

Bright, A. D. "Information campaigns that enlighten and influence the public." Parks & Recreation 29(8): 48.

Studies the elements necessary for communication effectiveness. Goal of changing attitudes and behavior; Key factor of a successful information program; Contributing factors that increase public comprehension; Factors to consider in the provision of multiple exposures to information; Provision of relevant information; Consideration of prior knowledge.

Burgoon, J. K., M. Burgoon, et al. (1981). "LEARNING THEORY APPROACHES TO PERSUASION." Human Communication Research 7(2): 161-179.

This review synthesizes relevant research dealing with the processes of learning and suggests its applications to compliance gaining. The two major issues addressed are: (1) to what degree can learning theories explain the acquisition of new attitudes and behaviors, and (2) to what degree are attitudinal and behavioral changes governed by learning theory principles? The learning theories discussed are grouped into three categories: stimulus-response or connectionist approaches; cognitive approaches; and stochastic, mathematical, and cybernetic approaches. The stimulus-response models, which encompass most of the research examined in this paper, are further broken down into four types: (1) classical conditioning, (2) contiguity models, (3) instrumental (or operant) conditioning and (4) models including drive and drive reduction. Principles and major research evidence from numerous learning theories are reviewed and analyzed, and suggestions are made as to how this evidence may aid in the construction of more complete theories of persuasion and attitude change.

Corbett, J. B. (2002). "Motivations to Participate in Riparian Improvement Programs: Applying the Theory of Planned Behavior." Science Communication 23(3): 243-263.

This study utilized the theory of planned behavior, a model of attitudinal factor related to behavioral intention, to investigate the lack of participation in government-sponsored programs to conserve riparian areas. A telephone survey of 209 rural landowner whose property abutted a waterway revealed that financial motivations, past behaviors, exposure to government information, and self-efficacy predicted 29 percent of the variance in intent to participate in future conservation programs. The findings suggest that external constraints and social barrier (such a financial variables) are important moderator of perceived behavioral control and deserve closer scrutiny.

Corbett, J. B. (2005). "Altruism, Self-Interest, and the Reasonable Person Model of Environmentally Responsible Behavior." Science Communication 26(4): 368-389.

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.

de Groot, J. and L. Steg "General Beliefs and the Theory of Planned Behavior: The Role of Environmental Concerns in the TPB." Journal of Applied Social Psychology 37(8): 1817-1836.

This study tested whether the theory of planned behavior (TPB; Ajzen, 1985) could explain people's intention to use a park-and-ride facility (transferium) in Groningen, The Netherlands. We extended the TPB by including egoistic, altruistic, and biospheric concerns. A questionnaire study was conducted among 218 respondents who regularly visit the center of Groningen for work or shopping. Environmental concerns were directly related to attitudes toward using the transferium. However, the 3 types of concerns were not directly related to intention to use the transferium. Furthermore, positive attitudes, positive subjective norms, and high perceived behavioral control toward the use of the transferium was related to stronger intention to use the transferium. Limitations and practical implications of the study are discussed.

De Young, R. (1993). "Changing Behavior and Making it Stick: The Conceptualization and Management of Conservation Behavior." Environment and Behavior 25(3): 485.

A sustainable planet is not possible without patterns of conserving behavior. The resource-costly life-styles that are characteristic of the current scene present a historic challenge. Never before have so many behaviors needed to change in so short a time. More challenging is that they must stay changed. For many reasons the techniques commonly used to promote conservation behavior are more reliable at modulating short-term behavior than at achieving durable change. The perceived urgency of environmental problems tends to make immediate behavior change the major focus. But of equal importance is the stability of behavior once changed. Thus one goal of conservation behavior research is to discover techniques that change individual behavior while minimizing or eliminating the need for repeated intervention. This article categorizes behavior change techniques first by their informational or motivational nature and second by the source of the change: derived from others or gained by direct personal involvement. Evaluating selected techniques using five proposed dimensions suggests why durable behavior change has been so hard to achieve. Research implications are discussed.

De Young, R. (2000). "Expanding and evaluating motives for environmentally responsible behavior." Journal of Social Issues 56(3): 509-526.

