

What are the Main Psychographic Differences between Persons Behave in an Environmentally Friendly Way and Those Who Do Not?

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Abstract: Experts dealing with environmentally friendly consumer behavior can often meet the problem of the existing gap between positive environmental attitude and green behavior. Despite of the very intensive communication campaigns in connection with environmental problems there are still only a few consumers who consciously put this view into practice. One of the main aims of this empirical study conducted in September 2007 was to identify those psychographic factors, which differentiate persons alongside their environmentally friendly behavior the most. Perceived consumer effectiveness and perceived inconvenience of environmentally friendly behavior were those factors, which play significant role in differentiation of green consumers from the others.

Keywords: environmentally friendly behavior, psychographic variables (environmental knowledge, ecological world-view, perceived consumer effectiveness, perceived inconvenience of environmentally friendly behavior, perceived seriousness of ecological problems), discriminant analysis

1 Introduction

Although the conscious movement of environmental protection has still continuing of its march since 1960's, experts dealing with environmentally friendly consumer behavior can often meet the problem of the existing gap between positive environmental attitude and green behavior. Despite of the very intensive communication campaigns in connection with environmental problems (such as green-house effect, global warming, waste-management) in the last decade, there are still only a few consumers who consciously put this view into practice. Although green-marketing has a wide range of tools to influence the behavior of consumers, we can still find obstacles in the way of reaching them.

One of the main aims of this empirical study conducted in September, 2007 in Budapest (capital of Hungary), was to identify those psychographic factors, which can differentiate green consumers from the others in a most effective way.

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2 What is Environmentally Friendly Behavior?

In the international literature we can find different approaches of environmentally friendly behavior based on the complexity of areas which are examined within this concept. Basically, we can differentiate two main groups of them: one-dimensional and multi-dimensional approaches. The former ones focus only one type of green behavior such as waste disposal or purchase of special green product like biofruits, while multi-dimensional approaches try to cover all of the relevant topics (e.g. energy-saving, eco-friendly purchase, vote for green party) in one variable (Kaiser et al, 1999; Aoyagi-Usui, 2003). Stern (2000) defined environmentally significant behavior based on the different scope of their significance, which has four elements: (1) environmental activism, (2) non-activist behaviors in the public sphere (e.g. environmental citizenship and support of public policies), (3) private-sphere environmentalism (green purchase, waste disposal), (4) other environmentally significant behaviors (e.g. organizational actions). This point of view reflects to the relationships and trade-offs of these elements and more appropriate to fit to the wide spectrum of environmental problems and their solutions.

However, this categorization leaves the problem of deliberateness untouched. We do not know why people buy recycled toilet paper: because they want to make contribution to environment protection or because it is cheaper than the other toilet-papers. That is why another distinction is needed based on the intention of the consumer. From this point of view environmentally significant behavior is an action “undertaken with the intention to change (normally, to benefit) the environment” (Stern, 2000, p. 408).

From the standpoint of the state of the environment, the non-deliberate environmentally friendly behaviors are also welcomed, however they cannot be influenced or motivate on environmentally friendly bases.

3 Research Background

3.1 Aim of the Research

This empirical study is trying to identify the significant differences between environmentally friendly and non-environmentally friendly consumer groups, in order to be able to show the most effective area of potential green-marketing interventions. As former Hungarian and international studies have contradictory results in connection with the explanation power of demographic variables, experts turned their attention to psychographic variables, namely: the level of

environmental knowledge, the ecological worldview, short-term view, the perceived seriousness of environmental problems, the perceived effectiveness of their behavior and the perceived inconvenience of environmentally friendly behavior and others (such as political view and religion).

3.2 Sample Description and Research Method

In order to make the statistical comparison practicable 102 environmentally friendly and 102 non-environmentally friendly persons has been chosen based on their behavior for the analysis. These persons were 18-65 years old Budapest-dwellers and were selected randomly by the interviewers¹ - as we had no a priori information on the demographic profile of environmentally friendly consumers. The same location of them means by and large similar external facilities to carry out environmentally friendly actions and nearly the same affection by environmental problems.

