

1999

A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism

Paul C. Stern

National Research Council (U.S.)

Thomas Dietz

George Mason University

Troy D. Abel

Western Washington University, troy.abel@wwu.edu

Greg Guagnano

George Mason University

Linda Kalof

George Mason University

Follow this and additional works at: https://cedar.wwu.edu/hcop_facpubs

Part of the [Environmental Education Commons](#)

Recommended Citation

Stern, Paul C.; Dietz, Thomas; Abel, Troy D.; Guagnano, Greg; and Kalof, Linda, "A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism" (1999). *Huxley College on the Peninsulas Publications*. 1.

https://cedar.wwu.edu/hcop_facpubs/1

This Article is brought to you for free and open access by the Huxley College on the Peninsulas at Western CEDAR. It has been accepted for inclusion in Huxley College on the Peninsulas Publications by an authorized administrator of Western CEDAR. For more information, please contact westerncedar@wwu.edu.

A Value-Belief-Norm Theory of Support for Social Movements: The Case of Environmentalism

Paul C. Stern

National Research Council
2101 Constitution Avenue, NW
Washington, DC 02418
USA

Thomas Dietz, Troy Abel, Gregory A. Guagnano and Linda Kalof¹

Department of Sociology & Anthropology
George Mason University
Fairfax, VA 22030
USA

Abstract

We present a theory of the basis of support for a social movement. Three types of support (citizenship actions, policy support and acceptance, and personal-sphere behaviors that accord with movement principles) are empirically distinct from each other and from committed activism. Drawing on theoretical work on values and norm-activation processes, we propose a value-belief-norm (VBN) theory of movement support. Individuals who accept a movement's basic values, believe that valued objects are threatened, and believe that their actions can help restore those values experience an obligation (personal norm) for pro-movement action that creates a predisposition to provide support; the particular type of support that results is dependent on the individual's capabilities and constraints. Data from a national survey of 420 respondents suggest that the VBN theory, when compared with other prevalent theories, offers the best available account of support for the environmental movement.

Keywords: *values, beliefs, norms, environmentalism, social movements*

Public support is one of the most important resources social movements mobilize in their efforts to overcome cultural inertia and the interests of powerful actors. Indeed, as the debate about the "new social movements" has emphasized, changes in attitudes and behavior on the part of the public can be a central goal of a movement. But while a number of social movement scholars have acknowledged the importance of public support, there has been little theory developed to explain public support, and less empirical research. In this paper, we offer a theory of public support

for the environmental movement that is congruent with both research on environmentalism and with the theoretical approaches being used in the social movements literature. We identify three dimensions of support and examine the determinants of each using data from a survey of the U.S. public. Our analysis suggests that support for the environmental movement can be explained by a social psychological theory that is congruent with existing social movement theory, while other contending theories of environmentalism have less explanatory power.

Movement Activism and Movement Support

Social movements depend upon highly committed and engaged activists, but support by others is also important. Supporters are potential recruits, as several researchers have noted (e.g., Hunt et al. 1994; Klandermans and Oegema 1987). Public support also provides movement organizations with a resource that can be mobilized in political struggle. Friedman and McAdam (1992, 168) note that "in many cases it will suffice that those with power merely believe that there is a large constituency for a given course of action." Indeed our previous work shows that general public support may be one of the most important resources for the environmental movement, and one that is critical in struggles to define social problems (Dietz et al. 1989). For some movements, public support in the form of widespread change in individual behavior among non-activists is also necessary to achieve movement goals (Johnston et al. 1994).

One goal of this article is to link the extensive literature on the social psychology of environmentalism with scholarship on social movements. Because rather different language has emerged in the two fields, it is helpful to begin by clari-

fyng the terms we use in referring to the environmental movement.

The U.S. environmental movement includes several distinct discourses (Brulle 1995) and many different organizations. Despite this variety, all environmental movement discourses have common elements in their beliefs and values: human action has the potential for adversely affecting the biophysical environment, changes in the biophysical environment can harm things people care about, and steps should be taken to avoid at least some harmful actions. The discourses and the organizations that promote them differ in how they define harm, in their understandings of why humans act to harm the environment, and in the remedies they propose for the problem. But it is still meaningful to speak of them as part of a single movement. The term movement, in this usage, is rather like the term “social movement industry” as used by Zald (1992).

We define movement activists as those who are committed to public actions intended to influence the behavior of the policy system and of the broader population.² Committed activists are the core of a movement and have been the subject of much recent work in the social movements literature. For them the movement becomes an important part of their life and a central element in their identity. We define movement supporters as those who are sympathetic to the movement and who are willing to take some action and bear some costs in order to support the movement. Of course the boundary between supporters and activists is fuzzy, and as Snow et al. (1986) have noted, people often move back and forth, being activists for a time then retreating to a less committed but still supportive role. As noted above, it is from the supporters that new activists are drawn (Hunt et al. 1994; Klandermans and Oegema 1987).

Our conceptualization of the environmental movement, and by analogy other movements, includes not only activists but supporters. Further, we emphasize that the movement is embedded in a broader society. It is engaged in struggles in a policy system that includes not only elements of the state but also opponents. Here our conceptualization of the movement parallels that of McLaughlin and Khowaja (1999): the movement and movement organizations are engaged in a struggle with their opponents (and sometimes with other elements of the movement) to shape the ideological landscape and societal practices. McLaughlin and Khowaja provide a macro-historical account of this process, while we focus on the social psychology of public support.³

What is Movement Support?

Although support can take many forms, researchers on social movements typically focus on committed public activism, such as participation in demonstrations, and active,

extensive involvement in social movement organizations (McAdam, McCarthy and Zald 1988). Committed activism is essential, of course, for movement organizations to function and for movements to move forward in the face of inertia and active resistance. But other, less intense, kinds of support also are critical to a movement’s success. One is low-commitment active citizenship — political activities that are less public or present less risk than engaged activism. These include writing letters to political officials, joining and contributing funds to movement organizations, and reading movement literature. A second is support and acceptance of public policies that may require material sacrifice in order to achieve the movement’s goals. Movements often press for social changes that require such sacrifices. For example, environmental policies often require individuals to pay higher prices or higher taxes or to submit to regulation of their behavior (e.g., mandatory recycling, bans on lawn watering during droughts). Movements’ struggles are made easier if many people, not only activists, voluntarily make such sacrifices and support public policies that impose them on all. A third important kind of support involves changes in behavior in the personal or private sphere. For the environmental movement’s goals, consumer behaviors such as reductions in energy use and purchases of environmentally benign products can make a considerable contribution if they are sufficiently widespread. They also serve as a signal to government and industry regarding citizen concerns and consumer preferences.

All three non-activist types of public support are important to many movements. For example, support for minority rights movements can be measured not only in terms of committed activism that puts bodies on the line, but also in terms of the willingness of majority group members to accept policies that may require them to make sacrifices (e.g., paying increased taxes or accepting affirmative action programs to improve conditions for minorities), to change personal behavior (e.g., engaging in more positive interactions with minority group members), and to take low-commitment political actions in their citizen roles (e.g., voting, signing petitions). Support for religious fundamentalists’ opposition to sexually explicit material in the mass media can be measured not only by committed political actions, but also by willingness of individuals to sacrifice elements of personal choice by accepting restricted public access to objectionable books, films, and recorded music; by personal behaviors, such as keeping their children from exposure to these materials; and by ordinary political participation.

In summary, all three types of non-activist public support can be essential for movement success. However, we lack a theory of how individuals come to support movements short of committed activism — how they become part of what

Klandermans and Oegema (1987) call the “mobilization potential” of a movement. Here we offer the first steps toward such a theory.

Towards a Theory of Movement Support

Social movements seek to provide collective goods. In some cases the good is distributed to a small and easily identifiable group, which may minimize the problem of free riders. But in the case of movements such as the environmental movement, the collective good is often provided at a regional, national or even global scale. This suggests that although some individuals may expect enough personal gain to justify provision of the collective good on egoistic grounds, most are also motivated by a broader, altruistic concern — a willingness to take action even in the face of the free rider problem.

We propose that the base for general movement support lies in a conjunction of values, beliefs, and personal norms — feelings of personal obligation that are linked to one’s self-expectations (Schwartz 1977) — that impel individuals to act in ways that support movement goals. Personal norms and altruistic values are important because social movements, unlike pure interest groups, are organized around normative claims on individuals and social organizations to act on the movement’s principles for reasons other than self-interest. The labor movement, for example, is more than an interest group to the extent that it appeals to normatively laden principles and altruistic values such as class solidarity and to other principles that even nonworkers can support, such as social justice, workplace democracy, or the right to bargain collectively. Such principles sometimes impel supporters to sacrifice personal benefits for the good of the movement. Personal norms rather than social norms are central because to the extent that movements are forces for social change, they cannot build support on existing social norms.⁴ Personal norms that reflect a movement’s principles lead to support of the movement’s goals through political participation in the citizen role, with personal-sphere behaviors, and by accepting policies that may call for material sacrifices. Behavioral differences across these types of movement support are likely to be due to capabilities and constraints specific to particular actions and particular individuals. Capabilities and constraints determine the efficacy, real and perceived, of an individual’s taking particular actions.