DeYoung claims that prior research regarding environmentally responsible behaviors (ERBs) has focused on two motivations, incentives/disincentives and altruism, at the expense of proper exploration of other alternatives. Research that uses the behaviorist perspective (Geller, Scott 1987, 1992; Cone and Hayes 1980) suggests that ERBs can be motivated by the manipulation of a material reward. However, a caveat to these findings come through the research Katzev and Johnson (1987) who find that incentives must be continually reintroduced if they are to be effective in altering behavior permanently. In terms of altruism, DeYoung argues that research tends to polarize altruism and self-interest as inherent opposites. In this way, he echoes Kaplan's concerns that self-interest tends to be incorrectly equated with selfishness [see Kaplan summary for details]. DeYoung also points out that self-interest is about more than attaining personal happiness at the cost or neglect of everyone else's, for personal happiness can be derived by achieving an outcome that we care about. This is called the motive of intrinsic satisfaction. DeYoung identifies several types of intrinsic satisfaction related to sustainable behavior, like competence (enjoying being able to take part in problem solving), frugality or simplified living, and participation.

Harland, P., H. Staats, et al. (1999). "Explaining pro-environmental intention and behavior by personal norms and the theory of planned behavior." Journal of Applied Social Psychology 29(12).

The value of personal norms (S. H. Schwartz, 1977) for pro-environmental behavior has been demonstrated in previous studies (J. Vining and A. Ebreo, 1992), but not in addition to the theory of planned behavior (I. Ajzen and T. J. Madden, 1986). In the present study, this combination was examined by means of a mail survey among a sample of 305 Dutch citizens (average age 47 yrs) who were enlisted to participate in a behavioral change intervention program on environmentally relevant behavior. Personal norms appear to increase the proportion of explained variance in 5 intentions and 4 self-reported measures of performed environmentally relevant behaviors beyond that explained by 3 of the theory of planned behavior constructs (i.e., attitude, subjective norm, and perceived behavioral control). Issues evoked by these results are discussed.

Kaiser, F. G., G. Hübner, et al. "Contrasting the Theory of Planned Behavior With the Value-Belief-Norm Model in Explaining Conservation Behavior." Journal of Applied Social Psychology 35(10): 2150-2170.

In this paper, we contrast the value-belief-norm (VBN) model and the theory of planned behavior (TPB) for the first time regarding their ability to explain conservation behavior. The participants represent a convenience sample of 468 university students. Using survey data and adopting previously established compound measures, structural equation analyses revealed a remarkable explanatory power for both theories: TPB's intention accounted for 95% of people's conservation behavior and VBN's personal norms accounted for 64%. Compared to the VBN model, the TPB

covered its concepts more fully in terms of proportions of explained variance. More importantly, the fit statistics revealed that only the TPB depicts the relations among its concepts appropriately, whereas the VBN model does not.

Kaplan, S. (2000). "Human nature and environmentally responsible behavior." Journal of Social Issues 56(3): 491-508.

Kaplan posits an alternative to the altruism-centered approach to understanding environmentally responsible behaviors (ERBs), which he argues promotes feelings of helplessness, focuses on sacrifice, and undermines "quality of life" interests of those affected. His model is called the Reasonable Person Model of environmental behavior, which takes an evolutionary/cognitive/motivational approach to understanding human nature; and, more importantly, allows both altruism and self-interest to coincide.

In terms of altruism, Kaplan argues that one of the problems is that the assumption that "good" motives will lead to "good" outcomes is no absolute, for helping others for selfless reasons can still cause suffering and make those being helped feel helpless. Likewise, acts derived from selfish motives can create "good" outcomes, such as NIMBY-ism and fighting toxic waste siting. Another problem with altruism, according to Kaplan, is that it runs counter to the human instinct to act with the "self" in mind. And finally, specifically in terms of ERBs, because an altruism-centered approach communicates sacrifice as a virtue, there is an inadvertent suggestion that ERBs reduces ones quality of life, thus buying into the status quo view that our current unsustainable way of living is the most satisfactory way to live.

The Reasonable Person Model does not disregard self-interest, but rather treats it as a cognitive reality that can be used to an environmental advantage. Drawing from cognitive science and human evolution, Kaplan argues that people have always been adept at processing information; early human survival depended on this ability. The Reasonable Person Model takes into account the human inclination to know, understand, and participate in problem-solving. The model also takes into account that humans, who by their very nature to want to solve problems, will find situations of helplessness distasteful, which makes helplessness a motivational issue that must be considered in the context of ERBs. Personal control and the belief that one's actions will benefit the environment is a motivational combo that should be drawn on more frequently. The solution to this dilemma, according to Kaplan, is to give people a focused task that requires problem solving. The solutions derived out of this problem-solving should represent reasonable options, taking into account both self-interest and altruism. Doing this should set into place multiple-desirable choices.

