

Environmental Attitudes^{*}

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Summary

Environmental attitudes are conceptualized in terms of attitude theory as being composed of beliefs and affect toward an object. The environment as an object is difficult to define and this has implications for the study of general environmental attitudes. Attitudes are based on values, have horizontal and vertical structure and tend from general to specific. The overall affect statement is the summary of this structure. From research done in the United States, it seems possible to measure global environmental attitudes since five general environmental attitude scales have reasonable reliability and show some evidence of validity. Environmental concern appears to be a specific belief which is largely embedded in cognitive structure and should be considered an opinion rather than an attitude. While changes in this opinion have been documented, it is not clear that environmental attitudes or values have shifted, although attitudes have most probably become more differentiated over the last decade. In the United States positive environmental attitudes tend to show consistency with related beliefs and behaviors. It is concluded that research on environmental attitudes has largely been atheoretical and noncumulative. While it is possible to measure these attitudes, little is known about the basic beliefs, affect or the organization of these components.

Introduction

Environmental attitudes are fundamentally important, widely discussed, frequently measured, and poorly understood. In spite of better than 40 years of systematic inquiry into the nature of attitudes by social psychologists, little of this theory has found its way into research on environmental attitudes. In some ways it

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is too easy to gather data on environmental attitudes. Anyone with access to a mimeograph machine and a population of willing respondents can (and probably will) conduct an "attitude survey".

Consequently, the goal of this paper is not to review an almost hopelessly disorganized and fundamentally unintegratable literature, but rather to consider environmental attitudes at a more general level. It builds on social psychological theory about attitudes. Those who are planning to survey or actually conduct research on environmental attitudes are urged to go much deeper than this article and review Fishbein and Ajzen (1975), Bem (1970), McGuire (1969), Rokeach (1960, 1968, 1973, 1979), Eagly and Rimmelfarb (1978), and Leventhal (1974). I will reference and discuss those environmental articles which can be interpreted in terms of and contribute to a broader understanding of attitudes¹. For a list of approximately 300 studies on environmental attitudes, see Dunlap and Van Liere (1978a).

In a scientific sense it is not clear that attitudes exist. One cannot weigh them, say what color they are, how fast they are, or describe their bio-chemical nature. An attitude is a hypothetical construct about a mental state which is inferred from verbal reports and behavioral observation. As a concept, attitude takes its reality from our own introspection. We believe in attitudes and find them useful for understanding the behavior of others. We know them to be powerful because changes in social structure, such as a law which requires an environmental impact statement, or stabilities, such as the continued reliance on the single person automobile, often seem to be influenced by public attitudes.

Because attitudes are so slippery, clear and widely shared definitions of attitudes have not yet developed in social psychology (see almost any text or review article for a discussion of this problem). Just because they are ill-defined doesn't mean environmental attitudes cannot be studied. Biologists can't define life either but yet go on to study it anyway. The view expressed in this paper builds mainly on the work of theorists such as Rokeach, Bern, Rosenberg and Abelson. The widely cited Fishbein model is not considered because operational problems make the findings suspect to this reviewer at least.

¹ Geographers influenced by Gilbert White have been studying something called environmental perceptions for some time. The term perception as used by geographers is much more akin to the idea of attitudes, thoughts or feelings about an object, rather than how the object is sensed by the sensory organs of the body. This label, perception, acts as an artificial, but still very real, hiatus between attitude theory and this environmental research and, consequently, research on environmental perceptions will not be covered as part of this article. We will focus rather on those articles which more specifically address themselves to attitudes.

Attitude Objects

Theorists do agree that attitudes have an object. A person has an attitude about something. The great difficulty with even thinking about environmental attitudes is the ambiguity of the object itself. Is environment only pollution? Is it the natural world but not the built environment? In a technical sense any object outside of self exists in the individual's environment, so all attitudes except those beliefs about self could be correctly called environmental attitudes. But this doesn't get us very far. To further understand the implications of this problem, consider others such as racial attitudes (Brigham and Weissbach, 1972), international attitudes (Kelman, 1965) and political attitudes (Campbell, et al., 1960) which have been the subject of substantial inquiry. Political liberalism and prejudice may be as broad

and general as environmentalism, so it is not absolutely necessary to have a totally clear attitude object in order to measure and theorize about an attitude.

