
Altruism, Self-Interest, and the Reasonable Person Model of Environmentally Responsible Behavior

JULIA B. CORBETT

University of Utah

This study operationalized a new model of environmental behavior to test its utility in predicting the relatively difficult behavior of getting people out of their cars. The Reasonable Person Model of environmentally responsible behavior hypothesizes that a mix of self-interest, altruism, personal norms, desirable choices, and participatory problem solving are the best predictors of behavior. In a random sample telephone survey of drivers (N = 344) along the Wasatch Front, all independent variables were significantly correlated to behavior with the exception of one personal control measure. A multiple regression model found that 52 percent of the variance in environmentally responsible behavior was predicted by the independent variables ($R^2 = .52$, $p < .001$). However, none of the measures of personal control contributed significantly to the model.

Keywords: *Reasonable Person Model; environment; behavior change; theory of planned behavior; environmental attitude; personal norm*

Of all the types of environmentally responsible behaviors (ERBs) that researchers and campaign planners work to encourage, reducing automobile use may be the most difficult. Use of a personal vehicle is strongly associated with convenience, ease, speed, freedom, choice, status, personal identity, and

Author's Note: A version of this article was presented in 2004 at the annual conference of the Association for Education in Journalism and Mass Communication in Toronto, where it received the Best Faculty Paper Award from the Science Communication Interest Group. This research was supported by the Utah Division of Air Quality, the Environmental Protection Agency

Science Communication, Vol. XX No. X, Month 2003 1-
DOI: 10.1177/1075547005275425
© 2003 Sage Publications

other factors, even though those factors often come with traffic congestion, vehicle expenses, lengthy commutes, and environmental consequences. Alternatives to vehicle use exist in most major cities, but as mass transit planners know, a variety of barriers (perceived or otherwise) nevertheless prevent drivers from getting out of their cars. As Americans drive more and more vehicle miles every year—miles that include a great many very short trips—tapping into what factors are associated with driving behavior is very important.

During the past several decades, researchers have endeavored to identify which attitudes, beliefs, demographics, constraints, and practices are most associated with ERBs and to develop models and theories that effectively predict such behaviors. While great strides in our understanding have been made, the mix of factors continue to be tested and refined.

This study represents one such attempt to test and refine the mix. Because reducing auto use is not considered an “easy” behavior change, theories such as the theory of planned behavior (TPB) and norm-activation theory may be of less utility. For this reason, this study attempted to operationalize a fairly new model—the Reasonable Person Model—to test its ability to predict the environmentally responsible behavior of getting drivers out of their cars.

Literature

Some of the early attempts to understand behaviors toward the environment involved the search to discover the components of environmental concern. That is, what are the correlates of environmental concern and can those, in turn, help identify the correlates of ERB? In this endeavor, researchers have consistently turned to demographic variables such as age, sex, education, race, income, political and religious affiliations, and place of residence as indicators of environmental concern, and possibly of ERB as well.

Since the 1980s, the demographic factor most strongly and consistently associated with environmental concern has been age, with younger adults more concerned than their counterparts (Arcury and Christianson 1990; Howell and Laska 1992; Mertig and Dunlap 2001). A recent review of

(Mobile Source Outreach Assistance Competition), and the Lowell Bennion Community Service Center at the University of Utah. Thanks in particular to Renette Anderson, Rick Sprott, and Cheryl Heying at the Division of Air Quality for their support and to the students of communication research, spring 2004, for their valuable help in this service-learning research project. Please address correspondence to Julia B. Corbett, Associate Professor, Department of Communication, University of Utah, 255 S. Central Campus Dr., Rm 2400, Salt Lake City, UT 84112; phone: 801-581-4557; fax: 801-585-6255; e-mail: julia.corbett@utah.edu.

research from 1988 to 1998 found that a clear picture also had emerged regarding sex and environmental concern: “women reported stronger environmental attitudes and behaviors than men. . . . As a single variable, the effect of gender on proenvironmental behavior was consistently stronger than on environmental attitudes” (Zelezny, Chua, and Aldrich 2000, 443). The researchers reasoned that females have higher levels of socialization to be other oriented and socially responsible. Other studies have also found stronger intentions for environmental action and stronger beliefs in women (Stern, Dietz, and Kalof 1993), but other studies have failed to find a gender connection.

The relationships between all other demographic factors and environmental concern are weak or at least inconclusive (Fransson and Garling 1999). In terms of education, the well educated tend to have moderately higher levels of environmental concern than their counterparts (Mertig and Dunlap 2001). Overall, concern for the environment is much more broad based among Americans than previously thought and is *not* strongly tied to what sociologists call “social elites” (Morrison and Dunlap 1986).

Attitudinal factors also have been tested as indicators of environmental concern and action. The general conclusion from decades of psychological research is that attitudes are only moderately good predictors of how people will act (Eagly and Chaiken 1993; Scott and Willits 1994) and depend to a great degree on a whole host of factors. Individual factors (such as resources, knowledge, experience, values, and skills) and social factors (such as the political and cultural environment, barriers and obstacles, dominant environmental values, and public and legal policy) all come into play.

In a meta-analysis of previous studies, Hines, Hungerford, and Tomera (1986) found a significant positive correlation between measures of environmental concern and ERB. The relationship was stronger for specific protective actions than for general ones. However, other researchers have found little relationship between concern and behavior (Gill, Crosby, and Taylor 1986; Van Liere and Dunlap 1981).

In the late 1970s, two related theories were developed to test the ability of certain variables to predict behavior. The TPB was based on the theory of reasoned action, a parsimonious model that held that a person’s intent to behave in a certain way was largely a function of the person’s attitude toward the act (his or her positive or negative evaluation of performing the behavior) and social norms (the person’s perception of social pressures to perform or conform to the behavior; Fishbein 1993; Fishbein and Ajzen 1975). The theory also suggested that a person’s intention to perform a behavior was strongly related to the behavior itself, if both are measured at the same level of specificity and within a short time frame. Hines, Hungerford, and Tomera (1986),

in a meta-analysis of 128 studies conducted since 1970, found that intention was the factor most closely related to actual behavior.

