Rorschach?*, Jossey-Bass, San Francisco, CA.
- Zaccaro, S. J. & Stone, E. F. (1988) 'Incremental validity of an empirically based measure of job characteristics', *Journal of Applied Psychology*, vol. 73, pp. 245–252.
- Zetterberg, H. (1977) *Arbete, livsstil och motivation*, SIFO, Stockholm.