There is, however, one important difference between even these broad attitude objects and the environment. The environment as an object is constantly present and has multiple sub-objects which do not, as individual objects, represent the totality. We have attitudes about specific objects in the environment such as pine trees, a particular river, the Rocky Mountains. etc. The environment is an expedient

ial object, but no one experiences "the environment" as a whole, but rather separate distinct aspects of the environment. In contrast, the subjects of political or international attitudes are media objects. Many of those people surveyed in polls have never been to Iran or Vietnam or seen Ted Kennedy. Yet, they have attitudes about them. We would expect these attitudes to be based on a few beliefs, be very general and not to be very salient to most people since the objects are outside the scope of one's immediate experience. But still it seems reasonable to ask a typical American his attitude toward Russia. Asking if they like or dislike the environment seems much more ambiguous.

The environment may be an attitude object which has been forced on the respondent by journalists and researchers, but which may not make sense to respondents who are likely to see the environment much more in terms of its component parts which they personally experience. For this reason, future reviews of environmental attitudes might well organize the environmental attitude literature in terms of objects such as attitudes toward wildlife, water, air pollution, mass transit and so on.² This review, however, will focus on the broader studies of environmental attitudes. Consequently, individual studies on specific aspects of the environment have not been included.

² Dunlap and Van Liere make this same point in their bibliography (1978a), and categorize the list of studies by topic area.

Components of Attitude

In most theories of attitudes, two components are noted, an emotional dimension involving feelings and a cognitive aspect which refers to dispassionate facts and beliefs. For purposes of illustration let us consider a more specific object, say water. Most people have certain beliefs about water. One can say that water is blue. This is a belief or cognition about water. Or perhaps it is better said that water is usually blue, but may be brown murky, grey, colorless, but seldom red or chartreuse. A single belief may be differentiated into a number of more specific beliefs. The cognition, „Water is blue”, is very general, “The water in the pond behind my house on a cloudy March day, 1st an off grey”, is a highly specific belief about water color. In a system of psycho-logic, which does not quite obey the rules of deduction, the specific belief does not negate the more general statement. Some how they are all hooked together in a loose and fluid arrangement called cognitive structure. A single belief statement about the water in a pond combines all sorts of beliefs about the house, pond and March into a particular statement about water. It is a bit like a disk file on a computer, spinning at high speed. so the machine has almost immediate access to bits of information. Stating a belief about the color of water can evoke parts of many other beliefs and attitudes just as rapidly.

An attitude is something else beyond simple facts that may be judged against other data, It has an evaluation component. This may be very deep at an emotional level, where it is called affect. The thought of the vista of the great plains, or the blue sparkly water on a north woods lake in autumn, things that for individuals bring tears to our eyes, which evoke a visceral response illustrate this emotional component or affect, Of course, not all things elicit this emotional response and besides, it is very difficult to measure with the crude instruments available to the social psychologist, so we have invoked another term which describes the more usual state of affairs where an object does not make one dewy-eyed, but we can tell whether we like it or not. Daryl Bern (1970) and others call this an evaluative belief. It is measured with a belief statement such as “I like violent rain storms,” yes or no. As such, it does not capture terror, or elation which might follow an individual watching a storm from the veranda. It is a cognitive summary of the emotional feeling.

A specific summary evaluative judgment, such as “I like trees” or “I dislike wind” is defined as an attitude by Bern (1970) and Fishbein and Ajzen (1975). This attitude is based on evaluative beliefs and beliefs about a particular object. It ‘is a single summary statement which implicitly combines both affect and cognitions. Other theorists such as Rokeach (1968) refer to the organization of beliefs, evaluative beliefs, and affect about the object as an attitude. Rokeach’s theorizing is more unwieldly to operationalize since no single number represents an attitude. One has to measure the many components of attitude and integrate them into some kind of totality. In spite of its complexity, this seems like a more realistic way of representing attitudes.