Kollmuss, A. and J. Agyeman "Mind the Gap: why do people act environmentally and what are the barriers to pro-environmental behavior?" Environmental Education Research 8(3): 239-260.

Numerous theoretical frameworks have been developed to explain the gap between the possession of environmental knowledge and environmental awareness, and displaying pro-environmental behavior. Although many hundreds of studies have been undertaken, no definitive explanation has yet been found. This article describes a few of the most influential and commonly used analytical frameworks: early US linear progression models; altruism, empathy and pro-social behavior models; and finally, sociological models. All of the models we discuss have some validity in certain circumstances. This indicates that the question of what shapes pro-environmental behavior is such a complex one that it cannot be visualized through one single framework or diagram. They then analyze the factors that have been found to have some influence, positive or negative, on pro-environmental behavior such as demographic factors, external factors (e.g. institutional, economic, social and cultural) and internal factors (e.g. motivation, pro-environmental knowledge, awareness, values, attitudes, emotion, locus of control, responsibilities and priorities). Although we point out that developing a model that tries to incorporate all factors might neither be feasible nor useful, we feel that it can help illuminate this complex field. Accordingly, we propose our own model based on the work of Fliegenschnee and Schelakovsky (1998) who were influenced by Fietkau and Kessel (1981).

Ledingham, J. A. "The kindness of strangers: Predictor variables in a public information campaign." Public Relations Review 19(4): 367.

Presents a study of the role of mass media and interpersonal communication in public information campaign in the United States. Dependency theory; Mediated and interpersonal messages; Roles of mass and interpersonal communication; Communication as a link between attitudes and behavior; Literature of public information campaigns; Segmenting of audience members predisposed to charities.

Maiteny, P. T. (2002). "Mind in the gap: Summary of research exploring 'inner' influences on pro-sustainability learning and behaviour." Environmental Education Research 8(3): 299-306.

Comments on the A. Kollmuss and J. Agyeman article (see record 2003-04487-001) which discusses a few of the most influential and commonly used analytical frameworks developed to explain the gap between the possession of environmental knowledge and environmental awareness, and displaying pro-environmental behavior. The present article discusses research findings which accord with Kollmuss and Agyeman's observation that "old habits are a very strong barrier" to pro-environmental behavior change. Specifically, the author describes (1) experiences that have prompted individuals to reduce the environmental impact of their lifestyles through attitudinal and behavioral change, and (2) how these experiences relate to their wider beliefs, meanings and convictions. The research from which these findings are drawn hypothesizes that pro-environmental behavior change is more likely to endure in the long term if it is rooted in, and driven by, significant and meaningful experiences.

Pelletier, L. G., S. Dion, et al. (1999). "Why Do People Fail to Adopt Environmental Protective Behaviors? Toward a Taxonomy of Environmental Amotivation1." Journal of Applied Social Psychology 29(12): 2481-2504.

Individuals' reasons for their lack of motivation toward environmental protective behaviors were proposed: amotivation because of strategy, capacity, effort, and helplessness beliefs. Confirmatory factor analyses and correlations between the four types of amotivation and constructs related to the environment supported the validity of the constructs. A structural model in which helplessness beliefs could be predicted by the other sets of beliefs, and wherein strategy and ability beliefs resulted from effort beliefs, was tested. All estimated parameters were significant, with the exception of one link: amotivation because of effort beliefs did not display a significant relationship with helplessness beliefs. The importance of understanding why individuals may be amotivated and the strategies liable to help reduce their lack of motivation are discussed.

Ryan, R. L. "Exploring the Effects of Environmental Experience on Attachment to Urban Natural Areas." Environment & Behavior 37(1): 3-42.

This study explored the relationship between place attachment and both environmental experience and environmental attributes within three urban natural areas in Michigan. To understand these relationships, 328 park users--including neighbors, visitors, volunteers, and staff--were asked about their attachment, use, environmental knowledge, and attitudes toward management using a photo questionnaire. The results showed that attachment has different manifestations related to experience--a place-specific attachment was generally held by neighbors and recreational users, whereas a conceptual attachment was held by volunteers, staff, and those with extensive natural-areas knowledge. Each form of attachment was associated with distinctive perspectives on management. The study showed that the expert's vision of appropriate management of a natural area may differ from those of neighbors and users, which can readily lead to conflict. If, however, attachment is recognized as a multifaceted and far-reaching component of people's relationship to a place, such conflicts can be mitigated.