The TPB extended the theory of reasoned action by incorporating a third independent variable, perceived behavioral control, or the extent to which performing the behavior was considered to be easy or difficult. Both internal and external control factors can be relevant; internal factors may include inadequate knowledge of how to conserve water or where to take recycling, and external factors may be barriers or constraints to performing the behavior that lie outside the control of the individual, such as the cost of home insulation or the presence of walkable neighborhoods. The TPB maintains that the greater the perceived control one has over a behavior, the stronger the person's intention to perform that behavior.

Scholars have suggested numerous additional independent variables for inclusion in the TPB: past behavior, self-efficacy (feeling capable to perform a behavior or a belief that individual actions made a difference; Trumbo and O'Keefe 2000); moral norms, personal norms, information processing or seeking (Griffin, Dunwoody, and Neuwirth 1999); and financial capability (Corbett 2002; Lynne et al. 1995).

Although the TPB has been useful in predicting a variety of health-related and environmental behaviors (Armitage and Conner 1999; Chan 1998; Cheung, Chan, and Wong 1999; Conner, Warren, and Close 1999; Fox-Cardamone, Hinkle, and Hogue 2000; Lam 1999; Sheeran and Orbell 2000; Smith and Stasson 2000), some scholars have concluded that the theory has most utility for behaviors that are relatively easy and under volitional control. The experience of transportation planners and air quality experts across the country lead one to believe that "driving less" is perceived as a fairly difficult behavior; the TPB, therefore, may have limited utility.

Environmental actions and issues often involve collective or community goods, such as air and water. Therefore, individuals may feel a moral obligation to take into consideration both other humans and the nonhuman world in evaluating environmental behaviors. Schwartz's norm-activation theory (1977) originally was an explanation of altruistic behavior but also has been applied to a wide variety of ERB (Guagnano, Stern, and Dietz 1995; Schultz and Zelezny 1999).

According to this theory, an important antecedent to ERB is the activation of a personal moral norm. This takes place when an individual has an awareness of environmental problems (and their adverse consequences) and believes that environmental conditions are creating a threat to things the individual values: threats to self (including health threats), other humans, and the biosphere.

As Guagnano, Stern, and Dietz (1995) interpret the Schwartz model, for a person to act altruistically, the person must be aware of negative consequences and also must ascribe some responsibility to take appropriate action to persons like himself or herself. When people hold both these beliefs, they experience a sense of obligation to act to prevent harm (altruistic personal norm). However, when behaviors are difficult, expensive, or inconvenient, behavior change will be more rare. In addition, these researchers found that external conditions help determine the efficacy of altruism; in their study, providing recycling bins removed a major barrier in keeping action consistent with preexisting attitudes. Without the bins, people did not undertake the behavior change.

The importance of a personal moral norm in behavior change raises the question: on what is this norm based? Nordlund and Garvill maintained that “the personal norm, experienced as a moral obligation to act to protect whatever is threatened, is derived from the individual’s relevant general and environmental values” (2002, 745). If this is the case, measuring an individual’s personal moral norm in a sense also taps an individual’s value orientation toward the environment.

According to Rokeach (1968), values are criteria for guiding action and developing attitudes toward relevant objects and situations. From the early 1970s, a debate ensued on the social psychological basis of environmentalism—that is, whether proenvironmental attitudes came from a valuing of other people (i.e., the golden rule) or of the nonhuman world (i.e., a land ethic; Stern and Dietz 1994). The literature in environmental ethics has connected environmental concern (as did the environmental applications of norm-activation theory) to three classes of valued objects: the self, others, and the biosphere. Merchant (1992) formed a similar classification when she identified three ethics: egocentric, homocentric, and ecocentric. Stern, Dietz, and Kalof (1993) labeled their spheres of values *egoistic*, *social-altruistic*, and *biospheric*.

Researchers maintain that such value objects or orientations come into play when an individual is considering action and estimating the effect it will have on the things that he or she values. Although social context and social influence agents may affect this process and influence actions, the values placed on different targets (the self, other people, or the biosphere) elicit normative reasoning and a willingness to support proenvironmental attitudes and behaviors (Stern and Dietz 1994; Stern, Dietz, and Kalof 1993; Stern et al. 1995).

In a study of the value structures behind ERB, Nordlund and Garvill (2002) discovered that a personal norm (conceptualized as the moral obligation to protect the environment) was derived from self-transcendent and

ecocentric values and activated by problem awareness. They found that a personal norm mediated the effects from general values, environmental values, and problem awareness on ERB. The researchers said their model was an extension of Schwartz's norm-activation theory and similar to Stern's value-belief-norm theory in making the personal moral norm the main basis for individuals' general dispositions for ERB. Stern, Dietz, and Black (1985–86) agreed about the important role of moral norms in ERB, concluding that “support for environmental protection has a moral dimension” (p. 218).

In an article outlining the theory developed by his research team, Stern (2000) said the goal of value-belief-norm theory was to link value theory, norm-activation theory, and a “new environmental paradigm” scale of environmental attitudes and beliefs. According to this theory, four major types of causal factors potentially influence ERB: attitudinal factors, contextual factors, personal capabilities, and habits or routines.