Before we can use these concepts to examine human orientations toward the environment, it is necessary to introduce another concept, value. The term value is another kind of hypothetical mental construct when it is conceptualized at the level of the individual rather than at the societal level. A value is a particular kind of attitude; like an attitude, it has both cognitive and affective elements. It is possible to feel considerable emotions about one's values. Rokeach (1913) defines value as "an enduring belief that a specific mode of conduct is personally or socially preferable to an opposite or converse mode of conduct or end state of existence." Values, Rokeach argues, tend to be single, stable beliefs, which are used as standards to evaluate action and attitudes. Values have two notable characteristics which differentiate them from most attitudes. First, they transcend objects. If one holds equality as a value, then this value applies to many different situations, issues, or objects. In contrast, one holds attitudes about particular objects. Second, values are most central in a person's belief system. Values are the basis for evaluative beliefs, and other linkages among beliefs. Because of this centrality and their linkages with many beliefs and attitudes, they are very difficult to change, and if they were to be changed, we would expect to see major cognitive reorganizations.

Important work on values has been done in the 1970's by Milton Rokeach. His two books summarizing over a decade of research represent a quantum leap in our understanding of this concept. Rokeach has identified 18 terminal values, such as "a comfortable life (a prosperous life)," "happiness (contentedness)," "freedom (independence, free choice)" etc. and 18 instrumental values, such as "ambitious (hard working, aspiring)," "logical (consistent, rational)," and "obedient (dutiful, respectful)". Rokeach developed a research program where ranking of these two sets of values are used as dependent and independent variables. These values can be useful for understanding the organization of environmental attitudes, as the following example will illustrate. See also Pierce (1979).

An Example

An example will help show how the concepts we have been developing can be helpful for understanding environmental attitudes. For purposes of our discussion, let us, like Rokeach, provisionally define an environmental attitude as an organization of beliefs, including an overall evaluation, liking or disliking for some aspect of the environment, the environment as a whole, or of some object which has clear and direct effects on the environment, such as power plants.

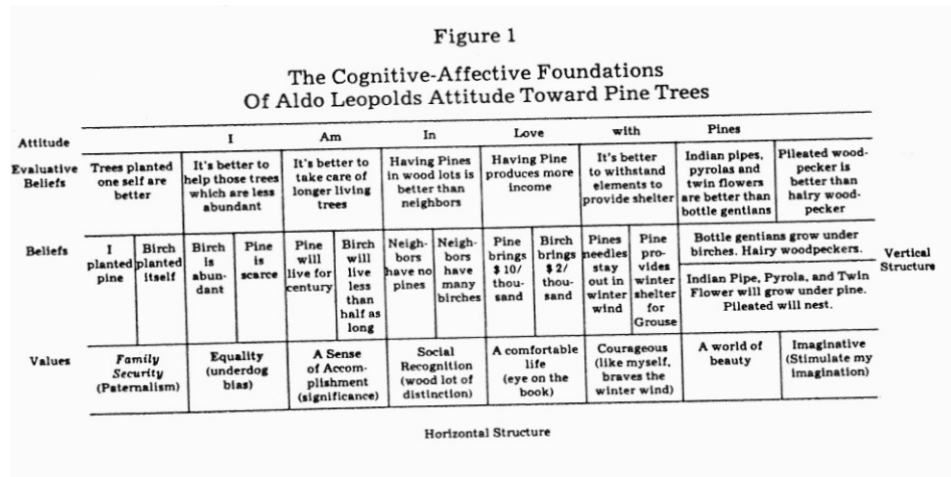
In *Sand County Almanac* (1949). Aldo Leopold, forester, wildlife ecologist and social philosopher, described the components of one environmental attitude namely his attitude toward pine trees. He explores this attitude in his essay "November" as he ponders the psychological reasons behind his decision to cut one tree, the birch, in favor of the pine.

"Well, first of all, I planted the pine with my shovel, whereas the birch crawled in under the fence and planted itself. My bias is to some extent paternal..."