Schultz, P. W. and L. Zelezny (2003). "Reframing Environmental Messages to be Congruent with American Values." Human Ecology Review 10(2): 126-136.

The authors examine the disconnect between traditional environmental appeals and American values. Values are guiding principles that form an organizing structure. The authors cite Kohls

and Triandis as they explain that American values tend to lean towards self-interest (i.e., personal gain, power, individual achievement), which appears incompatible with pro-environmental concern and behavior. According to Schwartz's continua of values, which place self-transcendence and self-enhancement at opposite ends of the spectrum, Americans tend to score high on self-enhancement. On the other hand, self-transcendence is most closely related to pro-environmental attitudes and action. As the norm-activation theory of environmental behavior posits, environmental concern be measured as a product of what one values (self, others, biosphere). These values tested on Schwartz's continua show that self-transcendence correlates with biospheric altruism. In spite of what these tests show, the authors argue that self-enhancing values might lead toward egoistic attitudes toward the environment, which would result in rational-choice decision-making. So, when environment degradation threatens an individual with egoistic values, that individual is likely to act in a more environmentally responsible way.

The authors admit that there is little to no evidence pointing to an egoistic basis for environmental action, however they contend that this has, at least in part, to do with the way in which pro-environmental behaviors are typically marketed and framed. The act of protecting the environment is typically framed as requiring sacrifice, simpler living, and altruistic values. To those who endorse the new environmental paradigm (NEP) and have altruistic values this sort of framing is convincing. However, to those who have more egoistic concerns, these message frames are not likely to be that convincing.

So, the authors ask: "How do you motivate people to act in environmentally responsible ways who have more self-enhancing principles?" The authors turn to the work of Stephen Kaplan in order to shed some light on this dilemma. When framing environmental appeals, Kaplan recommends: (1) work within the motivational characteristics of the target population; (2) treat human cognitive capacity as an asset; (3) engage motivations other than altruism (i.e., competence, being needed, making a difference, and forging a better life). All are self-enhancing values, however they focus on contribution.

Stern, P. C. (2000). "Toward a coherent theory of environmentally significant behavior." Journal of Social Issues 56(3): 407-424.

This article develops a conceptual framework for advancing theories of environmentally significant individual behavior and reports on the attempts of the author's research group and others to develop such a theory. It discusses definitions of environmentally significant behavior; classifies the behaviors and their causes; assesses theories of environmentalism, focusing especially on value-belief-norm theory; evaluates the relationship between environmental concern and behavior; and summarizes evidence on the factors that determine environmentally significant behaviors and that can effectively alter them. The article concludes by presenting some major propositions supported by available research and some principles for guiding future research and informing the design of behavioral programs for environmental protection.

Stets, J. E. and C. F. Biga "Bringing Identity Theory into Environmental Sociology." Sociological Theory 21(4): 398-423.

In an effort to explain pro-environmental behavior, environmental sociologists often study environmental attitudes. While much of this work is atheoretical, the focus on attitudes suggests that researchers are implicitly drawing upon attitude theory in psychology. The present research brings sociological theory to environmental sociology by drawing on identity theory to understand environmentally responsive behavior. We develop an environment identity model of environmental behavior that includes not only the meanings of the environment identity, but also the prominence and salience of the environment identity and commitment to the environment identity. We examine the identity process as it relates to behavior, though not to the exclusion of examining the effects of environmental attitudes. The findings reveal that individual agency is important in influencing environmentally responsive behavior, but this agency is largely through identity processes, rather than attitude processes. This provides an important theoretical and empirical advance over earlier work in environmental sociology.

Syme, G. J., B. E. Nancarrow, et al. "The evaluation of information campaigns to promote voluntary household water conservation."

Save-water campaigns are the most common tools for promoting household water conservation. Despite their popularity, there is some debate about how effective they are. In this article, the authors provide a representative review of the **summative evaluations of persuasive conservation programs**. It is concluded that there is an underuse of quasi-experimental techniques and qualitative analysis. Most have been too broad to allow for specific suggestions for improving campaigns. In the second half of the review, **an outline of a communications model is offered and literature relating to both input and output variables pertaining to persuasion is summarized**. Gaps in understanding are identified. The need to systematically research behavioral change models to improve understanding and performance of persuasive water conservation campaigns is discussed.