Researchers have at times considered personal health threats from environmental conditions as threats to valued objects, either to self (which could be called self-interest) or to others (which could be called altruism). Although this work falls beyond the typical “risk communication” research, Stern and Dietz said, “Perceived risks can be seen as perceived negative consequences to things people value, including personal health and safety, the health and safety of other human beings, and the welfare of other species and the biosphere” (1994, 79). In a Southern California study, residents who believed that environmental problems posed a very serious threat to their health were more likely to engage in ERB, including limiting their driving (Baldassare and Katz 1992). The scholars concluded, “Personal environmental threat is a better predictor of overall environmental practices than are demographic variables and political factors” (p. 602). Fransson and Garling (1999) also found a connection between behavior and a perceived threat to personal health.

If we accept these three realms of valued objects—self, others, and biosphere—as valid potential motivators of moral responsibility and ERB, does this imply that one realm is viewed as a “better” or more correct source of behavioral motivation? After all, a presumption that was central to much of the early research on ERB was that self-interest was a major *source* of environmental problems (Mansbridge 1990). Self-interest often is conceptualized as focusing solely on short-term individual or familial gain to the exclusion of long-term societal or environmental benefits (Low and Heinen 1993).

Likewise, is feeling or acting on behalf of the welfare of others—that is, altruism—a desirable motivator of ERB? After all, most conceptualizations of altruism entail sacrifice on the part of the self, which creates a serious motivational issue and which essentially goes against the self-interest. The

reasoning could be that altruistic behavior toward the environment leads to a reduction in quality of life and makes people question what they are willing to give up and sacrifice. It should not be surprising that people resist making changes that they perceive as reducing their quality of life. This reasoning certainly seems plausible when promoting driving less.

However, “in sharp contrast, research reported this past decade suggests the possibility that self-interest is a potential *solution* to environmental problems” (De Young 2000, 514) and may even work in concert with altruism to promote ERB (Stern, Dietz, and Kalof 1993).

In a recent essay, Kaplan (2000) investigated the roles of self-interest and altruism in what he called the Reasonable Person Model of ERB. Kaplan maintained that although the altruism-centered approach is currently popular in the academic literature, it has had the inadvertent consequence of contributing to helplessness and focusing on sacrifice rather than quality-of-life-enhancing solutions. “A central failing of the altruistic position,” according to Kaplan, “is that it attempts to put aside the issue of gain, of self-interest, in human behavior” (p. 496). “The requirement of receiving no benefit from one’s action and the inclination to enshrine sacrifice as a paradigmatic environmental virtue communicate a powerful, if unintended message, namely that ERB inherently leads to a reduction in the quality of life” (p. 494).

A decade prior, Mansbridge (1990) came to a similar conclusion about this motivational reality: “we normally see self-interest and altruism as being at opposite poles. Indeed, conceptually we know what we mean by altruism only by contrasting it with self-interest. In practice, however, altruism must coincide with self-interest sufficiently to prevent the extinction of either the altruistic motivation or the altruist” (p. 133).

Kaplan’s goal with the Reasonable Person Model was to reconceptualize human nature in such a way as to make altruism and self-interest coincide. In addition to these two factors, Kaplan explored the nature of helplessness and personal control and what he called participatory problem solving. Regarding helplessness, Kaplan cited a 1993 study that discovered that the increasing quantity of information available about environmental problems has led not only to greater concern but also to a greater sense of helplessness (Levin 1993). It is then not a matter of apathy but rather a sense of futility, of feeling helpless: “people who feel helpless, who feel that their behavior would not make a difference, are less likely to participate in ERB” (p. 499).

Personal control—what Kaplan called “the opposite of helplessness”—is not a new variable in attitude-behavior research. The TPB’s major contribution was the addition of perceived behavioral control, defined as the perceived ease or difficulty of the behavior and which included both internal and external factors. But the Reasonable Person Model attempts to distinguish

itself by linking personal control to motivation, participation, and the need for “desirable choices.” As Kaplan’s earlier work found (Kaplan and Kaplan 1989), people are motivated to understand, to learn, to answer their own questions, and to play a role in what is going on around them—the opposite of feeling confused, incompetent, or helpless. People gain intrinsic satisfaction (which De Young [2000] calls a form of self-interest) through behavioral competence—that is, being able to solve problems and complete tasks.

A typical persuasive approach regarding ERB is “telling people what to do.” The goal of participatory problem solving, said Kaplan (2000), is to move beyond “telling” and beyond “asking people what they want to do” to actually “helping people understand the issues and inviting them to explore possible solutions.” The goal of this process, then, is “multiply desirable choices” (p. 500). In this way, people are able to make choices that do not run counter to their perceived self-interest, choices that ultimately should prove more sustainable and satisfying.

Though Kaplan (2000) identifies key variables in the Reasonable Person Model, he stops short of fully operationalizing or testing it. That is one goal of this research.

Background of Research Setting

Increasingly, air quality in the Salt Lake valley is a summertime problem and not just a phenomenon of winter air inversions settling between the two mountain ranges that rim the valleys. In the summer of 2003, the Department of Environmental Quality issued seventeen voluntary “no-drive days” because of dangerous levels of ozone.

The department’s Division of Air Quality (DAQ) received an Environmental Protection Agency grant to improve summer air quality through a campaign to reduce the contribution of “mobile sources” (i.e., vehicles) to air pollution. The campaign would be geared toward drivers along the Wasatch Front, a metropolitan and suburban area spanning four counties from Provo south of Salt Lake City and north to Ogden. Because DAQ officials know the difficulty of behavior change that involves driving, they wanted to investigate the feasibility of encouraging walking instead of driving for short trips and promoting “smart driving.” The greatest amount of harmful pollutants are emitted during the first few minutes of driving, therefore making short auto trips a worthwhile target. The campaign chose not to attempt to convince people to take the bus to work or to replace their personal vehicle with mass transit or carpools. The most realistic target was deemed short trips and, for some of these short trips, to see whether people considered walking as a realistic alternative.