The face-to-face in-home interviews started with the screening in which a 25-statement list of the frequency of different environmental behaviors were used to separate environmentally friendly respondents from the others, and then in the main questionnaire the respondents were asked to answer questions related to psychographic variables. Socio-demographic questions closed the interview.²

3.3 Variables in the Research

3.3.1 Dependent Variable: Environmentally Friendly Behavior

Consider the distinctions mentioned formerly in connection with the interpretation of environmentally significant behavior, in the current empirical study a wide range of environmentally friendly behaviors were used to cover the whole continuum (the four groups) of the definition – disregard to their direct motivations.³

¹ With birthday key. Interviewers made the recruitment from 20 different starting-points of the town and they chose every 15th flat.

² Originally the questionnaire consisted of more parts than what has been analyzed in this article.

³ Unfortunately, in the random sample nobody was a member of any green civil organization, therefore environmental activism was not a feature of the group of environmentally friendly persons.

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Based on the results of the pilot study⁴, we considered respondents environmentally friendly if they had at least 14 points (from the potential 25) on the environmentally friendly behavior scale in the screening questionnaire.

Figure 1 shows the distribution of environmentally friendly behavior points in the total sample. (Respondents got one point if (s)he does the given activity often or always, and got zero if (s)he does it only rarely or never.) The distribution supports the two-group approach as it is not a normal distribution but has more local maximums.

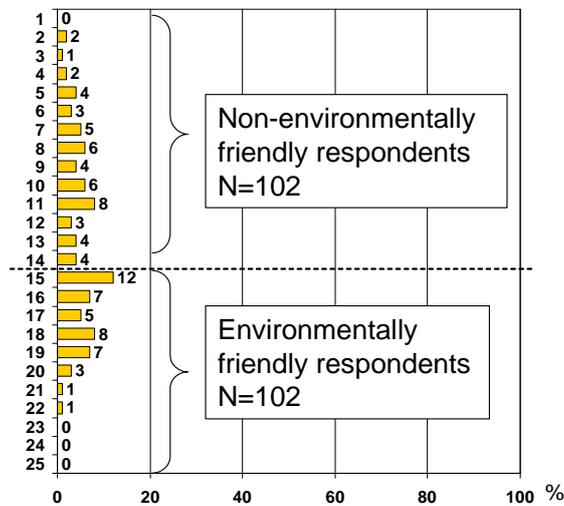


Figure 1
Distribution of environmentally friendly behavior scores

Table 1 shows the different areas which were covered by the questionnaire and their differences between the two groups. It can be seen that in every aspects of the behavior these groups show significant differences for the benefit of environmentally friendly respondents.

3.3.2 Independent Variables

Scales used for the measurement of psychographic variables in this analysis mainly based on the method used by international literature.

Ecological worldview was measured by NEP (New Ecological Paradigm, Dunlap et al, 2001) because this 15-statement list has been revised by others and its reliability has been proven by many experts (in this research Cronbach's alpha= 0.803).

⁴ Pilot study was carried out at Corvinus University, Budapest, in September, 2006, among students (N=167)

Table 1
Environmentally friendly actions covered by the variable and their differences among behavioral groups

Environmentally friendly behaviors, standardized scores (number of statements in parentheses)	Non-environmentally friendly respondents (N=102)		Environmentally friendly respondents (N=102)		Comparison of Means (T test)		
	Mean	SD	Mean	SD	t	DF	Sign.
Selective waste disposal (4)	-0.69	0.72	0.69	0.72	-13.74	202	0.000
Reducing consumption (3)	-0.52	0.96	0.52	0.74	-8.67	189	0.000
Green purchasing (4)	-0.70	0.75	0.70	0.67	-14.16	202	0.000
Energy saving (5)	-0.62	0.90	0.62	0.65	-11.23	184	0.000
Water saving (4)	-0.56	0.89	0.56	0.76	-9.65	198	0.000
Non-activist public sphere behavior and other env.sign. behaviors (4)	-0.56	0.67	0.56	0.96	-9.74	180	0.000
Transportation (1)	-0.13	1.06	0.13	0.92	-1.91	198	0.057

For measuring ecological knowledge, I mainly relied on the article of Kaiser and Fuhrer (2003), because their theory of knowledge has wide spectrum. They identified four different types of knowledge, which are in interaction of each other and all of them need to be present to help forming environmentally friendly behavior, namely: declarative, procedural, effectiveness and social knowledge. In this study, the former three were measured by a 17-statement list where respondents had to judge the statements based on their truth content, so number of right answers were summarized into one variable.

Social knowledge reflects to the social and subjective norms, which have forcing power even if the person is not convinced of the advantage of the given action. This social knowledge (acceptance of environmental norms) was taken into consideration by a variable based on a 6-statements list related to normative and descriptive norms (Cronbach's alpha= 0.823).