We propose that movement success depends on movement activists and organizations building support by activating or reshaping personal norms to create feelings of obligation. Many social movements, including the environmental movement, are aimed at producing public goods that are advocated by reference to altruistic values. Such movements work to activate personal norms tied to those values. It is also possible, however, for a social movement to try to activate

personal norms based on other kinds of values. For example, some conservative social movements, which see traditional values of duty, family loyalty, and the like as essential for providing public goods such as social order, refer to these values in attempting to activate feelings of personal obligation to support movement objectives.

In the case of committed activism, such processes of generating support have been extensively examined in the literature on framing (Snow et al. 1986; Friedman and McAdam 1992; Snow and Benford 1992). To understand the shaping of more general movement support, we apply a version of Schwartz’s (1972, 1977) moral norm-activation theory (Stern et al. 1993). We propose that norm-based actions flow from three factors: acceptance of particular personal values, beliefs that things important to those values are under threat, and beliefs that actions initiated by the individual can help alleviate the threat and restore the values. Each of these three terms involves a generalization of Schwartz’s theory. The original theory presumes altruistic values; the generalization posits that personal norms may have roots in other values as well and that levels of altruism and other relevant values may vary across individuals. The original theory emphasizes awareness of adverse consequences (AC) of events for other people (the main objects valued by altruists); the generalized theory emphasizes threats to whatever objects are the focus of the values that underlie the norm. In the case of environmentalism, threats to the nonhuman species and the biosphere may be important (Stern et al. 1993; Stern and Dietz 1994). Finally, in Schwartz’s theory, norm activation depends on ascription of responsibility (AR) to self for the undesirable consequences to others, that is, the belief or denial that one’s own actions have contributed to or could alleviate those consequences. The generalized theory emphasizes beliefs about responsibility for causing or ability to alleviate threats to any valued objects.⁵

In expanding the range of valued objects to be given theoretical consideration, we adopt the topology of values developed by S. H. Schwartz (1992, 1994), which maps all human values onto a psychological space that can be divided into ten value types and four broader value clusters or orientations, arrayed in particular relationships to each other. Many social movements build their normative claims on altruistic value types such as that labeled by Schwartz as universalism. The environmental movement is an example (e.g., Stern and Dietz 1994; Stern, Dietz, Kalof and Guagnano 1995), as are movements for civil rights, human rights, and social justice. Other movements, however, are built on other values. Religious fundamentalist movements rest on conservative value types such as those labeled tradition, conformity, and security (Schwartz and Huismans 1995; Schwartz 1996). Libertarian and human-potential movements may be based on individual-

istic or openness-to-change value types such as stimulation, hedonism, or achievement. Movements based on altruistic and conservative values tend to emphasize the importance of collective goods, while movements based on egoistic and openness-to-change values tend to emphasize the importance of private benefits.

It is possible to investigate any social movement's ideology to reveal the values and beliefs that underlie its policy positions. We propose that each social movement seeking a collective good develops its positions based on certain basic human values and that each movement's ideology contains specific beliefs about consequences and responsibilities that, in conjunction with its chosen values, activate personal norms that obligate individuals to support the movement's goals.

While our approach draws on the social psychological theory of altruism, it is quite congruent with recent work on social movements. The role of values in social movements has been emphasized by Johnston et al. (1994), Gamson (1992), and Pichado (1997). In their analysis of the environmental movement, Cotgrove (1982) suggests that personal values may be of paramount importance in determining who is an environmentalist and who is not. Snow et al. (1986), in their discussion of value amplification, argue that an intense focus on values already held by prospective constituents is one of the key steps toward committed movement activism. Further, our concepts of awareness of consequences of a problem (AC), ascription of responsibility to oneself for

action (AR) and activation of a personal norm for action (PN) parallel the account of Hunt et al. (1994), which distinguishes diagnostic (AC), prognostic (AR) and motivational (PN) steps in the framing process in which movement activists construct their identities. In a similar vein, M. Schwartz and Shuva (1992, 214-215) suggest that free rider problems can be overcome when "1. There is an abiding sense of group fate. 2. There is a belief in the viability of group action as a strategy. 3. Individuals cannot distinguish themselves from other group members in terms of their capacity to contribute. 4. Personal ties among group members are sufficiently dense to activate group obligations in the face of free-rider impulses." Their theory references individuals' perceptions of the group. Their first condition involves a perception of consequences (AC), their second implies a belief that action can alleviate the consequences (AR), and their fourth mentions the activation of a norm about action.

We are not arguing that the theory we propose is identical to any of those offered in the literature on movement activists. Nor should it be. The step towards intense activism involves a substantial and transformational commitment, including a reframing of key elements of identity, as the literature over the last decade has demonstrated. However, the processes that lead someone to take small steps in support of a movement should be logically congruent with the process that leads to activism, and it appears that our value-belief-norm theory has such congruence with key arguments in the existing literature on activism.

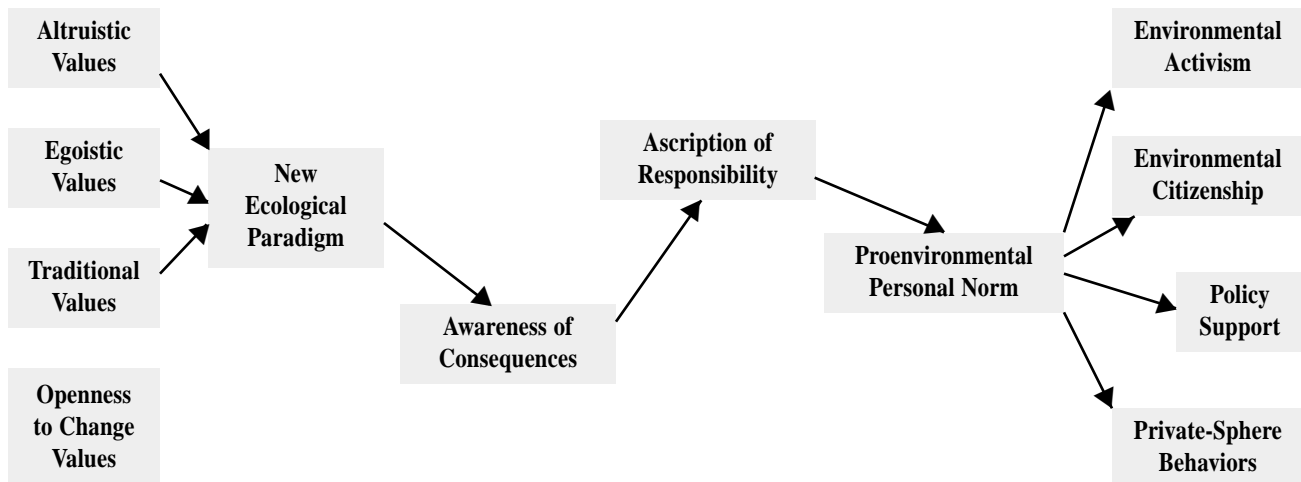


Figure 1. Schematic model of variables in the Value-Belief-Norm theory as applied to environmentalism, showing direct causal relationships between pairs of variables at adjacent causal levels.^a

^aEffects of egoistic and traditional values on other variables are negative. Variables in this model may also have direct effects (not shown) on variables more than one level downstream. In addition, each of the variables in the model may be affected by variables not shown, which are not elements of the VBN theory. However, only personal

Explaining Support for Environmentalism

This paper examines the usefulness of a value-belief-norm (VBN) theory of movement support using the case of the environmental movement. There is a huge volume of literature on public support for the environmental movement spanning 25 years. Unfortunately, the criticism offered by Heberlein (1981) nearly two decades ago still stands — most work on public environmental attitudes and behavior does not build into a cumulative understanding because too little attention has been given to systematic theory and the comparative testing of alternative theoretical models. There are at least six theoretical accounts of environmentalism that have been subject to conceptual and empirical exploration — but not to comparative tests. Our theory links three of these: norm-activation theory, the theory of personal values, and the New Ecological Paradigm hypothesis (see Figure 1). This study tests the explanatory value of our theory against each of its three elements alone and against three other theories.

The Value-Belief-Norm Theory of Environmentalism

Moral Norm Activation. S. H. Schwartz's (1972, 1977) norm-activation theory of altruism has been applied to pro-environmental behavior with some success. The theory holds that pro-environmental actions occur in response to personal moral norms about such actions and that these are activated in individuals who believe that environmental conditions pose threats to other people, other species, or the biosphere (awareness of consequences, or AC) and that actions they initiate could avert those consequences (ascription of responsibility to self, or AR). Supportive evidence comes from studies focused on a variety of pro-environmental actions (Black 1978; Van Liere and Dunlap 1978; Black, Stern and Elworth 1985; Stern, Dietz and Black 1986; Stern, Dietz and Kalof 1993; Guagnano, Dietz and Stern 1994; Guagnano 1995; Guagnano, Stern and Dietz 1995; Stern, Dietz, Kalof and Guagnano 1995; Widegren 1998).