The first section of Figure 1 diagrams how these beliefs would be represented in terms of attitude theory. Paternalism is the basic value. This is a broad single belief which transcends situations. It is possible to be paternal toward one's students, home, animals, and many other things. In Rokeach's terms it most closely fits the value "family security (taking care of loved ones)." Along with this value Leopold holds two beliefs. He planted the pine and the birch planted itself. These, combined with the value, produce an implied evaluative belief which serves as a grounding for his overall attitude about pine trees.

The birch is an abundant tree in my township and becoming more so. whereas pine is scarce and becoming scarcer; perhaps my bias is for the underdog. But, what would I do if my farm were further north, where pine is abundant and red birch is scarce? I confess. I don't know. My farm is here.

The pine will live for a century. the birch for half that; do I fear that my signature will fade? My neighbors have planted no pines but all have many birches; am I snobbish about having a woodlot of distinction? The pine stays green all winter. the birch punches the clock in October; do I favor the tree that, like myself, braves



the winter wind? The pine will shelter a grouse but the birch will feed him; do I consider bed more important than board? The pine will ultimately bring ten dollars a thousand, the birch two dollars; have I an eye on the bank? All of these possible reasons for my bias seem to carry some weight, but none of them carries very much

So I try again, and here perhaps is something; under this pine will ultimately grow a trailing arbutus, an Indian pipe, a pyrola. or a twin flower, whereas under the birch a bottle gentian is about the best to be hoped for. In this pine a pileated wood pecker will ultimately chisel out a nest; in the birch a hairy will have to suffice. In this pine the wind will sing for me in April at which time the birch is only rattling naked twigs. These possible reasons for my bias carry weight, but

why? Does the pine stimulate my imagination and my hopes more deeply than the birch does? If so, is the difference in the trees, or in me?

The only conclusion) ' have ever reached is that I love all trees, but lam in love with

pinos" (1 949, Pp. 69— 70).

As can be seen from the diagram, Leopold has a number of basic beliefs all of which support his overall attitude. These stacks of beliefs, evaluative beliefs, and values constitute horizontal structure. Leopold's belief system which underlies his attitude toward pine trees has a relatively large amount of horizontal structure. I would guess that the positive attitudes of most Americans toward pine trees are grounded in one or two beliefs and few values. In Leopold's case, it is possible in these few brief paragraphs to see that pine trees are closely associated in his own belief system with at least eight basic values; family security, equality, accomplishment, social recognition, personal comfort, courage, beauty and imagination, and more than 14 beliefs (some have been omitted from the diagram for reasons of clarity). This substantial horizontal structure gives his attitude stability.

Any one of the supporting beliefs could be knocked out and we would not expect Leopold's attitude to change. If birch suddenly brought \$10 per thousand instead of two, it would change one evaluative belief, but the attitude as diagramed would still be well supported. We would expect him to hold it just about as strongly. Leopold's belief system could be described as highly differentiated.

Another factor which suggests attitudinal stability is the centrality of the attitude. If one simply liked pine trees because one had one in one's front yard, we might expect this attitude to change if one, say changed houses. In Leopold's case he explicitly ties his attitude to basic values, which are almost by definition central to the individual. Given a tendency toward consistency, we would not expect the attitude to change without a basic value shift, or a denial of some rather well grounded beliefs (i.e. I didn't really plant the pines). Since neither the values nor beliefs based on behavior are easily changed, consequently, the attitude will not easily change either.

The diagram in Figure 1 also indicates another principle of cognitive organizations, namely vertical structure. This notion described by Bern (1910) suggests that beliefs are stacked up on top of each other finally leading to an attitude. It is logically possible for there to be a long string of beliefs, much like diagrams of complex molecules, where dozens of beliefs are stacked on each other. In Leopold's case, the attitude is very close, just two beliefs away from basic values. This short vertical arrangement also suggests a stability. If anyone were to try to talk Leopold out of this belief, one expects that they would have to do a lot of talking.