Hypothesis

This research setting provided a good test of the Reasonable Person Model. The DAQ recognized that any change in driving behavior needed to be “doable,” not considered too much of a sacrifice (in time or convenience) and in line with self-interest. The DAQ also knew that it might be possible to frame walking (instead of driving) as contributing to self-interest by improving an individual’s fitness and health. Both walking and smart driving contribute to altruism as well. Finally, a variety of “desirable choices” for both smart driving and walking could be identified.

Hypothesis 1: The elements of the Reasonable Person Model (self-interest, altruism, personal control, and desirable choices) will predict the intention to behave environmentally responsibly.

Here, the target ERB was conceptualized as both an intent to participate in the upcoming campaign, as well as a more general intention to take steps to reduce one’s contribution to air pollution. Self-interest was conceptualized both as the environmental health threat posed by air pollution and as the degree to which walking was perceived as a good and realistic fitness option for an individual. The case for including personal moral norm is based on the research that found it strongly related to values placed on the attitude objects of self, others, and biosphere and, therefore, related to self-interest and altruism.

Method

This research was conducted as part of a senior-level communication research course that was taught as “service learning,” a pedagogy designed to link classroom learning with the research needs of nonprofit organizations and agencies (Corbett and Kendall 1999). As a class, appropriate theories were identified, survey questions formulated, surveys administered, and data gathered, coded, and entered.

The target population was considered the “Wasatch Front driving public,” or adult drivers residing in the four counties that make up the urban area surrounding Salt Lake City.

Operationalization

The survey instrument consisted of fifty-one questions designed to test for the target independent and dependent variables, to collect pertinent demographic

data, and to illicit information valuable to DAQ's campaign, such as credible sources of information about air quality and knowledge about the source and nature of summer air pollution. The survey was pretested for length and clarity on an independent sample of five adults.

Table 1 lists the variables of the Reasonable Person Model and their operationalization.

Self-interest was measured in relation both to personal health threat and walking. Two questions were asked regarding the effect of pollution on a person's health. Personal health threats from environmental conditions constitute threats to valued objects, particularly the self. A third question regarding general concern about air quality also was included; because this question leaves open the valued object it harms most, the concern could be in relation to self or to valued others (which taps altruism in addition to self-interest). These three measures did not sufficiently scale ($\alpha = .42$) and were analyzed independently.

Two questions tapped the connection between walking and self-interest. One question concerned whether walking was part of an individual's fitness plan. The other question asked if walking would be a likely alternative to driving for short trips.

One question measured a personal moral norm, or a sense of obligation to act to prevent harm or protect whatever is threatened, called an *altruistic personal norm* by some scholars.

The concept of *personal control* was measured in several ways. Kaplan (2000) defined personal control as the opposite of helplessness, including the notion of knowledge competence. Others (including those who have tested the TPB) have defined personal control to include the perception of difficulty of behavior change and the belief that behavior change would make a difference. The four personal control items did not sufficiently scale; even with the information item removed, the alpha was only .41.

"Desirable choices" were operationalized from information provided by the DAQ regarding possible choices to walk instead of drive for very short trips and to engage in "smart driving" practices. Respondents were asked whether they were *not willing*, *somewhat willing*, or *very willing* to consider these practices. Eight smart driving practices included choices such as not using drive-through windows, fueling in the evening, keeping tires inflated, commuting during nonpeak hours, and accelerating slowly. Six walking practices included items such as parking and walking, walking to errands, and walking to lunch or packing a lunch. All fourteen items were combined into one scale of desirable choices ($\alpha = .69$).

Two questions formed the dependent variable of ERB, in this case a behavioral intention rather than a concrete behavior. This was necessary

TABLE 1
Operationalization of Variables for Reasonable Person Model

<i>Variable</i>	<i>Survey Question</i>	M	SD
Self-interest: environmental threat	Air pollution along the Wasatch Front doesn't present much of a health threat to me personally. (reversed)	4.9	2.1
Self-interest: walking	Air pollutants harm my heart and lungs even if I don't feel it right away.	6.0	1.4
	I am concerned about air quality along the Wasatch Front.	5.8	1.4
	Walking is a good way for me to stay healthy and fit.	6.6	1.0
Personal moral norm (altruistic)	How likely would you be to walk instead of drive if the trip was very short?	4.5	2.1
	It's my moral responsibility to do my part to reduce air pollution.	5.5	1.5
	I really have no control over the amount that I drive. (reversed)	4.3	2.2
Personal control or helplessness	I can change my driving habits.	4.5	2.0
	My individual transportation choices don't make much of a difference in air quality. (reversed)	4.1	2.1
	I know how to obtain information about alternatives to driving.	5.2	1.8
	I want to take steps to reduce my contribution to air pollution.	5.5	1.5
	I would participate in a campaign that promoted walking and smart driving.	4.6	1.8

NOTE: ERB = Environmentally responsible behavior. Responses to all questions were on a 1-to-7 scale of 1 = *strongly disagree* to 7 = *strongly agree*. The anchor points for the question about the likelihood of walking instead of driving were 1 = *not at all likely* to 7 = *very likely*.

because the campaign has not been implemented. Numerous studies have concluded that behavioral intention is the factor most closely related to actual behavior (Hines, Hungerford, and Tomera 1986) and can adequately substitute for behavior when that measure is not possible. One question concerned the likelihood of participation in a campaign to promote walking and smart driving. The second question, to coincide with Kaplan's notion of choice and participatory problem solving in the Reasonable Person Model, made no mention of the campaign and asked only whether a person would be likely to take steps to reduce his or her contribution to air pollution. These two items were scaled together ($\alpha = .68$).

Administration

A computer-generated random-digit-dialing telephone list was obtained from a reputable survey research firm. The list included 8,000 names from the four target counties in proportion to the population they contained. A systematic sample with a random start drew telephone numbers from the master list. Disconnected numbers and numbers for businesses and fax machines were later replaced with new numbers.