Personal Values. Following the reasoning already described that links pro-environmental behavior to particular basic types of values, researchers have drawn on the value measures developed in cross-national research by Schwartz and colleagues (Schwartz and Bilsky 1987; Schwartz 1992, 1994), using them or modifications of them for environmental research (Stern, Dietz, Kalof and Guagnano 1995; Stern, Dietz and Guagnano 1998; Karp 1996). In the initial formulation of this approach, Stern, Dietz, and Kalof (1993) posited three "value orientations" or types of values relevant to environmentalism: self-interest, altruism towards other humans, and altruism towards other species and the bio-

sphere. These three bases for environmental concern are logically distinct and are noted in environmental philosophy and the environmental movement literature (e.g., Merchant 1992), but the distinction between altruism towards humans and altruism towards other species and the biosphere has not yet been demonstrated empirically in samples of the U.S. general public. The distinction may be important, however, in more strongly environmentalist populations such as U.S. students (Karp 1996; Stern, Dietz and Kalof 1993) or the general public in some other countries.

In this study, we examine two value bases for environmental concern — altruism and self-interest — that correspond with the Self-Transcendent and Self-Enhancement value clusters defined by Schwartz. We also examine the other two major value types Schwartz has identified — Conservation (traditional) values and Openness to Change — for evidence of effects on environmentalism such as have been reported elsewhere (Stern, Dietz, Kalof and Guagnano 1995).

New Ecological Paradigm. Dunlap and his colleagues have proposed that the rise of the environmental movement is linked to growing acceptance of a new ecological paradigm or worldview (NEP) — a view that human actions have substantial adverse effects on a fragile biosphere. The NEP scale developed by this group (Dunlap and Van Liere 1978, 1984; Dunlap et al. 1992) is perhaps the most widely used social-psychological measure in the literature on environmentalism. The NEP scale primarily measures broad beliefs about the biosphere and the effects of human action on it — a sort of "folk" ecological theory from which beliefs about the adverse consequences (AC) of ecological change can easily be deduced (Stern, Dietz and Guagnano 1995). In a sense, NEP measures awareness of very general adverse consequences of environmental conditions, whereas most studies using the Schwartz norm-activation model use measures of problem-specific consequences. The NEP is a worldview that predisposes an individual to accept more narrowly focused AC beliefs.

Our theory links these three accounts through a causal chain of five variables: values (especially altruistic values), NEP, AC beliefs, AR beliefs (not measured in this study), and personal norms for pro-environmental action. The rationale and empirical support for this causal ordering are presented in a series of previous works (Black, Stern and Elworth 1985; Stern and Oskamp 1987; Stern, Dietz, Kalof and Guagnano 1995; Gardner and Stern 1996, Chapter 7). The causal chain moves from relatively stable, central elements of personality and belief structure to more focused beliefs about human-environment relations, the threats they pose to valued objects, and the responsibility for action, finally activating a sense of moral obligation that creates a predisposition to act in sup-

port of movement goals. We postulate that each variable in the chain directly affects the next; each may also directly affect variables farther down the chain. We hypothesize that personal norms directly affect all three manifestations of support for the environmental movement and that all the other variables in the theory may have indirect effects through norms, as well as in some cases direct effects net of norms. Other variables from VBN theory and perhaps other social-psychological variables may directly affect particular types of movement support, but we do not expect any of these variables to have direct effects on all types. We further expect that each type of movement support will be affected by individuals' capabilities to take the actions required to provide the particular type of support and by external, contextual conditions that facilitate or constrain those actions (Guagnano, Stern and Dietz 1995; Gardner and Stern 1996). Thus, particular types of movement support flow from a dispositional element based in personal values and normative beliefs but are further shaped by other influences — notably, capabilities and constraints — that transform the disposition into particular kinds of action. Our focus here is on three types of non-activist movement support; other theories postulate specific processes such as identity transformation that lead to committed activist participation.

Other Social-Psychological Theories of Environmentalism

We tested the VBN theory against three other theories in the literature. One, derived from so-called cultural theory (Douglas and Wildavsky 1982), posits that the bases of contemporary environmentalism lie in deep-rooted orienting dispositions or “cultural biases” that make some individuals especially fearful of environmental threats to human health and safety. Dake (1991, 1992), following Douglas and Wildavsky, has developed scales that measure four orienting dispositions: egalitarianism, hierarchy, individualism and fatalism. The theory suggests that egalitarians will be most concerned with the environment and individualists least concerned. There is some supporting evidence for this view (Dake 1991; Peters and Slovic 1995).

The theory of post-materialist values (Inglehart 1977, 1990, 1997) holds that a new set of “post-materialist” social and political values and attitudes is emerging in the industrial world as a result of increasing affluence and security. These values emphasize quality of life and self-expression as important desiderata in a society, in contrast to materialist values that have emphasized economic well-being and personal and national security. Inglehart sees emerging environmental concern as one result of increasing post-materialism (Inglehart 1995). A number of studies have examined this hypothesis, with mixed results (Abramson 1997; Brechin and Kempton 1994; Brechin and Kempton 1997; Dunlap and

Mertig 1997; Kidd and Lee 1997; Lee and Kidd 1997; Pierce 1997; Dietz, Stern and Guagnano 1998).⁶

We also examined the idea that a spiritual or religious world view may have an important influence on environmentalism (White 1967; Greeley 1993; Kempton, Boster and Hartley 1995; Eckberg and Blocker 1996; Dietz, Stern and Guagnano 1998). We focused on the view that people who hold nature sacred, whether because it was created by God or because it is sacred in itself, are more active in supporting environmental protection. Religious or spiritual beliefs may be especially important because they offer an absolute standard that supersedes appeals to efficiency, practicality and expedience.

This study examines the predictive value of VBN theory and compares it with six models found in the published literature. Although there have been tests of the explanatory power of each model separately and a few studies have used two of them as predictors of behavior (e.g., Tarrant and Cordell 1997; Widegren 1998), there has been no effort until now to compare all of them in any systematic way.

Method

Data Collection and Analytic Strategy

In June 1994, we collected data from 420 respondents throughout the United States using computer-assisted telephone interviewing. Phone numbers were generated using a random digit procedure; random respondent selection within the household was accomplished using the “next birthday” method (Salmon and Nichols 1983). The overall response rate was 87.7% based on the number of households where we were able to contact a next birthday respondent. The sample was 56% female and had a mean age of 44.2 years, a mean educational level of 14.4 years, and a median family income of \$36,700.

To develop scales, we followed Armor's (1974) method with some modifications. Candidate items were included in a principal components analysis (PCA). The PCA was bootstrapped with 500 replications to construct bias-corrected confidence intervals for the eigenvalues (Hall 1988; Hamilton 1992, 319-325). These confidence intervals were used to determine the number of factors. To identify items loading on a particular factor (i.e., the items tapping a latent variable) we used an iterated principal factors analysis, constrained to the number of factors indicated by the bootstrapping, followed by a promax rotation. All items loading above 0.4 in absolute value on a factor were considered as part of the factor and included in scales constructed from that factor. Scales were constructed by adding together all non-missing responses and dividing by the number of valid responses. This produces a scale with the same range as the original

variables (either 1-4 or 0-1) and allows creation of a scale even when some items comprising the scale are missing. (We also constructed weighted scales using Armor's theta procedure and used regression-based imputation methods for replacing missing data. These produce results nearly identical to the simpler procedure described, so are not reported here.)

Models were estimated with ordinary least squares (OLS) regression. Several issues must be considered in interpreting results. OLS assumes no measurement error in the independent variables. We have also experimented with errors-in-variables regression that takes account of the reliability of the independent variables. However, because the scales developed using the Dake cultural theory items have low reliability in our sample, we cannot include them in an errors-in-variables estimation. We therefore have chosen to report OLS results that include the Dake items. Estimates using the errors-in-variables procedure of models not including the Dake scales produce results very similar to those reported here. Our estimates assume the causal ordering described above. If these assumptions are incorrect, then OLS will produce biased estimates of causal effect that are still valid measures of association. Finally, collinearity is not a serious problem in the estimates we report. The largest variance inflation factor in any model is 2.5 for personal norms in the model including both VBN variables and those suggested by other theories.

The Measures

Variables from Moral Norm Activation Theory. We measured two variables from Schwartz's norm-activation theory: personal norms and awareness of consequences (AC). The survey included nine items on normative belief . . . three tapping beliefs about personal moral obligations and, following a past extension of the theory (Stern, Dietz and Black 1986), three on the obligations of government and three on the obligations of business. Beliefs about the moral obligations of such collective actors may be important determinants of personal choice to support social movements through which one may influence those actors. Factor analysis determined that the nine items loaded on a single factor that accounted for 52 percent of the variance. An additive scale of the 9 items (see Appendix) has an alpha reliability of 0.88.⁷ Nine items designed to measure AC (see Appendix) formed a single factor accounting for 60 percent of the variance; the additive scale has an alpha of 0.91.