The diagram suggests that each vertical structure is equally important. This is not strictly the case as Leopold himself notes. Of the first six structures he says: -‘All of these possible reasons for ray bias seem to carry some weight but none very much.’ Most important, apparently, is the last structure. The pine harbors plants and animals that he feels are more beautiful and do more to stir his imagination. They represent greater diversity and beauty on his land. It is likely that this belief which caused him to engage in the behavior also accounts for some of his other beliefs. Reviewing Leopold’s other writings and discussions of his intellectual development (Flader, 1974), we also suspect that Leopold would rate a world of beauty and imagination much higher than social recognition or a comfortable life. Our final judgment is that all other structures could fall and he would continue to hold this same attitude toward pines if the seventh structure stayed intact.

On the other hand, If Leopold changed his beliefs or evaluations about these plants, or if he disassociated the linkages between the beliefs and values, change would be likely. That is, if he no longer felt that these plants and animals increased natural beauty or stirred his imagination, we might expect a major change in his attitude toward pines even though the remaining six structures stayed in place. Psycho-logic involves more than the simple counting of structures. The centrality of structures and the number of links to other components of one’s entire belief system must be taken into account.

The Leopold case points out a bit of the complexity of environmental attitudes. Here we have taken but one element from the environment and found it tied to all sorts of other things. Think of the richness and detail of Leopold’s entire cognitive/affective system about all of the elements which might be broadly listed under the rubric of environment. The complexity is great. The goal of much research on environmental attitudes seems to be to reduce this attitude to a single number and determine how it changes over time or what predicts it best³

What I have tried to do to this point is to present basic aspects of attitude theory and show with the Leopold example how values, beliefs and affect function to form an attitude toward some aspect of the environment. While this theoretical statement was not intended to be comprehensive, it provides a conceptual basis which is largely lacking in the published literature on environmental attitudes. Indeed, as Burris-Bammel points out in a 1978 article, eleven previous studies on the topic of environmental attitudes published in the same journal did not bother to even define the term! In the next section of the paper I will review some of the general efforts to measure environmental attitudes and environmental concern, the factors which relate to these attitudes and issues of cognitive consistency and specificity.

³ One of the few exceptions to this research is an article by O’Riordan (1976) which specifically deals with cognitive structure, among other things. It develops the cognitive basis of detergent buying behavior among Canadian women, based on field interviews. He further discusses some of the dynamics of environmental attitudes.

Environmental Attitude Scales

Because attitudes are viewed as hypothetical mental states underlying constructs which influence a variety of verbal statements, no single verbal statement yields a particularly good measure of attitude. The goal of scaling is to get a measure of the construct, under the assumption that the errors associated with responses to any single item cancel each other out, over a large number of items. This model of an attitude scale grows out of a large body of literature called test theory (Nunnally, 1978; Lord and Novik, 1968; and Magnusson, 1967). What an attitude scale does is to reduce a person's environmental attitude to a single quantitative score, one number. Quite clearly, this fails to capture the richness of an environmental attitude which is displayed in the Leopold schematic. On the other hand, it is a parsimonious representation which can be easily used to compare individuals and groups. Many studies use their own ad hoc attitude scales, created only for the study itself. Five papers, however, are devoted to scale construction. The goal of these articles is to develop an environmental attitude measure which can be used by others. They generally present more information about reliability and validity than those scales embedded in more substantive work and for these reasons are reviewed here.

Weigel and Weigel. These social psychologists developed a 16-item Likert scale published in *Environment and Behavior* (1978). The items were originally selected from thirty-one used by Weigel and his associates in 1972 (Tognacci, et.al, 1972). Each item correlated significantly with behavior (Weigel et.al. 1974, Weigel and Newman, 1976), for residents of both a Western and Eastern city. The items have reasonable item to total correlations. The scale has an alpha of .85. A small sample test-retest reliability was .85 and the scale differentiates between Sierra Club members and the known public. Two sample items are presented to illustrate this scale. For a full listing of the scale items, see the original source.

1. The benefits of modern consumer products are more important than the pollution that results from their production and use.
2. Predators such as hawks, crows, skunks, and coyotes which prey on farmer's grain crops and poultry should be eliminated,

A person saying no to both questions is scored as having a more positive environmental attitude than those who would respond yes. The total score on this scale is based on the summated rating of each item.