Tarrant, M. A. and G. T. Green "Outdoor Recreation and the Predictive Validity of Environmental Attitudes." Leisure Sciences 21(1): 17-30.

The utility of the attitude concept in outdoor-recreation research rests upon its predictive validity, that is, an ability to predict subsequent behavior (at either the general or specific level). **This study examines the moderating and mediating effects of participation in three types of outdoor recreation activities (appreciative, consumptive, and motorized) on environmental attitude-behavior correspondence**. A mediating effect occurs if participation accounts for the relation between attitude and behavior. A moderating effect occurs if the attitude-behavior relationship changes as a function of participation. Respondents (n1220) to a telephone interview of households in the Southern Appalachian region of the Southeast United States were asked about their participation in a selection of outdoor recreation activities and their environmental behaviors and were randomly assigned to one of five general environmental attitude scales. Results support a significant mediating effect for appreciative outdoor activities only. No consistent moderating effects were found. Findings are interpreted within the context of attitude accessibility, and implications for generating pro-environmental behaviors are provided.

Teisl, M. F. and K. O'Brien "WHO CARES AND WHO ACTS? Outdoor Recreationists Exhibit Different Levels of Environmental Concern and Behavior." Environment & Behavior 35(4): 506.

Provides information on the use of **probability models to analyze the relationship between the level of environmental concern/behavior of a person and his or her participation in outdoor recreation**. Differences in the relative effects of recreation activities; Application of a multivariate regression approach; Classification of individuals by participation in recreation activities.

Trumbo, C. W. and G. J. O'Keefe "Intention to Conserve Water: Environmental Values, Planned Behavior, and Information Effects. A Comparison of Three Communities Sharing a Watershed." Society & Natural Resources 14(10): 889-899.

This article examines a set of constructs underlying water conservation behavior in three distinct communities located in the California-Nevada Truckee River Watershed. Using the **theory of planned behavior as a theoretical base, we focus on the additional explanatory power of environmental values and information**. The analysis, based on 733 telephone interviews, indicates that significant differences in these variables do not appear across the communities. An analysis of the full watershed shows that the theory of planned behavior does a good job of accounting for intention to conserve water. Environmental values and information effects demonstrate significant but weak effects. Interpretation of the results suggests that **conservation promoters should understand the power of audience information seeking and direct behavior change efforts at improving self-efficacy to conserve water**.

Valente, T. W., P. Paredes, et al. (1998). "Matching the Message to the Process The Relative Ordering of Knowledge, Attitudes, and Practices in Behavior Change Research." Human Communication Research 24(3): 366-385.

This study reconsiders traditional hierarchy models that posit a learning model of behavior change in which knowledge precedes attitudes, which in turn influence behavior. The case of

contraception in Peru is considered and six possible knowledge, attitude, and practice permutations are developed. Contraceptive practice may precede detailed knowledge that may result in considerable misinformation. This misinformation may lead to dissatisfied users and discontinued use of health behaviors. Media campaigns designed to inform the public can create a more informed population of users, which in turn may create a more satisfied and hence sustainable user base. Assessing the fit of behavior change models is consistent with emerging work in development communication that has called for women's empowerment and informed choice to be cornerstones of health and development policy. The informed choice approach provides the basis for communication strategies that can more readily create a critical mass of support for such policies.

Wall, R., P. Devine-Wright, et al. "Comparing and Combining Theories to Explain Proenvironmental Intentions: The Case of Commuting-Mode Choice." Environment & Behavior 39(6): 731-753.

This article addresses the need for systematic theory comparison and development in environmentally significant behavior (ESB) research. Using logistic regression ($N = 398$), models based on Schwartz's norm-activation theory (NAT) and Ajzen's theory of planned behavior (TPB) were compared as explanations of drivers' intentions to reduce or maintain their car use for commuting. NAT explained more variance (McFadden $R^2 = .342$). A model using NAT and TPB constructs was also tested. This explained more variance than either individual theory (McFadden $R^2 = .379$). A personal-normative variable (NAT) and perceived behavioral control (TPB) were the only statistically-significant predictors of intentions in the model derived from both theories. It is argued that combining NAT and TPB constructs accounts for a range of influences on car-use intentions that neither individual theory fully captures. A combined model may also apply to other ESBs, especially those perceived as reducing personal utility (i.e., entailing sacrifice).