Personal Values. We included twenty-six items from the Schwartz value scales as we have modified them to tap environmental values (Stern, Dietz, Kalof and Guagnano 1995). Our analysis of these items indicated a four-factor solution was appropriate. We created an additive scale for each of the

four factors (see Appendix), consisting of all items loading at least 0.40 on the factors for Self-Transcendent values (altruism) (alpha = 0.86), Traditional values (alpha = 0.80), Self-Enhancement (alpha = 0.69), and Openness to Change (alpha = 0.62). As in our previous analysis of data from a general-public sample in the USA (Stern, Dietz, Kalof and Guagnano 1995), this analysis does not reveal an empirical distinction between altruism towards humans and altruism towards other species. Items related to concern with the biophysical environment load on the same factor as items related to more humanistic concerns.

New Ecological Paradigm (NEP). The NEP is measured using five items from Dunlap's longer scale (Dunlap et al. 1992). The unidimensionality of the scale was verified using Armor's method. The additive scale has an alpha reliability of 0.73. Items are listed in the Appendix.

Cultural Theory. We included two items each from Dake's egalitarian, individualist, hierarchist and fatalist cultural bias scales. A factor analysis of these eight items constrained to four factors, as called for by the theory, produces factors representing the hierarchy, egalitarianism and individualism dimensions. Although only one item from the fatalism scale, "Co-operation with others rarely works," loaded above 0.4 on a factor, we used both items in creating the fatalism scale as Dake's work suggests is appropriate. Scale items are reported in the Appendix. The alpha reliabilities for the scales are: hierarchy, 0.41; egalitarianism, 0.56; individualism, 0.67; fatalism, 0.36. The use of this minimal subset of Dake's items has probably lowered reliability and may reduce the ability of our measures of cultural-theory variables to predict environmentalism.

Post-materialism. Post-materialism was measured using two questions asking about priorities for the country. The first is: "The following is a list of four items that some people consider important priorities for the United States. Please tell me which of the four you consider the highest priority. The four items are maintaining order in the nation, giving people more say in government decisions, fighting rising prices or protecting freedom of speech." The second question asks about the second priority for the nation. The second and fourth items in the list are considered post-materialist values, the first and third materialist. The post-materialism variable was scored 0 if the respondent selected neither post-materialist items as a priority, scored 1 if a materialist item was the first priority but a post-materialist item as the second, scored 2 if a post-materialist item was first priority but a materialist the second priority and scored 3 if post-materialist items were selected as both first and second priorities.

Sacredness of Nature. The sacredness of nature measure is a single item: "Which of the following is closest to your views? Nature is sacred because it is created by God. Nature

is spiritual or sacred in itself. Nature is important but not in a spiritual or sacred way.” We have created binary variables for respondents who selected the first or the second response, leaving the third response as the left-out category.

Indicators of Environmentalism. The survey included 17 items reflecting self-reported behaviors and behavioral intentions. The items were developed to tap environmentally relevant private-sector behavior, environmental citizenship, and policy support, the three types of non-activist movement support described above. We subjected these items to factor analysis to develop reliable measures of environmentalism. These results are reported below.

Results

Dimensions of Environmentalism

Factor analysis of the 17 behavioral items suggested three factors, corresponding to the three components of environmentalism we postulated. One consists of four self-reported consumer behaviors ($\alpha = 0.72$), a subset of private-sphere movement support.⁸ A second is composed of three willingness-to-sacrifice items that indicate one form of policy support ($\alpha = 0.78$). The third is composed of seven items asking about non-activist environmental citizenship actions taken in the last twelve months and one item asking directly about the strength of the respondent’s support for the environmental movement ($\alpha = 0.77$). The items are

listed in Appendix A. Although the three scales show moderate intercorrelations of between 0.33 and 0.39, the statistical separation of three highly coherent factors suggests that non-activist support for the environmental movement can indeed be considered as a three-dimensional construct.⁹

The one item in our survey that taps a more committed and higher risk form of activism, participation in demonstrations and protests, is rare in self-reports with only 7% of respondents reporting having done so in the last 12 months. It does not load on a factor with other items. Its correlation with the willingness to sacrifice scale is 0.06, with consumer behavior is 0.12 and with environmental citizenship is 0.26. Because participation in protests provides an interesting contrast with less committed more general movement support, we include it as a separate dependent variable below.¹⁰

Explaining Environmentalism with the Value-Belief-Norm Theory

We tested the VBN theory with a series of regression models. First, we regressed the measures of the consumer behavior, willingness to sacrifice, and environmental citizenship, as well as the indicator of participation in demonstrations against the set of predictors in the theory (four values, NEP, AC, and personal norms). Then, we regressed each of the links in the postulated causal chain against the variables postulated to be causally prior to it. These results are presented in Table 1.

Table 1. Unstandardized regression coefficients for models using predictor variables from value-belief-norm theory.

Independent Variable	Consumer Behavior	Willingness to Sacrifice	Environmental Citizenship	Demonstrate	Personal Norm	Awareness of Consequences	New Ecological Paradigm
Personal norm	0.476 (4.15)	0.413 (4.78)	0.105 (2.60)	-0.022 (-0.50)	— —	— —	— —
AC	0.058 (0.67)	0.125 (1.90)	0.109 (3.55)	-0.018 (-0.54)	0.262 (7.50)	— —	— —
NEP	0.058 (0.61)	0.221 (3.09)	0.068 (2.03)	0.038 (1.04)	0.336 (9.11)	0.515 (11.33)	— —
Altruism	0.169 (2.62)	0.082 (1.66)	0.046 (2.02)	0.057 (2.23)	0.076 (2.74)	0.257 (7.02)	0.414 (12.13)
Self-enhancement	-0.041 (-1.01)	0.024 (0.81)	-0.059 (-4.17)	-0.000 (-0.02)	-0.004 (-0.22)	0.022 (0.93)	-0.061 (-2.35)
Traditional	-0.094 (-1.19)	-0.119 (-2.00)	-0.105 (-3.78)	-0.087 (-2.81)	0.009 (0.27)	-0.108 (-2.28)	-0.230 (-4.62)
Openness to Change	0.028 (0.60)	0.026 (0.74)	0.030 (1.76)	0.037 (1.97)	0.019 (0.92)	0.030 (1.04)	-0.040 (-1.28)
Intercept	0.398 (1.05)	0.217 (0.75)	-0.149 (-1.11)	0.100 (0.67)	0.850 (5.40)	1.074 (4.98)	2.379 (11.79)
R-square	0.194	0.346	0.302	0.042	0.560	0.477	0.264
N	417	409	419	418	419	419	419

Note: t-values in parentheses.

The results of the regression analyses are strongly consistent with the theory. Personal norms had strong associations with the behavioral indicators of each type of non-activist environmentalism (the bivariate correlations of personal norm with consumer behavior, willingness to sacrifice, and environmental citizenship are 0.41, 0.55, and 0.43, respectively). In addition, norms were by far the strongest predictor of consumer behavior and willingness to sacrifice in the multiple regressions. Overall the set of predictors from VBN theory together accounted for between 19 and 35 percent of the variance of the behavioral indicators. Personal norm was the only variable from the VBN theory that had a direct effect on all three types of movement support, with the contributions of the other VBN variables being mainly indi-

rect except in the case of environmental citizenship, where there were also multiple direct effects. However, personal norms do not have a direct effect on participation in a demonstration, though altruistic, traditional and openness to change values do. This finding is consistent with our expectation that the VBN theory as operationalized in a survey will not be a strong predictor of intense activism, such as demonstrating, and is also consistent with the social movements literature that has argued for the importance of values as a driver of committed activism. It seems likely that factors not measured in this survey, such as adoption of an environmentalist identity, are strongly implicated in activism. It remains an open question whether values affect activism directly, or indirectly through the process of identity transformation.

Table 2. Unstandardized regression coefficients for models using predictor variables from six theories of environmental support.