Maloney and Ward. These psychologists first developed a 128-item scale in 1973 (Maloney and Ward, 1973) which was described in the *American Psychologist*, a journal which circulates to all members of the American Psychological Association. Since a scale of this length is unwieldy in most research situations, they trimmed it down to 35 items in a subsequent publication, (Maloney, Ward and Braucht, 1975). The scale was composed of three Likert subscales:

Verbal Commitment

1. I would be willing to use a rapid transit system to help reduce air pollution.
 2. I would donate a day's pay to a foundation to help improve the environment.
- Actual Commitment

1. I have attended a meeting of an organization specifically concerned with bettering the environment.
2. I subscribe to ecology publications.

Affect

1. When I think of the ways industries are polluting, I get frustrated and angry.
2. It frightens me to think that much of the food I eat is contaminated with pesticides.

They also report a 15 item knowledge scale.

1. All but one of the following decompose in ocean water.
A) Sewage, B) Garbage, C) Tin cans, D) Plastic bags, and E) Chemical fertilizer.
2. Ecology assumes that man is: a (an) part of nature.

A) differential, B) integral, C) inconsequential, D) superior B) original The three Likert scales have alpha's of .81 to .69 and all four scales significantly differentiate between a sample of Sierra Club Members, a college and noncollege group. Interscale correlations are not presented.

Dunlap and Van Liere. Sociologists Dunlap and Van Liere (1978B) have hypothesized a new environmental paradigm (NEP) in contrast to what Pirages and Ehrlich (1974) call our society's Dominant Social Paradigm (DSP), i.e., traditional values and beliefs such as economic growth, material progress and technological optimism. The NEP represents a constellation of values, attitudes, or beliefs which are 'perhaps best captured by the spaceship earth metaphor'. They constructed a 12 item Likert scale to measure this construct. Two sample items:

1. Mankind is severely abusing the environment.
2. There are limits to growth beyond which our industrialized society cannot expand.

The scale had a reliability of .81 for a general population sample and .76 from a sample of members of environmental organizations and each item significantly differentiated between the two samples. Factor analysis showed that items formed a single general factor.

Dunlap, Gale and Rutherford. Dunlap and other associates (1973) had also developed an earlier eight item scale. Dunlap has not continued to use the scale since he feels it measures both environmental concern and traditional American values, which in his recent work he prefers to operationalize separately. Each item in the scale had a significant item to total correlation $r = .45$, an alpha of .76 and a single factor structure. The items in the scale represent a tension between what Dunlap calls „environmental rights” and more traditional values and time honored practices.” Sample items:

1. Where natural resources are privately owned, society should have NO control over what the owner does with them.
2. One person’s right to a clean environment is NOT as important as another’s right to gainful employment.

The scale showed some limited evidence of validity using reported behaviors of college students as a criterion. Those high on the scale were more likely to say they had taken action on an environmental issue, and to have participated in a campus environmental organization.

Lounsbury and Tornatzky These psychologists did a series of scale construction studies. Initially they began with 78 items and 660 respondents. They point out (Lounsbury and Tornatzky, 1977, p.300) that the Likert items were selected to represent five domains including overpopulation, pollution, economic materialism, conservation and environmental action. A cluster analysis routine yielded six distinct oblique clusters.

A shorter, 26 item scale, was constructed based on the first study. Two strong clusters (concern for environmental degradation and concern for environmental action) were found along with a third weaker cluster.

Concern for Environmental Degradation

The news media have exaggerated the ecological problem. If mankind is to survive at all, ecological pollution must be stopped”. Concern for Environmental Action

“People should buy (and return) beverages only in returnable containers.

People should use less detergent than the manufacturer recommends to help preserve water quality”.

In a third study they showed that a sample of environmental organization members had significantly higher scores on these measures than previously sampled groups. No evidence of reliability was presented in their article.

