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Energy Conservation: Two Easy Ways Out¹

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This study investigated attitude-behavior relationships in the context of energy conservation. Results indicated that general environmental concern is a poor predictor of energy-conservation behaviors. Direct evaluative comparisons of various non-conservationist behaviors with a more conservationist alternative showed a clear relationship with behavioral preference. Non-conservationists, however, evaluated their own behavior only marginally favorably and in some cases clearly unfavorably. This was accompanied by an overestimation of the common occurrence of these behaviors among the general population and by an unwillingness to relate these behaviors to personality characteristics. It is argued that these biases (i.e., considering one's behavior as a habit that is shared by many others) could hinder behavioral change. These findings are discussed in terms of effective public policy on the issue of energy consumption.

The last decade has shown an increasing awareness of the importance of residential energy conservation. Experts agree that the use of currently available technology could achieve considerable energy savings (e.g., Ross & Williams, 1976; Stobough & Yergin, 1979). The limited success of strategies emphasizing the need for voluntary reductions in energy use led to the realization that the social sciences could play a role in this context. In recent years, a substantive number of studies have been produced which attempt to apply psychological theory and procedures to the problems of residential energy conservation (e.g., Baum & Singer, 1981; Seligman & Becker, 1981; Yates & Aronson, 1983).

Understanding what determines an individual's decisions and efforts to conserve has been the central focus of psychological and sociological research on energy conservation. Some studies (e.g., Seligman, Kriss, Darley, Fazio, Becker, & Pryor, 1979) found a clear relationship between attitudes and conservation. However, the bulk of the research in this area indicates the poor predictive power of attitudes in relation to energy conservation. McClelland and Canter (1981) conclude that information stressing the "goodness" of energy conserva-

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tion, accompanied by some advice, might change attitudes but this is not guaranteed to change behavior. A number of studies have shown that individual concern does not lead to a general willingness to maintain reduced levels of energy consumption on a permanent basis (Curtin, 1975; Stokols, 1978). Geller, Ferguson, and Brasted (1979) concluded that attitudinal change is less likely to lead to energy conservation than action-oriented efforts to change behavior. Van Raaij and Verhallen (1983) also found that attitudinal factors are relatively unimportant determinants of energy use, and they suggest that habit formation could be partially responsible for this divergence.

This article is concerned primarily with the discrepancy between attitudes and behavior; it focuses on the "non-conservers" and explores some of the cognitive aspects of this discrepancy. More specifically, the emphasis will be on the *perceived* prevalence of various behaviors and people's willingness to make trait inferences about the typical person who would follow a given non-conservationist behavioral alternative.

Social comparison theory (Festinger, 1954) addressed the causes and consequences of people's tendency to evaluate themselves in terms of how they compare with others. Research in this area has shown that many decisions are based on people's estimate of their relative standing on salient dimensions. A related point is suggested by a finding reported by Ross, Greene, and House (1977) that they termed the "false consensus effect." This effect refers to a tendency to see one's position on a given dimension as being more common than it is seen by someone holding a different position. Thus, for example, people who are actively engaged in energy conservation estimate this behavior to be more common than do those who are not engaged in this behavior. There has been a good deal of empirical support for this phenomenon (Fields & Schuman, 1976; Goethals, Allison, & Frost, 1979). Studies on a variety of issues ranging from cigarette smoking (Sherman, Presson, Chassin, Corty, & Olshavsky, 1983) to nuclear energy (van der Pligt, van der Linden, & Ester, 1982) confirmed this bias.

This perceptual bias has profound implications for social comparison processes. In the literature it is frequently assumed that people are quite aware of the opinions and behaviors of others. If, however, this is not the case, differing behaviors and opinions may exert a less marked influence on behavior than previously assumed.

Ross, Greene, and House (1977) argue that the overestimation of one's own behavior as a common occurrence in the general population has important consequences for how people perceive and explain their own and others' behavior. This suggestion is related to attribution theory. According to attribution theory (Kelley, 1967), behaviors that are seen as relatively common tend to be regarded as unrevealing about personality characteristics. By contrast, relatively uncommon behaviors are seen as rich with implications about the person's personality. A further field of research that is relevant to the present study is that concerned

with ego-defensive attributions (Heider, 1958). The general idea is that people's attributions are biased in order to preserve favorable self-evaluations. In other words "good" behaviors are attributed to personality characteristics and "bad" behaviors to circumstance.