Four hours of class time were devoted to student interviewer training (including interviewing strategies and protocol). In addition, mock situations with types of callers (such as quiet, opinionated, and vague respondents) and complete one-on-one interviews (in student pairs) were conducted. Students were provided with a standardized introductory script, survey protocol sheets, and lists of standardized replies to common questions, in addition to surveys and phone lists.

Actual interviewing took place during a two-week period in late February and early March; four call attempts were made before an individual was considered unreachable. To randomize respondent selection from the household, the interviewer asked to speak with the adult driver in the household with the most recent birthday. The survey took an average of ten minutes to complete. The response rate was 52 percent (344 completed surveys, 206 refusals, and 117 unreachable).

Results

Descriptive Results

The mean age of respondents was forty-six (median of forty-four) and ranged from eighteen to eighty-nine. Females accounted for 64 percent of

survey respondents to 36 percent for men. The average education level was fairly high, with 78 percent reported having “some college” or more. Respondents lived an average of fourteen miles from work; the median and mode of distance from work were ten miles, because of a few extreme mileage scores. People drove an average of 4.3 times a week to work. These drivers reported that about one-third of their car trips were short trips less than five minutes long.

When respondents were asked what alternative to driving they might choose for some of their shortest trips, 41 percent mentioned walking, 22 percent mass transit, and 11 percent bike. Almost 18 percent replied that there were no alternatives to driving or that they were not aware of any alternatives. The biggest factor in the choice of an alternative to driving was convenience and ease, mentioned by 22 percent of respondents.

Although people strongly agreed that walking was a good way for them to stay healthy and fit, it did not appear that people were actually walking much currently. People reported walking an average of 2.3 times per week for exercise, although the mode was zero. Very few people said they had walked to a local store or business in the past week. When asked whether walking was a realistic alternative to driving for short trips, the average response was right in the middle; the mean was 3.5 of 7 (with 7 as *strongly agree*). Although people often reported having to walk busy streets to reach nearby stores and businesses, people nevertheless said they would feel safe walking there.

When asked to rate the overall air quality where they live, 56 percent rated it fair or poor. Seventy-six percent correctly identified that the biggest source of air pollution along the Wasatch Front was vehicles.

The Internet was mentioned as the most popular source of credible information regarding air pollution; it was mentioned as an information source by 35 percent of respondents. About 23 percent mentioned television, 17 percent said state officials or agencies, and 14 percent said newspaper.

Correlations

Table 2 displays correlations between variables tested as part of the Reasonable Person Model.

All independent variables were significantly correlated with the two measures of ERB, with the exception of the personal control measure regarding the amount of control a person felt that he or she had over the amount driven. The strongest positive correlations occurred between the two measures of ERB, personal moral norm, and several of the items regarding personal health threat. There also were moderately strong positive associations between desirable choices and the two measures of ERB. The table also

TABLE 2
Pearson Correlation Coefficients for Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. self-interest: air pollution threat	—	.28**	.36**	.04	.06	.21**	.09	.09	.21**	-.01	.22**	.30**	.18**
2. self-interest: air pollution harm		—	.42**	.29**	.15**	.52**	.09	.08	.20**	.05	.36**	.49**	.40**
3. self-interest: concern air quality			—	.14**	.05	.46**	.00	.27**	.13*	.17**	.34**	.47**	.37**
4. self-interest: walking for fitness				—	.02	.20**	.11*	.09*	.05	.02	.17*	.23**	.19**
5. self-interest: walk instead drive					—	.14**	.04	.25**	.05	.12*	.28**	.17**	.26**
6. personal moral norm						—	.08	.25**	.14**	.07	.37**	.59**	.45**
7. personal control: over amount drive							—	.19**	.26**	-.10*	.13*	-.02	.08
8. personal control: can change driving								—	.11*	.04	.18*	.26**	.21**
9. personal control: actions make diff.									—	.00	.13*	.17*	.25*
10. personal control: able to obtain info										—	.10*	.15**	.09*
11. desirable choices											—	.36**	.46**
12. ERB: action to reduce pollution												—	.51**
13. ERB: campaign participation													—

NOTE: ERB = Environmentally responsible behavior.

* $p < .05$. ** $p < .01$ (both one-tailed).

reveals correlations even among those items that did not scale sufficiently. Although these individual measures may have been tapping slightly different dimensions, the significant correlations suggest that they nevertheless bear some relationship to each other and to ERB.

Regression

All independent variables of the Reasonable Person Model were entered into a regression model (using the “enter” method in the Statistical Package for the Social Sciences). As shown in Table 3, 52 percent of the variance was explained. However, only five of the 11 items contributed significantly to the model. The variables that did not contribute were self-interest—walking good for fitness and none of the measures of personal control: ability to control the amount of driving, ability to make a difference, information competence, and ability to change driving habits.

When the regression was rerun with a stepwise procedure (Table 4), the five noncontributing variables were excluded from the model and R^2 value decreased somewhat. In this model, 49 percent of the variance in ERB is explained by self-interest—air pollution harming heart and lungs, self-interest—concern for air quality, desirable choices, personal moral norm, self-interest—likelihood of walking instead of driving, and self-interest—air pollution a personal health threat. The single largest contribution to the model was self-interest—air pollution harming heart and lungs, which explained 29 percent of the variance in intended ERB.

The regression analysis provides a fairly strong predictive model regarding ERB and thus supports the hypothesis—however, with the exception of the personal control measures.

Discussion

The primary purpose of this research was to attempt to operationalize and test the Reasonable Person Model of environmentally responsible behavior introduced by Kaplan (2000). In addition, the research endeavored to provide guidance to the DAQ regarding the factors most associated with ERB and participation in an upcoming campaign.