Independent Variable	Consumer Behavior	Willingness to Sacrifice	Environmental Citizenship	Demonstrate	Personal Norm	Awareness of Consequences	New Ecological Paradigm
Personal norm	0.534 (4.46)	0.412 (4.56)	0.155 (3.86)	-0.038 (-0.81)			
AC	0.042 (0.48)	0.103 (1.56)	0.090 (3.05)	-0.017 (-0.49)	0.232 (6.65)		
NEP	0.073 (0.76)	0.186 (2.58)	0.073 (2.27)	0.030 (0.80)	0.30 (8.07)	0.469 (9.78)	
Altruism	0.145 (2.15)	0.052 (1.02)	0.042 (1.88)	0.038 1.40	0.059 (2.10)	0.241 (6.31)	0.288 (7.74)
Self-enhancement	-0.005 (-0.11)	0.035 (1.10)	-0.034 (-2.40)	0.003 (1.94)	-0.026 (-1.48)	0.012 (0.48)	-0.057 (-2.18)
Traditional	-0.095 (-1.12)	-0.084 (-1.30)	-0.074 (-2.57)	-0.066 (-1.94)	-0.007 (-0.20)	-0.134 (-2.63)	-0.138 (-2.63)
Openness to Change	0.031 (0.65)	0.036 (0.99)	0.025 (1.53)	0.034 (1.74)	0.024 (1.18)	0.038 (1.30)	-0.038 (-1.28)
Post-materialism	0.012 (0.34)	-0.014 (-0.56)	0.007 (0.63)	0.012 (0.92)	0.007 (0.47)	0.010 (0.50)	0.017 (0.80)
Nature made by God	0.217 (2.63)	0.032 (0.52)	0.010 (0.35)	0.038 (1.18)	0.019 (0.55)	0.055 (1.12)	-0.003 (-0.06)
Nature sacred	0.210 (2.23)	0.090 (1.28)	0.093 (2.93)	0.107 (2.88)	0.043 (1.08)	0.049 (0.86)	0.067 (1.14)
Hierarchicalist	-0.006 (-0.10)	-0.003 (-0.06)	-0.013 (-0.65)	-0.003 (-0.14)	0.049 (1.94)	0.096 (2.66)	-0.019 (-0.51)
Egalitarian	-0.111 (-1.80)	0.042 (0.91)	-0.075 (-3.62)	0.008 (0.35)	0.130 (5.22)	0.074 (2.08)	0.222 (6.28)
Individualist	-0.122 (-1.70)	-0.189 (-3.56)	-0.079 (-3.32)	-0.000 (-0.02)	0.077 (2.62)	-0.034 (-0.80)	-0.059 (-1.34)
Fatalist	-0.050 (-0.76)	0.031 (0.63)	-0.067 (-3.10)	0.020 (0.79)	-0.032 (-1.18)	-0.076 (-1.97)	0.000 (-0.01)
Intercept	0.844 (1.96)	0.645 (1.99)	0.175 (1.21)	0.020 (0.81)	0.579 (3.27)	1.169 (4.72)	2.059 (8.69)
R-square	0.227	0.379	0.393	0.068	0.598	0.498	0.349
N	411	404	413	412	413	413	413

Note: t-values in parentheses

The regressions treating personal normative beliefs, AC, and NEP as dependent variables show that as the theory predicts, the variable hypothesized to be immediately antecedent had a very strong direct effect on each dependent variable. In addition, each of these dependent variables was directly affected by altruistic values, as should be expected with these beliefs because they are characteristic of an altruistic social movement. The other value types were less consistently related to the dependent variables. Assumptions about causal direction must be built into analysis of non-experimental data such as these, and so we cannot make strong claims about support for the causal ordering posited by our theory. However, the results are at least consistent with the causal order we suggest and with previous findings.

Comparing VBN Theory with Other Theories of Environmentalism

Table 2 presents regression models that have been expanded to include variables suggested by other theories of environmental concern, and Table 3 compares the variance explained by alternative models.

As VBN theory predicts, personal norm is the only variable in the data set that consistently predicts all dimensions of non-activist support for the environmental movement — although the individualism scale of cultural theory has a significant effect on willingness to sacrifice and environmental citizenship and is nearly significant in the model of consumer behavior. In each case, individualists are less likely than others to support the environmental movement. Participating in a demonstration again emerges as a distinct form of movement support. Unlike the three dimensions of general support that are our focus, demonstrating is not well explained by any prevalent theory of environmentalism.

VBN theory appears to be the best predictor of each form of public support. Post-materialism is not related to any form of support. Sacredness of nature has significant effects on consumer behavior ($p(F) = 0.023$) and environmental citizenship ($p(F) = 0.004$) but not on willingness to sacrifice ($p(F) = 0.425$). The variables representing Dake's approach to cultural theory show mixed results — individualists are

less likely to be movement supporters in any way while fatalists and, strangely, egalitarians, are less likely to engage in environmental citizenship behaviors. As Table 3 shows, the full model, including explanatory variables from all six theoretical accounts of environmentalism, increases explanatory power (R^2) only 3 percent beyond that achieved by VBN theory for consumer behavior and willingness to sacrifice, and by 9 percent for environmental citizenship.

The data contain some support for our hypothesis that variability across dimensions of support reflects special characteristics of the dimensions and the capabilities and constraints affecting individuals. This is most clearly seen with environmental citizenship. This type of movement support is distinct from others in at least two ways: it implies acceptance of a definition of environmental problems as social, requiring collective action and change by government, industry, and other social institutions; and it is a more promising course of action for individuals who have the status, access, and human capital resources to be effective influence agents in large organizations or the political system. The evidence shows that environmental citizenship is in fact differentially a function of variables that reflect a social definition of environmental problems and of individuals' access to resources for social influence.

Individuals' resources for social influence are affected by their socioeconomic and social-structural positions. Our data set included information on each respondent's age, educational attainment, household income, gender, and race, which we analyzed to examine consistency and variation across the types of environmental movement support. Holding the social-psychological variables constant, these demographic variables had no effect on consumer behavior ($p(F) = 0.19$) or policy support ($p(F) = 0.19$).¹¹ However, the demographic variables did have an effect on environmental citizenship ($p(F) < 0.001$). Blacks were less likely to offer this type of movement support than whites ($t = -2.22$) but higher income was associated with increased environmental citizenship ($t = 3.11$), consistent with our hypothesis about resources for social influence. And once again participating in a demonstration emerges as a different mode of action —

Table 3. Comparison of variance explained by VBN theory, other theories and the full model

Independent Variable	Consumer Behavior	Willingness to Sacrifice	Environmental Citizenship	Demonstrate	Personal Norm	Awareness of Consequences	New Ecological Paradigm
Norm activation theory	0.176	0.316	0.223	0.006			
Other theories alone	0.094	0.199	0.187	0.048	0.304	0.223	0.250
VBN theory alone	0.194	0.346	0.302	0.042	0.560	0.477	0.264
Full Model	0.227	0.379	0.393	0.068	0.598	0.498	0.349
Full minus VBN	0.033	0.033	0.091	0.026	0.038	0.021	0.085
Full minus other theories	0.133	0.180	0.206	0.020	0.294	0.275	0.099

it is negatively related to household income ($t = -2.53$) and to age ($t = -2.93$).

Discussion

Our findings can be summarized as follows:

1. *Non-activist support for the environmental movement can be usefully divided into three dimensions:* consumer behavior, environmental citizenship, and policy support or acceptance. Seventeen behavioral measures collapsed into three factors that closely corresponded to these dimensions. Each type of support is associated with a distinct cluster of predictive variables, suggesting that support as a dispositional variable is insufficient to explain particular kinds of support.

2. *Personal proenvironmental norms — the belief that the individual and other social actors have an obligation to alleviate environmental problems—are the only social-psychological element common to all three types of non-activist environmentalism.* This finding is consistent with the interpretation that personal norms create a general predisposition to support movement goals.

3. *A value-belief-norm theory that postulates causal links among variables from three of the six theories in the published literature offers the best available theoretical account of all three types of non-activist environmentalism.* The VBN theory builds on the strong associations of personal norms with all these forms of environmentalism by adding an account of the social-psychological determination of acceptance of those norms. The VBN theory accounts for 19 percent of the variance in consumer behavior, 35 percent of the variance in willingness to sacrifice, 30 percent of the variance in environmental citizenship, 56 percent of the variance in personal norms, 48 percent of the variance in AC, and 26 percent of the variance in NEP. Adding variables from the other social-psychological theories of environmentalism increases the variance explained by relatively small amounts. The VBN theory as operationalized in this study is not a strong predictor of self-reported participation in demonstrations, accounting for only 4 percent of the variance.

4. *Other social-psychological theories may still provide useful insights into specific types of non-activist environmentalism, particularly environmental citizenship.* For instance, variables from cultural theory increase the ability to predict environmental citizenship by 7 percent. We presume that the added predictive value reflects the fact that cultural-theory variables reflect beliefs about how society should be ordered, and are thus more likely to affect public-sphere behavior than behavior in the private sphere. In addition, beliefs in the sacredness of nature add small but statistically significant amounts of predictive value for the consumer behavior and

citizenship types of movement support. People who believe nature is sacred, whether for theistic reasons or not, are more likely to engage in proenvironmental consumer behavior; environmental citizenship behaviors, however, depend only on the belief that nature is sacred in itself. This finding suggests that different aspects of religious belief affect different types of environmentalism (similar results were reported by Dietz, Stern and Guagnano 1998, from the larger national sample of the 1993 General Social Survey).