Respondents were also asked to evaluate the seriousness of and their affectedness by 12 different environmental issues (e.g. global-warming, water- and air pollution, waste disposal, injurious chemicals in products). These environmental topics have been divided successfully into two groups by factor analysis: problems that affect the respondents directly and problems, which have only indirect effect as they are far from the respondents in time or in geographical terms. (Cronbach's alpha=0.79 and 0.88)

Short-term view refers to the main focus of the respondents' thinking: in general (s)he takes care of only today and doesn't think of the future. In general, we

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hypothesize that environmentally friendly behavior supposes long-term view. Two statements were used to identify this variable (Cronbach’s alpha=0.73).

Perceived consumer effectiveness (PCE) is a belief that individuals can positively influence the outcome of problems – in the recent context the environmental ones. If an individual is concerned about the seriousness of environmental problems but believes that only governmental or global actions can handle these problems, (s)he will fail to carry out environmentally friendly actions. Findings have proven the definite role of PCE in forming environmentally friendly behavior (Ellen et al, 1991, Roberts, 1996). In this study PCE was measured by two negatively-formulated statements which reflected to the feeling of irrelevance of the individual actions in solving environmental problems (Cronbach’s alpha=0.73)

Finally yet importantly, the perceived inconvenience of environmentally friendly behavior was taken into account by a three-statement scale that described the level of inconvenience of making sacrifices for the state of environment by everyday activities (Cronbach’s alpha= 0.802).

Table 2
Comparison of the means of independent variables between the two respondent groups

Independent variables ⁵	Non-environmentally friendly respondents (N=102)		Environmentally friendly respondents (N=102)		Comparison of Means (T test)		
	Mean	SD	Mean	SD	t	df	Sign.
Ecological world-view	3.5	0.52	3.8	0.52	-3.68	167	0.000
Environmental knowledge	7.99	3.09	9.13	2.79	-2.75	202	0.006
Acceptance of environmental norms	3.63	0.67	3.86	0.86	-2.20	202	0.030
Perceived seriousness of environmental problems with direct effects	8.57	1.39	8.90	0.95	-1.98	197	0.049
Perceived seriousness of environmental problems with indirect effects	7.76	1.58	8.48	1.34	-3.46	198	0.001
Short-term view	0.20	0.93	-0.19	1.03	2.81	198	0.005
Perceived irrelevance of individual actions (PCE)	2.83	1.04	2.10	0.95	5.28	202	0.000
Perceived inconvenience of environmentally friendly behavior	2.75	0.72	2.17	0.65	6.10	202	0.000

⁵ Seriousness of environmental problems were measured on a 10 point scale: 1 means: not a problem at all, 10 means: very serious problem; environmental knowledge scale ranged between 0 and 17 according to the number of right answers. Values of short-term view come from factor scores.

Data of Table 2 above shows that alongside each independent variables respondent groups differ significantly, however the aim here is to identify variables which can divide the respondents the most effectively, therefore a discriminant-analysis has been conducted.

3.4 Results of Discriminant Analysis

Discriminant analysis was carry out by stepwise method, because this method extracts only those variables which can explain the difference most between the groups examined. To test the validity of the model, the sample has been divided into two parts: estimation (80%) and validity (20%) sample retaining the 50-50% proportion of environmentally friendly and non-environmentally friendly respondents.

The analysis has resulted a discriminant-function with only two variables in it: they are the perceived irrelevance of actions and the perceived inconvenience of environmentally friendly behavior.

The function proved to be useful as it was able to produce significant differences between groups (Wilk's $\lambda=0.748$, $\chi^2=42.63$, $df=2$, $p<0.01$) The Eigenvalue of the function is 0,336, so it can explain 34% of the heterogeneity of values, and the relationship between discriminant scores and groups are convincing (canonical correlation is 0.502). Beside these, tolerances of the two variables are quite high (0.841) so they do not cause multicollinearity.

Table 2

The structural matrix and the coefficients of standardized canonical discriminant function

Independent variables	Structural Matrix Function 1	Standardized Canonical Discriminant Function Coefficients
Perceived inconvenience of environmentally friendly behavior	0.895	0.702
Perceived irrelevance of individual actions (PCE)	0.765	0.485
Short-term view	0.357	
Ecological worldview	-0.259	
Perceived seriousness of environmental problems with direct effects	-0.226	
Acceptance of environmental norms	-0.186	
Perceived seriousness of environmental problems with indirect effects	-0.179	
Environmental knowledge (declarative, procedural, effectiveness)	-0.164	

The table above shows the structural matrix in which scores are (average, within group) correlations between variables and discriminant-function so it can be used

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for the explanation of the function. Coefficients of the discriminant function show partial effects so they can interpret the contribution of the variables to the results.