As discussed in the literature section, the mix of attitudes, demographics, barriers, practices, and values is an often-tested yet imprecise prediction regarding a person’s intention to engage in ERB. Decades of research have identified key factors most consistently related to ERB, and theories (such as the TPB) have advanced our understanding of these relationships. Yet as

TABLE 3
Regression Model of Variables Predicting ERB

<i>Independent Variable</i>	<i>Beta</i>	<i>Partial Correlation</i>
Self-interest: air pollution threat	.11	.14
Self-interest: air pollution harm	.28**	.25
Self-interest: concern air quality	.13	.14
Self-interest: walking for fitness	.11*	.15
Self-interest: walk instead drive	.13*	.17
Personal moral norm	.19**	.21
Personal control: over amount drive	-.09	-.12
Personal control: can change driving	.06	.08
Personal control: actions make difference	.11	.14
Personal control: able to obtain information	.07	.10
Desirable choices	.17**	.21

NOTE: ERB = Environmentally responsible behavior. $R^2 = .52, p < .001$ ("enter" method, Statistical Package for the Social Sciences).

* $p < .05$. ** $p < .01$.

scholars readily admit, these findings may not sufficiently predict the most difficult ERBs, which certainly applies to reducing vehicle use.

Although walking as a substitute for driving may sound like an easier behavior change than increasing mass transit use, these data suggest that even walking may prove to be a relatively difficult change to make. Extremely few people reported now walking—whether for fitness or to errands—even though they agreed that walking was a good way for them to stay healthy and fit. Only the subsequent DAQ campaign will be able to test the relative ease or difficulty of encouraging a behavior that is not now practiced.

The Reasonable Person Model as conceptualized by Kaplan (2000) attempts to reexamine some key pieces of the ERB relationship, including the need for altruism and self-interest to coincide, the need for "desirable choices" in adopting an ERB, the importance of personal control, and the crucial role of individual participation and involvement in efforts to effect ERB.

As Kaplan (2000) introduced it, the Reasonable Person Model of ERB is a model, not a hypothesis fully articulated for testing. This exploratory operationalization and testing of the model adapted some of the elements of the TPB, norm-activation theory, and value-belief-norm theory such as personal control, personal moral norm, and personal health threat. Although the correlation matrix noted significant positive relationships between numerous variables, the regression found that only three of the four independent variables of the model predicted ERB: self-interest (four of the five measures),

TABLE 4
Stepwise Regression Model of Variables Predicting ERB

<i>Model and Variable</i>	<i>R²</i>	<i>Beta</i>	<i>Partial Correlation</i>
1. Self-interest: air pollution harm	.29	.54**	.54
2. No. 1 + self-interest: concern air quality	.38	.33**	.35
3. No. 2 + desirable choices	.44	.25**	.30
4. No. 3 + personal moral norm	.46	.20**	.21
5. No. 4 + self-interest: walk instead drive	.48	.13*	.17
6. No. 5 + self-interest: air pollution threat	.49	.11*	.15

NOTE: ERB = Environmentally responsible behavior.
* $p < .05$. ** $p < .01$.

personal moral norm, and desirable choices. None of the measures of personal control were significant predictors of ERB. In addition, some multiple measures of the same concept did not scale sufficiently, suggesting that the questions may be tapping slightly different things.

As a concept that may guide environmentally responsible behavior, “self-interest” occurs on many levels. Here, the factors deemed most relevant to the target behavior of reducing vehicle use and accompanying emissions (both by walking and smart driving) were the benefits a person might receive from walking and the degree to which an individual recognized the personal health impacts from vehicle use. This suggests an important campaign emphasis not just on the end goal of reducing short trips (perhaps through walking) and smart driving but on communicating the documented health effects of poor air quality, even on healthy individuals and particularly through long-term exposure. If individuals possess this awareness, a sense of moral responsibility and awareness of desirable choices may indeed lead to ERB. The importance of personal health threat and concern over pollution supports the findings of a California study that found personal environmental threat a much better predictor of ERB than demographics or other factors (Baldassare and Katz 1992).

There are, of course, other ways to conceptualize “self-interest,” for example financial self-interest. Yet as proponents of the TPB have suggested, tests such as this are better able to predict behavior if independent variables and behavioral intention are measured at the same level of specificity. Because the dependent variable was both a measure of intention to participate in a campaign that promoted walking and smart driving and a measure of intention to reduce contributions to air pollution, it was desirable to define self-interest in a way that coincided with the target behaviors. Of course, this

also introduces the possibility that the independent and dependent variables are not independent enough, a conundrum with no clear solution.

Although the Reasonable Person Model stressed that individuals need to feel a sense of personal control—“the opposite of helplessness”—regarding the ERB, none of the personal control measures were predictive in the regression. However, with the exception of the measure regarding information competence (which correlated with little else), the personal control measures by and large were significantly correlated with a wide variety of variables. One possible explanation is that the individuals who reported an intention to engage in this behavior were those for whom personal control was not an issue, at least not in the way that health threats and desirable choices were. Personal control played some role in the attitude-behavior mix, but in this instance, the other independent variables played a greater role. It is reasonable to assume that a sense of personal control is nevertheless an important factor in an individual’s intention to engage in the “hard” behavior of getting out of the car.

Kaplan conceptualized “personal control” as the opposite of “helplessness” but also linked it to motivation, participation, and desirable choices. As operationalized here, two personal control measures tapped control/helplessness, one measured self-efficacy (individual ability to make a difference), and one measured knowledge competence. In hindsight, it would have been desirable to measure personal control as both internally and externally derived—as does the TPB—but also more fully measure the Reasonable Person Model’s conceptualization of personal control as related to motivation and participation. More robust measurement might uncover the “missing link” of how a sense of personal control is related to driving behavior. It is logical to assume that external constraints (mass transit options, walkable neighborhoods, and so on) and internal motivations (convenience, health, time) are related to both driving and walking.