The present study, part of a larger-scale study on attitudes toward a variety of environmental issues, attempts to investigate the relationship between general environmental concern, specific attitudes and behavior, *and* the possible mediating role of the false consensus bias and willingness to infer personality characteristics. Subjects were asked to estimate the prevalence of various non-conservationist behaviors, and to rate the typical person opting for each of these behaviors on a number of trait-rating scales, environmental concern and evaluation of the behaviors being separately assessed. It was predicted that people opting for a non-conservationist alternative would both overestimate the prevalence of this behavior *and* would be less willing to relate this behavior to personality characteristics. We will demonstrate the generality of the false consensus bias and discuss its implications for energy conservation appeals.

Method

Subjects

The sample of participants in this study is a stratified quota sample ($n = 219$) of residents in both rural areas and towns in three counties in the Netherlands (Noord-Holland, Utrecht, and Gelderland). The study was aimed at the person "mainly responsible for running the household." As a consequence, only a small proportion of males was included (fewer than 4%). An attempt was made to obtain a representative sample for both age and educational background. The average respondent was 43.9 years of age; 35.6% were older than 50; 32.0% were 35-49 years of age; and 32.4% were younger than 35. For the Dutch population these percentages were 38, 28, and 34 respectively (1980 mini-census). Educational characteristics of the participants were as follows: 55% had received only a basic education, 24.7% had received further education, and 19.6% had received higher education. On a national level these percentages were 57, 26, and 17 respectively (according to the 1980 mini-census). All participants were approached individually (at home) by a team of female interviewers. Before collection of the data, the interviewers were told the purpose of the study. All interviewers were trained in techniques of interviewing. Interviews lasted about 45 minutes.

Procedure

Participants were presented with a questionnaire containing four pairs of behaviors related to home heating and energy conservation. Each pair contained a

"conservationist" alternative and a relatively "non-conservationist" alternative. The present analysis concerns the following four "non-conservationist" behaviors:

- (a) Not turning the thermostat to a lower temperature when not at home for a short time (e.g., shopping)
- (b) Not looking at energy use when buying electric home appliances
- (c) Not closing the curtains on winter nights
- (d) Central heating thermostat higher than 21°C when at home.

Participants were asked to rate a person who would choose each of the above behaviors. These ratings were made with respect to the following four personality traits: practicality, thoughtfulness, thriftiness, and realism. For each trait, a 100 mm rating scale was used; the two extremes of the four ratings scales were labeled as follows: "practical-impractical," "thoughtless-thoughtful," "thrifty-wasteful," "unrealistic-realistic." Subjects were also asked to rate the more "conservationist" alternative of each of the above behaviors (i.e., the reverse of the above options), but these ratings are less relevant to the present discussion and are not included in the analysis below (see van der Pligt, 1984, for a presentation of these findings).

After completing these trait ratings, participants were asked to state how frequently they displayed each of the above four behaviors on a five-point scale ranging from "always" to "never." This was followed by a question asking the respondents to estimate the percentage of people in the Netherlands who would show each particular behavior. Respondents were further asked to make a direct comparison between each of the four behaviors and their "conservationist" alternative. They were asked to indicate which of the two of each pair of alternatives was the better; the answer to this question was given on a five-point scale ranging from "much better" to "much worse," with "equally good" as the neutral category.

Finally, respondents rated seven statements concerning general environmental concern (e.g., "I am very worried about pollution; I would not object to a tax increase if the money were to be spent on environmental protection"). These statements were rated on a five-point scale ranging from "strongly agree" to "strongly disagree." These ratings were combined to form an index score indicating general environmental concern. This measure showed a reasonable consistency as indicated by a Cronbach's alpha of 0.70.