5. *The study provides evidence that factors in the social context affect the ways environmentalism finds behavioral expression.* In particular, environmental citizenship behavior, but not other forms of non-activist environmentalism, is affected by broad beliefs about how society should be organized and by social-structural variables that reflect an individual's access to resources to act as a social change agent (i.e., income and race). Further work is needed to understand how specific opportunities and constraints act, and also how life histories embedded in gender, race/ethnicity, and community may shape values and beliefs (Kalof et al. 1999).

6. *The kind of committed activism studied by most social movement researchers is distinct from the kinds of non-activist support we examine.* Our theory is consistent with the ideas of frame alignment and identity transformation in the social movement literature, but those experiences may depend on variables (e.g., identity) not measured in our survey.

The present data suggest that the VBN theory provides the best available social-psychological account of non-activist support for the goals of the environmental movement. In addition to providing a very strong empirical accounting for all three types of support, VBN theory is consistent with much social-psychological theory and data about the structure of values, beliefs, and attitudes.

An important conclusion from the present study is that research has progressed beyond the point where it makes sense to talk about the relationships of "environmental attitudes" and "proenvironmental behavior" in general terms. Knowledge about environmentalism will accumulate more easily if future research is explicit about which types of environmentalist behavior are being investigated and which social-psychological antecedents (sometimes loosely lumped together as "attitudes") are being put forward as explanatory constructs. Research on support for other social movements may similarly benefit by distinguishing clearly among committed movement activism, non-activist citizenship behaviors, private-sphere behavior, and policy support. As with environmentalism, different social-psychological variables may be associated with each type of support.

VBN theory has heuristic value for future studies of environmentalism and other social movements. It offers a

classification of types of movement support and proposes both a detailed theory of non-activist support for social movements and a plausible and empirically supported conceptual framework for analyzing the determinants of particular types of support, such as citizenship behavior.

The theory of non-activist movement support posits that social movements are rooted in particular human values and implies that in mobilizing support, movement activists and organizations will highlight those values, threats to them (AC), and the ability of their targets to alleviate those threats by appropriate action (AR). This sort of mobilization strategy is apparent from cursory examination of fund-raising mailings by movement organizations, but it has not to our knowledge been subjected to systematic study. The mobilization strategies of different movements should be distinguishable by the values they emphasize and the things they define as threatening those values. Individuals' susceptibility to mobilization will depend in part on their basic value priorities and their willingness to believe in the claimed threats. The theory also posits that different kinds of support can be elicited from movement supporters according to the beliefs they hold and the capabilities and constraints affecting them. The finding that social-structural position affects citizenship behavior but not other forms of non-activist movement support is worth examination in the context of other social movements.

The social-psychological theory presented here has the potential to link several research literatures. For instance, it suggests ways of connecting concepts of social movement mobilization with related literatures on the formation of public opinion and on attitude-behavior relationships. It points to the social-psychological roots of movement support in norm-activation processes, at the same time positing that particular types of movement support are affected by particular kinds of contextual variables, which may include economic, technological, and social-structural factors as direct influences on behavior or that may influence behavior indirectly by shaping the social psychology of movement support (Guagnano, Stern and Dietz, 1995; Gardner and Stern 1996).

Endnotes

1. Since Kalof was one of the coauthors of this paper, the review process from submission to decision was handled by the Managing Editor, Jonathan Taylor. Troy Abel is now at the Department of Political Science and the Environmental Science Program, Southern Illinois University, Edwardsville, Illinois 62026. This research was supported in part by the U.S. Environmental Protection Agency grant "The Social Psychology of Stated Preferences" and by National Science Foundation grants SES 9211591 and 9224036.
2. The policy system (Dietz and Rycroft 1987) is all those people and organizations who are actively engaged in trying to influence policy on the issues being contested. The environmental policy system in the United States includes movement organizations, government agencies, Congress, law and consulting firms, corporations and trade associations, and scholars working at think tanks and universities. Our approach applies to social movements that engage in struggles over policy. It may be less applicable to movements that do not attempt to achieve policy changes, such as spiritual or self-help movements, except as they might occasionally engage with the state. We also do not consider revolutionary movements that opt out of participation in the policy system in order to pull it down and substitute an alternative system.
3. We differ with those who suggest that the environmental movement, as a new social movement, is primarily about identity. The identity processes so well described in the literature on new social movements are certainly important in the development of movement activists. Indeed, some research indicates little mobility between environmental groups and other parts of the policy system (Dietz and Rycroft 1987), suggesting that environmental movement activists do maintain an identity distinct from that of general environmental professionals. But nearly every strain of the environmental movement actively engages with the policy system and is not content to confine itself to the politics of identity. We also differ with those who have characterized the environmental movement as a consensus movement (McCarthy and Wolfson 1992; Schwartz and Shuba 1992). Although environmentalism enjoys broad public support, it also faces strong and well-organized opposition. Even in communities affected by toxic contamination, where the geographic spread of the problem is narrow and the effects perceived are severe, there are nearly always powerful local opponents (Gould et al. 1996). And even a seemingly innocuous policy such as mandatory recycling faces systematic opposition.
4. Schwartz (1977, 231) distinguishes personal norms from social norms by noting "that the sanctions attached to personal norms are tied to the self-concept. Anticipation of or actual conformity to a self-expectation results in pride, enhanced self-esteem, security, or other favorable self-evaluations; violation or its anticipation produce guilt, self-deprecation, loss of self-esteem, or other negative self-evaluations."
5. Our focus on values and expectations about future events suggests that we are proposing a value-expectancy theory of norms. However, our theory diverges from the rational calculation model associated with most value-expectancy theories. We do not presume that decisions are typically taken on the basis of a full consideration of all relevant values and outcomes. Rather, we believe that personal norms are activated by application of fairly simple rule: if I discern that one of my values is threatened and if I believe my actions can alleviate the threat, I am obligated by my value structure to act (Dietz and Stern 1995). The fact that the calculations do not involve a full consideration of all one's values makes it possible for social movement organizations to influence decisions by directing individuals' attention selectively, for example, by defining choices in terms of particular values or labeling certain events as threats to those values. This parallels the framing process used to understand committed activism. Of course, there are situations in which individuals carefully deliberate about how all consequences of alternative courses of action may affect all their values. Indeed, some recent suggestions in environ-

- mental policy analysis call for collective deliberative processes as a way to prevent manipulation of public judgment (Dietz 1994; Dietz and Stern 1998).
6. Pichado (1997) has criticized the application of Inglehart's theory to the new social movements.
 7. A scale consisting of the three items concerning personal moral obligation has an alpha of 0.74 and yields highly similar results to the 9-item scale in regression analyses, except that it is a weaker predictor of environmental citizenship behaviors in this general public sample.
 8. The consumer behavior scale is focused on household purchase behavior. Other environmentally significant private-sphere behavior, such as household waste disposal and maintenance of motor vehicles, may be shaped by different patterns of social-psychological variables, capabilities, and constraints.
 9. In addition to bootstrapping we used a maximum likelihood factor analysis to examine the dimensions of public support for the environmental movement. A three factor solution produces chi-square = 116.3, df = 88, p = 0.02. A four factor solution produces chi-square of 87.35, df = 74 and p = 0.14. The only substantive difference between the two solutions is that in the latter, an item asking if the respondent had read any environmental group literature in the last 12 months loads alone on a factor. In the three factor solution, it loads with other environmental citizenship items.
 10. We report results of OLS regressions for a 0-1 dichotomous variable because they are easier to compare with the results for other measures of movement support. While a logit model is more appropriate for a dependent variable representing a categorical choice, the OLS estimates are consistent and are not likely to mislead in a sample of this size.
 11. Gender approaches statistical significance in the model of consumer behavior, with women more likely to engage in such behavior (t = 1.94).