An important part of Kaplan’s model that is not possible to test here is the role of participatory problem solving. The information obtained about the relative desirability of some choices is a good start and will be valuable for campaign planners; for instance, the “smart driving” measure that individuals were least willing to practice was reducing their use of drive-through windows. Additional opportunities for participation should be incorporated as part of the campaign. As Kaplan (2000) noted, the participatory problem-solving experience should go far in enhancing individuals’ engagement, connection, empowerment, and sense of commitment to a campaign.

In addition to the inherent limitations of being the first test of a conceptual model, this study had two other primary limitations. First, the nature of the topic no doubt produced an unavoidable social desirability response.

Although researchers have developed questions to test for social desirability effects, the most valid tests include more than 30 items. This survey was pre-tested at ten minutes and increasing its length could have had serious impacts on response rate. Social desirability may account in part for the large amount of variance predicted by the regression model. Social desirability also may have affected the personal control variable; if respondents perceived walking instead of driving as socially preferable, they may have overestimated their behavioral control. However, in defense, the survey did not ask whether individuals supported what would be viewed as a far greater sacrifice—driving less overall, including to work and using mass transit. If this type of sacrifice had been part of the mix, personal control and helplessness likely would have played a far greater role.

The second possible limitation is the overrepresentation of females, who accounted for 64 percent of the sample. This proportion may be due to the relative inexperience of student interviewers, despite their extensive training and despite a randomization procedure that should have equalized sex of respondents. “Cold calls” from a computer-generated phone list is a difficult task even for a professional. Anecdotally, interviewers reported that some respondents refused participation because of lingering confusion about the allowable exclusions under the “do not call list” policy. Despite clearly identifying the research as university related and having no connection with sales or marketing, a response rate of 52 percent could have contributed to the imbalance of females and males. As noted by Zelezny, Chua, and Aldrich (2000), women report stronger environmental attitudes and behaviors than men; the researchers postulated that females have higher levels of socialization to be other oriented and socially responsible. In a sense, women may be better campaign targets for DAQ and an overrepresentation is less of a problem.

Compared with other attitude-behavior models, what the Reasonable Person Model contributes to our understanding of environmentally responsible behavior is the importance of self-interest, particularly regarding so-called hard behaviors. Self-interest may not be as important for a behavior deemed relatively “easy,” such as recycling or even water conservation. But as soon as a behavior is perceived as requiring a greater degree of sacrifice, the weighing of the behavior with self-interest is inevitable. As Kaplan (2000) maintained, communicators need to reverse the “sacrifice” perspective given by the “dour environmentalist” and to instead legitimately position ERB as a route to a better life.

Kaplan (2000) also claimed that “people prefer making the environmentally responsible choice when they are not seriously disadvantaged by doing so” (p. 502). However, individual choice, whether guided by self-interest or

norms or other beliefs, is only part of what makes a behavior choice desirable or not. When it comes to improving air quality by reducing vehicle use, a host of social and structural factors outside individual control are essential, not the least of which are walkable neighborhoods and business districts and mass transit and nondriving options. One such example of theorizing is the ipsative theory of behavior (Frey 1989; Tanner 1999), which examines the relation between subjective constraints (that may prevent preferences for certain behavioral alternatives) and objective constraints (that prevent performance of behavioral alternatives). Theories such as this, as well as a more fully operationalized Reasonable Person Model, may help bridge this important gap by recognizing that individual action takes place in a social structure that is full of both real and imaginary constraints to ERB. Such approaches provide the most realistic path for the difficult behavior change of reducing vehicle use and therefore improving air quality and other related environmental problems.

References

- Arcury, T. A., and E. H. Christianson. 1990. Environmental worldview in response to environmental problems: Kentucky 1984 and 1988 compared. *Environment and Behavior* 22:387–407.
- Armitage, C. J., and M. Conner. 1999. Distinguishing perceptions of control from self-efficacy: Predicting consumption of a low-fat diet using the theory of planned behavior. *Journal of Applied Social Psychology* 29 (1): 72–90.
- Baldassare, M., and C. Katz. 1992. The personal threat of environmental problems as predictor of environmental practices. *Environment and Behavior* 24 (5): 602–16.
- Chan, K. 1998. Mass communication and pro-environmental behavior: Waste recycling in Hong Kong. *Journal of Environmental Management* 52:317–25.
- Cheung, S. F., D. K. -S. Chan, and Z. S. -Y. Wong. 1999. Reexamining the theory of planned behavior in understanding wastepaper recycling. *Environment and Behavior* 31 (5): 587–612.
- Conner, M., R. Warren, and S. Close. 1999. Alcohol consumption and the theory of planned behavior: An examination of the cognitive mediation of past behavior. *Journal of Applied Social Psychology* 29 (8): 1676–1704.
- Corbett, J. B. 2002. Motivations to participate in riparian improvement programs: Applying the theory of planned behavior. *Science Communication* 23 (3): 243–63.
- Corbett, J. B., and A. R. Kendall. 1999. Evaluating service learning in the communication discipline. *Journalism and Mass Communication Educator* 53 (1): 65–75.
- De Young, R. 2000. Expanding and evaluating motives for environmentally responsible behavior. *Journal of Social Issues* 56 (3): 509–26.
- Eagly, A., and S. Chaiken. 1993. *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace.
- Fishbein, M. 1993. Introduction. In *The theory of reasoned action: Its application to AIDS-preventive behaviour*, edited by D. J. Terry, C. Gallois, and M. McCamish, xv–xxv. Oxford, UK: Pergamon.