Results

Analyses compared three different subject groups on a number of variables. For each of the four behaviors, subjects were split into those who always or

usually chose the conservationist alternative, those who sometimes did, those who sometimes did not, and those who usually or always chose the non-conservationist option. General environmental concern, evaluation of the two alternatives, perceived consensus, and trait ratings were the dependent variables.

Environmental Concern and Evaluation

The results presented in Table 1 show that for each of the four behaviors the three subject groups did not differ in their general concern about the environment. All subject groups showed mean scores on the "concerned" side of the continuum (the arithmetic mean being 21). Thus, this general measure of environmental concern is not related to subjects' behavioral preference.

Results show that subjects' evaluation of the two alternatives is related to their behavior. The evaluation scores are based on the direct comparison subjects were asked to make between the two alternatives. As indicated in the table, this response was made on a five-point scale ranging from +2 (the conservationist alternative is much better) to -2 (the reverse), with 0 as the neutral point (both alternatives being equally "good"). For each of the behaviors, the conservationist option was rated most favorably by the conservationists, followed by the middle group and the subjects opting for the non-conservationist alternative. All differences were highly significant, as indicated by the linear F -ratios in the right-hand column of Table 1.

Most interesting, for two of the four behaviors the non-conservationist group rated their behavior negatively, i.e., the conservationist alternative was regarded to be better than their own behavior. Both mean scores (+0.7 and +0.9) were significantly different from zero; t -values were 5.0 and 8.3 respectively, both significant at the .001 level. In two cases, the non-conservationists showed a positive evaluation of their own behavioral choice (-0.4 on both the first and last behavioral item). However, this positive evaluation is far less clear-cut than the conservationists' evaluation of their own behavior. This was confirmed by a comparison of the extremity (difference from midpoint) of the evaluation scores between the conservationist and the non-conservationist subject group. For the first item, the conservationists' score was significantly more extreme than the non-conservationists' evaluation (1.5 vs. 0.4; $F = 74.9, p < .001$). A similar finding was obtained for the last behavioral item ($F = 17.5, p < .001$). Thus, although the evaluations of the various groups are significantly related to their behavioral preference, results also show that the non-conservationists rate their own behavior far less favorably than the conservationists rate theirs. Moreover, for two of the behavioral items the non-conservationists regard the conservationist option to be the better alternative. Closer inspection of the mean evaluative scores of the middle subject group confirms the above pattern. This group consistently rated the conservationist option to be better. All ob-

Table 1
Environmental Concern and Evaluation of Behaviors as a Function of Own Behavioral Choice

Behavior	Own behavioral choice												F-linear
	Conservationist			Sometimes, sometimes not			Non-conservationist						
	Evaluation*		Concern**	Evaluation		Concern	Evaluation		Concern	Evaluation		Concern	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	
Thermostat not on lower temperature when not at home	+1.5 (78)	0.6	24.0	5.1	+0.4 (41)	0.7	25.0	5.4	-0.4 (95)	0.9	24.4	5.1	255.4
Not looking at energy use	+1.5 (140)	0.6	24.7	5.4	+0.9 (34)	0.7	24.5	5.4	+0.7 (43)	1.0	23.4	4.1	47.9
Curtains not closed on winter nights	+1.6 (147)	0.7	24.5	5.3	+1.2 (15)	0.6	23.9	5.1	+0.9 (55)	1.0	24.3	5.0	36.9
Thermostat higher than 21°C when at home	+1.1 (87)	0.7	24.9	5.4	+0.2 (62)	0.8	23.6	4.7	-0.4 (27)	0.7	23.4	5.3	88.7

*A positive score indicates a more favorable evaluation of the conservationist alternative; a negative score indicates the reverse (possible range from +2 to -2).

**Possible range of scores is from 7 to 35; a higher score reflects more environmental concern.

Notes: Figures in parenthesis indicate the number of subjects in each group. F-values refer to differences in the evaluation score. All were significant at the .001 level. None of the differences in general environmental concern reached statistical significance.

tained means were significantly different from zero, with the exception of the last behavioral item (+0.2, $t(61) = -1.7$, $.05 < p < .10$).