References

- Abramson, P.R. 1997. Postmaterialism and environmentalism: A comment on an analysis and a reappraisal. *Social Science Quarterly* 78(1), 21-23.
- Armor, D. 1974. Theta reliability and factor scaling. In H. L. Costner (ed.), *Sociological Methodology*, 17-50. San Francisco: Jossey-Bass.
- Black, J. Stanley. 1978. Attitudinal, normative, and economic factors in early response to an energy-use field experiment. Unpublished doctoral dissertation, University of Wisconsin. Dissertation Abstracts International, 39, 436B.
- Black, J. Stanley, Paul C. Stern and Julie T. Elworth. 1985. Personal and contextual influences on household energy adaptations. *Journal of Applied Psychology* 70, 3-21.
- Brechin, S.R. and W. Kempton. 1994. Global environmentalism: A challenge to the postmaterialism thesis? *Social Science Quarterly* 75, 245-269.
- Brechin, S. R. and W. Kempton. 1997. Beyond postmaterialist values: National versus individual explanations of global environmentalism. *Social Science Quarterly* 78(1), 16-20.
- Brulle, Robert J. 1995. Environmental discourse and environmental movement organizations: A historical and rhetorical perspective on the development of U.S. environmental organizations. *Sociological Inquiry* 65, 58-83.
- Cotgrove, Stephen. 1982. *Catastrophe or Cornucopia?* New York: John Wiley and Sons.
- Dake, Karl. 1991. Orienting dispositions in the perception of risk: An analysis of contemporary worldviews and cultural biases. *Journal of Cross-Cultural Psychology* 22, 61-82.
- Dake, Karl. 1992. Myths of nature: Culture and the social construction of risk. *Journal of Social Issues* 48(4), 21-38.
- Dietz, Thomas. 1994. What should we do? Human ecology and collective decision making. *Human Ecology Review* 1, 301-309.
- Dietz, Thomas, A.S. Frisch, Linda Kalof, Paul C. Stern and Gregory A. Guagnano. 1995. Values and vegetarianism: An exploratory analysis. *Rural Sociology* 60, 533-542.
- Dietz, Thomas and Paul C. Stern. 1995. Toward a theory of choice: Socially embedded preference construction. *Journal of Socio-Economics* 24, 261-279.
- Dietz, Thomas and Paul C. Stern. 1998. Science, values and biodiversity. *BioScience* 48, 441-444.
- Dietz, Thomas, Paul C. Stern and Gregory A. Guagnano. 1998. Social structural and social psychological bases of environmental concern. *Environment & Behavior* 30, 450-471.
- Dietz, Thomas, Paul C. Stern and Robert W. Rycroft. 1989. Definitions of conflict and the legitimation of resources: The case of environmental risk. *Sociological Forum* 4, 47-70.
- Dietz, Thomas and Robert W. Rycroft. 1987. *The Risk Professionals*. New York: Russell Sage Foundation.
- Douglas, M. and A. Wildavsky. 1982. *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers*. Berkeley, CA: University of California Press.
- Dunlap, Riley E and Angela Mertig. 1997. Global environmental concern: An anomaly for postmaterialism. *Social Science Quarterly* 78(1), 24-29.
- Dunlap, Riley E. and Kent D. Van Liere. 1978. The New Environmental Paradigm: A proposed measuring instrument and preliminary results. *Journal of Environmental Education* 9, 10-19.
- Dunlap, Riley E. and Kent D. Van Liere. 1984. Commitment to the dominant social paradigm and concern for environmental quality. *Social Science Quarterly* 65, 1013-1028.
- Dunlap, Riley E., Kent D. Van Liere, Angela Mertig, William R. Catton, Jr. and Robert E. Howell. 1992. Measuring endorsement of an ecological worldview: A revised NEP scale. Paper presented at the 1992 Meeting Rural Sociological Society, State College, PA.
- Eckberg, D.L. and J.T. Blocker. 1996. Christianity, environmentalism and the theoretical problem of fundamentalism. *Journal for the Scientific Study of Religion* 35, 343-355.
- Friedman, Debra and Doug McAdam. 1992. Collective identity and activism: Networks, choices and the life of a social movement. In A. Morris and C. M. Mueller (eds.), *Frontiers in Social Movement Theory*, 156-173. New Haven, CT: Yale University Press.
- Gamson, William A. 1992. The social psychology of collective action. In A. D. Morris and C. Mueller (eds.), *Frontiers in Social Movement Theory*, 53-76. New Haven, CT: Yale University Press.

- Gardner, G.T. and Paul C. Stern. 1996. *Environmental Problems and Human Behavior*. Boston: Allyn and Bacon.
- Greeley, A. 1993. Religion and attitudes toward the environment. *Journal for the Scientific Study of Religion* 32, 19-28.
- Gould, Kenneth A, Allan Schnaiberg and Adam S Weinberg. 1996. *Local Environmental Struggles: Citizen Activism in the Treadmill of Production*. New York: Cambridge University Press.
- Guagnano, Gregory A. 1995. Locus of control, altruism and agentic disposition. *Population and Environment* 17, 63-77.
- Guagnano, Gregory A., Thomas Dietz and Paul C. Stern. 1994. Willingness to pay: A test of the contribution model. *Psychological Science* 5, 411-415.
- Guagnano, Gregory A., Paul C. Stern and Thomas Dietz. 1995. Influences on attitude-behavior relationships: A natural experiment with curbside recycling. *Environment Behavior* 27, 699-718.
- Hall, P. 1988. Theoretical comparisons of bootstrap confidence intervals. *The Annals of Statistics* 16, 927-953.
- Hamilton, L. C. 1992. *Regression with Graphics: A Second Course in Applied Statistics*. Belmont, California: Duxbury Press
- Heberlein, T.A. 1981. Environmental attitudes. *Zeitschrift für Umweltpolitik* 2, 241-270.
- Hunt, Scott A., Robert D. Benford and David A. Snow. 1994. Identify fields: Process and the social construction of movement identifies. In E. Laurana, H. Johnston and J. R. Gusfield (eds.), *New Social Movements: From Ideology to Identity*, 184-208. Philadelphia, Pennsylvania: Temple University Press.
- Inglehart, Ronald. 1977. *The Silent Revolution: Changing Values and Political Styles among Western Publics*. Princeton, NJ: Princeton University Press.
- Inglehart, Ronald. 1990. *Culture Shift in Advanced Industrial Society*. Princeton, NJ: Princeton University Press.
- Inglehart, Ronald. 1995. Public support for environmental protection: Objective problems and subjective values in 43 societies. *Political Science and Politics* 15, 57-71.
- Inglehart, Ronald. 1997. *Modernization and Postmodernization: Cultural, Economic and Political Change in 43 Societies*. Princeton, NJ: Princeton University Press.
- Johnston, Hank, Enrique Larana and Joseph R. Gusfield. 1994. Identities, grievances and new social movements. In E. Laurana, H. Johnston and J. R. Gusfield (eds.), *New Social Movements: From Ideology to Identity*, 3-35. Philadelphia, Pennsylvania: Temple University Press.
- Kalof, Linda, Thomas Dietz, Paul C. Stern and Gregory A. Guagnano. 1999. Race, Gender and Environmentalism: The atypical values and beliefs of white men. Unpublished manuscript, George Mason University, Department of Sociology and Anthropology, Fairfax, VA 22030.
- Karp, David G. 1996. Values and their effects on pro-environmental behavior. *Environment & Behavior* 28, 111-133.
- Kempton, Willett, James S. Boster and Jennifer A. Hartley. 1995. *Environmental Values in American Culture*. Cambridge, Massachusetts: MIT Press.
- Kidd, Q. and A-R. Lee. 1997. Postmaterialist values and the environment: A critique and reappraisal. *Social Science Quarterly* 78(1), 1-15.
- Klandermans, Bert and Dirk Oegema. 1987. Potentials, networks, motivations and barriers: Steps toward participation in social movements. *American Sociological Review* 52, 519-531.
- Lee, A-R. and Q. Kidd. 1997. More on postmaterialist values and the environment. *Social Science Quarterly* 78(1), 36-43.
- McAdam, Doug, John D. McCarthy and Mayer N. Zald. 1988. Social movements. In Neil J. Smelser (ed.), *Handbook of Sociology*, 695-738. Newbury Park, California: Sage.
- McCarthy, John D. and Mark Wolfson. 1992. Consensus movements, conflict movements and the cooptation of civic and state infrastructures. In A. D. Morris and C. M. Mueller (eds.), *Frontiers in Social Movements*, 273-297. New Haven, CT: Yale University Press.
- McLaughlin, Paul and Marwan Khawaja. 1999. The organization dynamics of the U.S. environmental movement. *Rural Sociology*, in press.
- Merchant, Carolyn. 1992. *Radical Ecology: The Search for a Livable World*. New York: Routledge.
- Peters, E. and P. Slovic. 1995. The role of affect and worldviews as orienting dispositions in the perception and acceptance of nuclear power. Decision Research Report 95-1. Eugene OR: Decision Research, Inc.
- Pichado, Nelson A. 1997. New social movements: A critical review. *Annual Review of Sociology* 23, 411-430.
- Pierce, J. C. 1997. The hidden layer of political culture: A comment on postmaterialist values and the environment: A critique and reappraisal. *Social Science Quarterly* 78(1), 30-35.
- Salmon, C. T. and J. S. Nichols. 1983. The next birthday method of respondent selection. *Public Opinion Quarterly* 47, 270-6.
- Schwartz, Michael and Paul Shuva. 1992. Resource mobilization versus the mobilization of people. In A. D. Morris and C. M. Mueller (eds.), *Frontiers in Social Movements*, 205-223. New Haven, CT: Yale University Press.
- Schwartz, Shalom H. 1973. Normative explanations of helping behavior: A critique, proposal, and empirical test. *Journal of Experimental Social Psychology* 9, 349-364.
- Schwartz, Shalom H. 1977. Normative Influences on Altruism. In L. Berkowitz (ed.), *Advances in Experimental Social Psychology, Volume 10*, 221-279. New York: Academic Press.
- 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* 25, 1-65.
- Schwartz, Shalom H. 1994. Are there universal aspects in the structure and contents of human values? *Journal of Social Issues* 50(4), 19-46.
- Schwartz, Shalom H. 1996. Value priorities and behavior: Applying a theory of integrated value systems. In C. Seligman, J. M. Olson and M. P. Zanna (eds.), *The Psychology of Values: The Ontario Symposium, Volume 8*. Hillsdale, NJ: Lawrence Erlbaum.
- Schwartz, S.H. and W. Bilsky. 1987. Toward a psychological structure of human values. *Journal of Personality and Social Psychology* 53, 550-562.
- Schwartz, Shalom H. and S. Huisman. 1995. Value priorities and religiosity in four western religions. *Social Psychology Quarterly* 58, 88-107.
- Snow, David A. and Robert D. Benford. 1992. Master Frames and Cycles of Protest. In A. D. Morris and C. M. Mueller (eds.), *Frontiers in Social Movements*, 133-155. New Haven, CT: Yale University Press.
- Snow, David A., E. Burke Rochford, Jr., Stephen K. Worden and Robert D. Benford. 1986. Frame alignment processes, micromobilization and movement participation. *American Sociological Review* 51, 464-481.
- Stern, Paul. C. and Thomas Dietz. 1994. The value basis of environmental concern. *Journal of Social Issues* 50(3), 65-84.