- Fishbein, M., and I. Ajzen. 1975. *Belief, attitude, intention and behaviour: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Fox-Cardamone, L., S. Hinkle, and M. Hogue. 2000. The correlates of antinuclear activism: Attitudes, subjective norms, and efficacy. *Journal of Applied Social Psychology* 30 (3): 484–98.
- Fransson, N., and T. Garling. 1999. Environmental concerns: Conceptual definitions, measurement methods, and research findings. *Journal of Environmental Psychology* 19:369–82.
- Frey, B. S. 1989. Ipsative and objective limits to human behavior. *Journal of Behavioral Economics* 17:229–48.
- Gill, J. D., L. A. Crosby, and J. R. Taylor. 1986. Ecological concern, attitudes, and social norms in voting behavior. *Public Opinion Quarterly* 50:537–54.
- Guagnano, G. A., P. C. Stern, and T. Dietz. 1995. Influences on attitude-behavior relationships: A natural experiment with curbside recycling. *Environment and Behavior* 27 (5): 699–718.
- Griffin, R. J., S. Dunwoody, and K. Neuwirth. 1999. Proposed model of the relationship of risk, information seeking and processing to the development of preventive behaviors. *Environmental Research* 80:230–45.
- Hines, J. M., H. R. Hungerford, and A. N. Tomera. 1986. Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *Journal of Environmental Education* 18:1–8.
- Howell, S. E., and S. B. Laska. 1992. The changing face of the environmental coalition: A research note. *Environment and Behavior* 24:134–44.
- Kaplan, S. 2000. Human nature and environmentally responsible behavior. *Journal of Social Issues* 56 (3): 491–508.
- Kaplan, S., and R. Kaplan. 1989. The visual environment: Public participation in design and planning. *Journal of Social Issues* 45:59–86.
- Lam, S. -P. 1999. Predicting intentions to conserve water from the theory of planned behavior, perceived moral obligation, and perceived water right. *Journal of Applied Social Psychology* 29 (5): 1058–71.
- Levin, G. 1993. Too green for their own good. *Advertising Age* 64:29.
- Low, B. S., and J. T. Heinen. 1993. Population, resources and environment: Implications of human behavioral ecology for conservation. *Population and Environment* 15:7–41.
- Lynne, G. D., C. F. Casey, A. Hodges, and M. Rahmani. 1995. Conservation technology adoption decisions and the theory of planned behavior. *Journal of Economic Psychology* 16:581–98.
- Mansbridge, J. J. 1990. On the relation of altruism and self-interest. In *Beyond self-interest*, edited by J. J. Mansbridge, 133–43. Chicago: University of Chicago Press.
- Merchant, C. 1992. *Radical ecology: The search for a livable world*. New York: Routledge.
- Mertig, A. G., and R. E. Dunlap. 2001. Environmentalism, new social movements, and the new class: A cross-national investigation. *Rural Sociology* 66:113–36.
- Morrison, D. E., and R. E. Dunlap. 1986. Environmentalism and elitism: A conceptual and empirical analysis. *Environmental Management* 10 (5): 581–89.
- Nordlund, A. M., and J. Garvill. 2002. Value structures behind pro-environmental behavior. *Environment and Behavior* 34 (6): 740–56.
- Rokeach, M. 1968. *Beliefs, attitudes, and values: A theory of organization and change*. San Francisco: Jossey-Bass.
- Schultz, P. W., and L. Zelezny. 1999. Values as predictors of environmental attitudes: Evidence for consistency across 14 countries. *Journal of Environmental Psychology* 19:255–65.
- Schwartz, S. H. 1977. Normative influences on altruism. In *Advances in experimental social psychology*, vol. 10, edited by L. Berkowitz, 221–79. New York: Academic.
- Scott, D., and F. K. Willits. 1994. Environmental attitudes and behaviors: A Pennsylvania survey. *Environment and Behavior* 26 (2): 239–60.

- Sheeran, P., and S. Orbell. 2000. Using implementation intentions to increase attendance for cervical cancer screening. *Health Psychology* 19 (3): 283–89.
- Smith, B. N., and M. F. Stasson. 2000. A comparison of health behavior constructs: Social psychology predictors of AIDS-preventive behavioral intentions. *Journal of Applied Social Psychology* 30 (3): 443–62.
- Stern, P. C. 2000. Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues* 56 (3): 407–24.
- Stern, P. C., and T. Dietz. 1994. The value basis of environmental concern. *Journal of Social Issues* 50 (3): 65–84.
- Stern, P. C., T. Dietz, and J. S. Black. 1985–86. Support for environmental protection—The role of moral norms. *Population and Environment* 8 (3–4): 204–22.
- Stern, P. C., T. Dietz, and L. Kalof. 1993. Value orientations, gender, and environmental concern. *Environment and Behavior* 25:322–48.
- Stern, P. C., T. Dietz, L. Kalof, and G. A. Guagnano. 1995. Values, beliefs, and pro-environmental action: Attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology* 25:1611–36.
- Tanner, C. 1999. Constraints on environmental behavior. *Journal of Environmental Psychology* 19:145–57.
- Trumbo, C., and G. O'Keefe. 2000. Understanding environmentalism and information effects in water conservation behavior: A comparison of three communities sharing a watershed. Paper presented to the Association for Education in Journalism and Mass Communication, August, Phoenix, AZ.
- Van Liere, K. D., and R. E. Dunlap. 1981. Environmental concern: Does it make a difference how it is measured? *Environment and Behavior* 13:651–76.
- Zelezny, L. C., P. Chua, and C. Aldrich. 2000. Elaborating on gender differences in environmentalism. *Journal of Social Issues* 56 (3): 443–57.

JULIA B. CORBETT is an associate professor in the Department of Communication at the University of Utah. Her research interests include media coverage of science and environment and social change. She is currently finishing a book, Green Messages: Communication and the Natural World.