Perception of Consensus

The data were examined to determine whether those endorsing the non-conservationist option estimated the choice of that option to be more common than those who "sometimes do, sometimes not" and those who consistently choose the conservationist option. Data were cast in an analysis of variance design with "own choice" as an independent variable and the estimated percentage of the Dutch population that would choose the non-conservationist alternative as a dependent variable. Overall, the results support the above prediction. Inspection of the results presented in Table 2 reveals that for the first two items the effect was clearly confirmed, while the last two items showed weak effects in the same direction. Furthermore, closer inspection of the estimates of the non-conservationist group shows that these are also considerably higher than the obtained prevalence of the various non-conservationist behaviors.

Trait Ratings

Table 3 shows the mean trait ratings for each of the four behaviors by the three subject groups. These results indicate clear differences in the profile attributed to the non-conservationists as a function of own behavior. The conservationist group makes relatively strong inferences about the non-conservationists in terms of practicality, thoughtfulness, thriftiness, and realism; i.e., the typical non-conservationist was seen as impractical, thoughtless, wasteful, and unrealistic. The middle group did so to a lesser extent, and again most scores were on the negative side of each of the four scales. The non-conservationist also showed a slightly negative evaluation in terms of personality traits, but as can be seen from the mean scores presented in Table 3, less extremely so.

Further confirmation is provided by the summed extremity of the trait ratings by the three subject groups. Willingness to infer personality traits from the non-conservationist behaviors was measured as the absolute discrepancy from midpoint (50) of each of the trait-rating scores, and these discrepancies were summed over the four scales for each of the four behaviors. As indicated in Table 3, these mean extremity scores were highest for the conservationist group and lowest for the non-conservationist group.

Discussion

The present study shows that general environmental concern is not a good predictor of specific decisions and efforts to conserve. However, direct evalua-

Table 2

Mean Prevalence Estimates of Behaviors as a Function of Own Behavioral Choice

Behavior	Own behavioral choice						F-linear
	Conservationist		Sometimes, sometimes not		Non-conservationist		
	M	SD	M	SD	M	SD	
Thermostat not on lower temperature when not at home	54.8 (75)	21.4	75.2 (42)	22.0	78.8 (90)	18.4	55.8*
Not looking at energy use	53.7 (134)	23.0	69.6 (34)	19.1	79.5 (39)	19.3	48.0*
Curtains not closed on winter nights	47.1 (144)	22.7	55.3 (15)	23.5	48.4 (53)	20.9	0.3
Thermostat higher than 21°C when at home	40.9 (85)	23.3	42.7 (60)	21.9	47.1 (26)	23.5	1.4

* $p < .001$.

Note: Mean scores represent the estimated percentage of the Dutch population that would prefer the non-conservationist option. Figures in parenthesis indicate the number of subjects in each of the groups.

Table 3

Mean Trait Ratings and Overall Mean Extremity of Trait Ratings as a Function of Own Behavioral Choice

Behavior	Own behavioral choice						F-linear
	Conservationist		Sometimes, sometimes not		Non-conservationist		
	M	SD	M	SD	M	SD	
Thermostat not on lower temperature when not at home:							
practical-impractical	79.6	24.8	54.1	34.8	43.1	33.9	58.7
thoughtless-thoughtful	12.4	22.9	33.2	32.7	52.6	32.1	82.0
thrifty-wasteful	79.4	25.3	59.8	29.9	45.0	30.9	61.5
unrealistic-realistic	16.8	24.3	41.9	31.1	52.9	30.3	67.8
extremity	155.9 (78)	37.9	115.4 (41)	59.1	104.3 (95)	65.3	36.2
Not looking at energy use:							
practical-impractical	85.6	15.0	76.7	21.7	65.1	20.1	46.5
thoughtless-thoughtful	8.2	13.3	13.6	16.9	26.8	21.7	43.6
thrifty-wasteful	82.9	17.8	76.6	19.1	64.9	21.6	29.7
unrealistic-realistic	16.3	21.4	23.7	25.7	36.6	23.5	26.9
extremity	153.7 (140)	34.1	126.0 (34)	60.0	85.8 (43)	61.5	75.1

(Continued)

Table 3 (Continued)