- Stern, Paul C., Thomas Dietz and J. S. Black. 1986. Support for environmental protection: The role of moral norms. *Population and Environment* 8, 204-222.
- Stern, Paul C., Thomas Dietz and Gregory A. Guagnano. 1995. The new environmental paradigm in social psychological perspective. *Environment & Behavior* 27, 723-745.
- Stern, Paul C., Thomas Dietz and Gregory A. Guagnano. 1998. A brief inventory of values. *Educational and Psychological Measurement* 58, 984-1001.
- Stern, Paul C., Thomas Dietz and Linda Kalof. 1993. Value orientations, gender, and environmental concern. *Environment & Behavior* 25, 322-348.
- Stern, Paul C., Thomas Dietz, Linda Kalof and Gregory A. Guagnano. 1995. Values, beliefs and proenvironmental action: Attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology* 25, 1611-1636.
- Stern, Paul C. and Stuart Oskamp. 1987. Managing Scarce Environmental Resources. In D. Stokols and I. Altman (eds.), *Handbook of Environmental Psychology*, 1043-1088. NY: Wiley.
- Tarrant, M.A. and H. K. Cordell. 1997. The effect of respondent characteristics on general environmental attitude-behavior correspondence. *Environment & Behavior* 29, 618-637.
- Van Liere, Kent D. and Riley E. Dunlap. 1978. Moral norms and environmental behavior: An application of Schwartz's norm activation model to yard burning. *Journal of Applied Social Psychology* 8, 174-188.
- White, L., Jr. 1967. The historical roots of our ecological crisis. *Science* 155, 1203-1207.
- Widgren, Örjan. 1998. The New Environmental Paradigm and personal norms. *Environment & Behavior* 30, 75-100.
- Zald, Mayer. 1992. Looking backward to look forward: Reflections on the past and future of the Resource Mobilization Research Program. In A. D. Morris and C. M. Mueller (eds.), *Frontiers in Social Movements*, 326-348. New Haven, CT: Yale University Press.

Appendix 1: Scales

New Ecological Paradigm (NEP)

The so-called "ecological crisis" facing humankind has been greatly exaggerated. (R)
The earth is like a spaceship with limited room and resources. If things continue on their present course, we will soon experience a major ecological catastrophe.
The balance of nature is strong enough to cope with the impacts of modern industrial nations. (R)
Humans are severely abusing the environment.

Values

Altruistic:

Social justice, correcting injustice, care for the weak
Preventing pollution, conserving natural resources
Equality, equal opportunity for all
Unity with nature, fitting into nature
A world of peace, free of war and conflict

Respecting the earth, harmony with other species
Protecting the environment, preserving nature

Traditional:

True friendship, close supportive friends
Loyal, faithful to my friends
Sense of belonging, feeling that others care about me
Obedient, dutiful, meeting obligations
Self-discipline, self-restraint, resistance to temptations
Family security, safety for loved ones
Honoring parents and elders, showing respect
Honest, genuine, sincere
Forgiving, willing to pardon others

Self-interest:

Social power, control over others, dominance
Influential, having an impact on people and events
Wealth, material possessions, money
Authority, the right to lead or command

Openness to change:

Curious, interested in everything, exploring
A varied life, filled with challenge, novelty and change
An exciting life, stimulating experiences

Cultural Biases

Hierarchy:

One of the problems with people today is that they challenge authority too often.
The best way to provide for future generations is to preserve our customs and heritage.

Egalitarianism:

What this world needs is a fairness revolution to make the distribution of goods more equal.
I support a tax shift so that the burden falls more heavily on corporations and persons with large incomes.

Individualism:

If people have the vision and ability to acquire property, they should be allowed to enjoy it.
Everyone should have an equal chance to succeed and fail without government interference.

Fatalism:

Co-operation with others rarely works.
It seems that no matter who you vote for in an election, things remain pretty much the same.

Awareness of Consequences (AC)

In general, do you think that climate change, which is sometimes called the greenhouse effect, will be a very serious problem for you and your family, somewhat of a problem for you and your family or won't really be a problem for you and your family?

Do you think that climate change will be a very serious problem for the country as a whole, somewhat of a problem or won't really be a problem for the country as a whole?

Do you think that climate change will be a very serious problem for other species of plants and animals, somewhat of a problem or won't really be a problem for other species of plants and animals?

Next, I'd like you to consider the problem of loss of tropical forests. Do you think this will be a very serious problem for you and your family, somewhat of a problem or won't really be a problem for you and your family?

Do you think that loss of tropical forests will be a very serious problem for the country as a whole, somewhat of a problem or won't really be a problem for the country as a whole?

Do you think that loss of tropical forests will be a very serious problem for other species of plants and animals, somewhat of a problem or won't really be a problem for other species of plants and animals?

Next, I'd like you to consider the problem of toxic substances in air, water and the soil. Do you think this will be a very serious problem for you and your family, somewhat of a problem or won't really be a problem for you and your family?

Do you think that toxic substances in air, water and the soil will be a very serious problem for the country as a whole, somewhat of a problem or won't really be a problem for the country as a whole?

Do you think that toxic substances in air, water and the soil will be a very serious problem for other species of plants and animals, somewhat of a problem or won't really be a problem for other species of plants and animals?

Personal Normative Beliefs

The government should take stronger action to clean up toxic substances in the environment.

I feel a personal obligation to do whatever I can to prevent climate change.

I feel a sense of personal obligation to take action to stop the disposal of toxic substances in the air, water, and soil.

Business and industry should reduce their emissions to help prevent climate change.

The government should exert pressure internationally to preserve the tropical forests.

The government should take strong action to reduce emissions and prevent global climate change.

Companies that import products from the tropics have a responsibility to prevent destruction of the forests in those countries.

People like me should do whatever we can to prevent the loss of tropical forests.

The chemical industry should clean up the toxic waste products it has emitted into the environment.

*Consumer Behavior**

How often do you make a special effort to buy fruits and vegetables grown without pesticides or chemicals; also known as organic fruits and vegetables?

How often do you make a special effort to buy paper and plastic products that are made from recycled materials?

How often do you avoid buying products from a company that you know may be harming the environment?

How often do you make a special effort to buy household chemicals such as detergent and cleaning solutions that are environmentally friendly?

Willingness to Sacrifice

I would be willing to pay much higher taxes in order to protect the environment

I would be willing to accept cuts in my standard of living to protect the environment.

I would be willing to pay much higher prices in order to protect the environment.

Environmental Citizenship+

Are you a member of any group whose main aim is to preserve or protect the environment?

In the last twelve months, have you read any newsletters, magazines or other publications written by environmental groups?

Signed a petition in support of protecting the environment?

Given money to an environmental group?

Written a letter or called your member of Congress or another government official to support strong environmental protection?

Boycotted or avoided buying the products of a company because you felt that company was harming the environment?

Voted for a candidate in an election at least in part because he or she was in favor of strong environmental protection?

Some people feel the environmental movement does a great deal of good and strongly support it, others feel the environmental movement does more harm than good and strongly oppose it. Where do you stand? Do you strongly support, somewhat support, somewhat oppose or strongly oppose the environmental movement.**

Notes: All scales scored so that high scores indicate strong endorsement of the concept.
(R) indicates an attitude item that was reversed in creating scales. Unless otherwise noted, response categories were: Strongly agree, Somewhat agree, Somewhat disagree, Strongly disagree
*—Response categories were: Always, Often, Sometimes, Never
+—Response categories were: Yes, No
**—Scores were rescaled to 0, 0.33, 0.67 and 1 to match the 0-1 scoring of other items in the scale.