Coefficients of standardized discriminant functions has already not influenced by the variances of the independent variables, therefore they can show the relative power of the variables in differentiating environmentally and non-environmentally respondents. Consistent with expectations, the results indicate that the perceived inconvenience of environmentally friendly behavior and the perceived irrelevance of individual actions differentiate the two behavioral groups the most – their effect is much more dominant than the effect of the other psychographic variables included in the analysis. These variables have the most direct relationship with behavior and high level of them can prevent consumers most of all from behaving green.

These findings draw green-marketers' attention to the importance of the fact they need to change the focus of communication activities: nowadays consumers are convinced – more or less – of the seriousness of environmental problems and their anthropomorphic roots so now they require more information on the relative effectiveness of consumers' actions instead. Therefore, the contribution of each individual to the solution or reproduction of environmental problems should be emphasized.

On the other hand, we need to differentiate the *real* and the *perceived* inconvenience of environmentally friendly behavior. Theoretically, we could categorize green activities according to their level of sacrifices (e.g. financial costs or, energy- and time consumption). However, those who have more positive attitude toward the environment and believe in the effectiveness of their own actions probably *perceive* the realization of environmentally friendly behavior less tiring or difficult than those who has less positive attitude toward both the environment and the fruitfulness of their own actions – even the behavior needs the same effort objectively.

Validity of the model was tested by the improvement of the goodness of classification based on the discriminant function compared by the original group membership. Proportion of well-classified respondents were 67.5 and 69.8% in the estimation- and in the validity sample, while a priori probabilities were 50%, so the goodness of classification has improved significantly by using the discriminant function. ($\chi^2=10.79$, $df=1$, critical value of χ^2 at 95% reliability: 3.84)

Conclusions

Results strengthen the general hypothesis that if an individual believes in the power of his/her actions he/she will carry out these behaviors at higher probability (Berger and Corbin, 1992; Roberts, 1996). Environmental problems vary in time and in space, some of them are only (?) local problems others are global ones, some has already have perceptible effect today others will only have consequences in the near future. Unfortunately - especially in connection with global problems,

experts usually emphasize that effective solutions can be found only at higher level - with the agreement among nations or national organizations. Despite of its reality, this approach ruins the potential contribution of consumers and makes the trustworthy of individual green actions more difficult.

Perceived consumer effectiveness can be establish or strengthen by rational and/or emotional arguments. Rational arguments can be factual information based on numbers, measurements (e.g. the amount of waste originating in a household per year) reflected to the effect of activities of one person. The role of consumers can be emphasized both from the side of generating environmental problems and from the side of solving them. It is also interesting that avoiding certain actions can be as useful as doing something, however both method needs effort from the side of consumer. Emotional arguments strengthen the *belief* that each individual may have positive, non-negligible effect on the environment.

I would like to underline that beside this quasi-rational approach there is another way of spreading environmentally friendly behavior. In this case a person does not make it because it is worth it but because there is an existing social norm (at best which has been transformed to subjective norm) and the power of a community force him/her to do it. However, formation and acceptance of norm needs a lot of time and also needs to reach a critical mass to be more dominant than former ones. Unfortunately, in our modern society the strength and durability of influencing effect of smaller and bigger communities has decreased dramatically as stability had been succeeded by the phenomenon of constant change.

Of course, perceived inconvenience of environmentally friendly behavior is in connection with the perceived effectiveness of it: if a person is not convinced that his/her action can improve the state of the environment the behavior will not be put into practice even it doesn't need much effort from the consumer. On the other hand, if he/she believes that the behavior does improve the state of the environment but perceives the action very inconvenient it may prevent him/her from doing it. Marketing managers should make the fulfillment of environmentally friendly behavior as easy as it can be.

I do believe that environmentally friendly behavior will spread in developed countries in the next decade due to both the national efforts and positive change of individuals' views. If marketers would like to accelerate this process, they must turn their attention to the relative effectiveness of consumers' actions and need to make the role of each person more conscious in solving environmental problems.

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