Behavior	Own behavioral choice								F-linear	
	Conservationist		Sometimes, sometimes not		Non-conservationist					
	M	SD	M	SD	M	SD	M	SD		
Curtaains not closed on winter nights:										
practical-impractical	82.9	17.1	72.5	19.1	71.8	25.8	13.7			
thoughtless-thoughtful	9.9	15.6	20.2	23.0	28.3	30.4	32.2			
thrifty-wasteful	83.1	16.5	64.5	27.8	71.1	25.6	17.3			
unrealistic-realistic	16.6	21.3	30.6	22.3	31.4	28.6	17.6			
extremity	148.6 (147)	40.6	106.8 (15)	54.9	119.3 (55)	63.4	17.2			
Thermostat higher than 21°C when at home:										
practical-impractical	78.0	22.5	63.4	23.6	52.6	32.0	26.9			
thoughtless-thoughtful	12.1	20.3	26.8	22.1	43.6	32.6	42.2			
thrifty-wasteful	80.4	19.8	64.9	21.8	55.4	27.6	34.1			
unrealistic-realistic	18.7	23.5	36.2	23.5	44.2	29.3	30.1			
extremity	141.5 (87)	50.0	88.6 (62)	63.1	96.7 (27)	63.7	24.7			

All *p* values < .001.

Note: Possible range of ratings from 1 (left-hand extreme) to 100 (right-hand extreme). Extremity ratings represent the absolute difference from midpoint (50) of each scale summed over the four scales. Figures in parenthesis indicate the number of subjects in each group.

tions of the non-conservationist alternatives and the conservationist options were systematically related to one's own behavioral preference. This finding is in accordance with recent research on the attitude-behavior relationship in the context of energy conservation. Both Olson (1981) and Ritchie, McDougall, and Claxton (1981) argue that specific attitudes will be better predictors of energy conservation than general attitudes. This confirms the importance of correspondence in level of specificity between one's attitude measure and the target behavior (see Ajzen & Fishbein, 1977).

However, our results also show that people are still prepared to engage in behaviors they regard only marginally favorably or even unfavorably. Present findings indicate that people engaging in these relatively dissonant (non-conservationist) behaviors overestimate the common occurrence of these behaviors in the general population and are reluctant to relate these behaviors to personality characteristics.

The major argument we would like to put forward is that both mechanisms (i.e., the perception of a false consensus and the unwillingness to relate non-conservationist behaviors to personality characteristics) could function as excuses for *not* changing one's behavior in the advocated direction. The practical implication is that it seems worthwhile to include both aspects in energy conservation programs. In other words, appeals for conservation should stress not only the "goodness" of energy conservation but also the personal responsibility for non-conservationist behavior. A similar point is made by van Raaij and Verhallen (1983), who suggest that acceptance of responsibility could be an important intermediate between attitude and behavior.

Furthermore, it seems worthwhile to emphasize the fact that non-conservation is gradually becoming a minority behavior. Both the present study and larger-scale surveys conducted in the Netherlands (e.g., Ritsema, Midden, & van der Heijden, 1982) indicate that the majority of the public engages in some form of energy conservation. These findings are based on self-reports but are supported by the fact that the average consumption of natural gas for residential usage showed a decrease of 5% (controlled for temperature differences) in 1982. Although it is impossible to determine from these findings whether such changes are due to energy conservation appeals or to increased prices, it seems important to mention this aspect in large-scale energy conservation programs. It is interesting to note that campaigns in the field of health education do stress the relatively low consensus of the "bad" behavior. For instance, a recent anti-smoking campaign of the British Health Education Council explicitly incorporated this aspect, and emphasized that the latest government figures showed that smokers "are now very much in a minority" and repeated this fact several times in its nationwide advertising campaign.

In summary, inclusion of both these aspects (consensus and responsibility) should make the excuses "everybody else does it" and "it's just a habit, anyway"

less available and could improve the effect of energy conservation appeals. Finally, it is necessary to stress the importance of determining the direction of causality between the perseverance of relatively dissonant behaviors, perceptions of consensus, and attributional preference. Although the present study has not addressed this issue, future research may provide an answer to this question.

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