Summary

It appears then that within the generally accepted conventions of attitude measurement it is possible to measure something called environmental attitudes. by developing an index which has re and some evidence of validity. How the five measures are related has not yet been reported in the literature but it seems probable that they all measure some general orientation⁴ Just what this orientation represents is not as clear. Merely developing a 12-item scale is hardly evidence for a broad overarching new environmental paradigm as Dunlap and Van Liere seem to imply. Neither Ward and his associates nor Weigel and his co-workers have used these instruments to explore cognitive structure, in the broader sense. A most interesting aspect of these scales is that they are seldom used in the published re search on environmental issues which uses some attitude measure as either an independent or dependent variable. Except for the research conducted by the auth ors, no published studies are avialable where either the Weigel and Weigel scale or Dunlap und Van Liere's NEP scale have been used.

The Maloney and Ward scale was published twice in the American Psychologist which has a single issue circulation of over 40,000. The initial publication was in 1973 and a revised shorter version of the scale was published again in 1975. As this review was written in early 1980, only two studies using this scale (Dispoto, 1971 and Borden and Schettino 1979) could be located in the published literature. In spite of wide availability and topical interest in environmental attitudes, neither this scale nor the others have been used by other research.

There are a number of possible reasons for this situation. It may be too easy to construct an attitude measure. When constructing a questionnaire, it is possible to sit down and write a number of ad hoc attitude items with some ease. It appears that this is what investigators tend to do, rather than searching the literature for existing measures. There often seems to be a reliance on single item indicators which have a clearer face validity than a multi-item scale which measures some broader abstraction. Most investigators are interested in more specific attitude objects like nuclear power, energy conservation, water pollution, air pollution and so on. It appears that those conducting these studies, assuming they know about these more general scales, choose to construct measures which focus on a more spe cific object rather than measuring attitudes toward the more global attitude

object. Finally, these instruments are designed for self-administration and all contain multiple items. On large scale surveys where interviewers are used there is a tendency to rely on single item indicators since the cost of asking multiple questions on, the same topic is substantial.

⁴ As a classroom exercise. 75 students answered the items for the first four scales. A factor analysis yielded a strong single factor indicating that for this sample they are all measuring the same orientation.

Environmental Concern

in contrast to the multi-item indicators of environmental attitudes, single item indicators have been used in a number of statewide and national surveys. The focus of the studies (Dunlap and Dillinsan, 1916; Dunlap and Van Liere, 1977a; Buttel, 1975; Erskine, 1972; and Mitchell, 1979), using these data, has been on attitude change. The early articles suggested a rapid Increase until 1970 then decline in environmental attitudes, although recently Mitchell (1979) has called that conclusion into question.

Responses to a single item indicator are particularly suspect as measures of attitudes, since they do not have the built-in potential of scales for reducing measurement error. Furthermore, these kinds of items simply measure single beliefs, rather than the organization of beliefs and affect which compose an attitude. It is possible that these beliefs are not well embedded in an individual's cognitive structure, but are mere offhand responses to an interviewer's question. Dunlap and Dillman (1976) cite Buttel's observation that the items used in his study "may tap a somewhat superficial awareness of environmental problems rather than a more meaningful commitment to solve such problems".

Buttel's work shows "environmental concern" increased from 16.8 percent in 1968 to 40.4 percent in 1970 and then dropped to 15.1 percent in 1972. "Environmental concern" was operationalized as a voluntary statement to an item which asked respondents to identify problems which face the state today. In 1970 Buttel shows that the evaluative label "problem" was more likely to be associated with the attitude object "environment". Thus, we know something about a very small piece of a person's organization of beliefs about the environment and how they changed during the period of the environmental crisis.

Dunlap and Diliman (1976) argue that their operationalization in a 1970—1974 panel study of Washington State residents is superior to Buttel's. Here individuals were asked to allocate tax dollars to various areas. In 1970, 70 percent wanted more money spent for pollution control and in 1974 this dropped to 32 percent. Willingness to select the environment from six areas as high priority for funding also dropped among the panel over this four year period. The authors conclude that "overall, our data indicate a substantial decline in public support for environmental protection (especially pollution control) from 1970 to 1974". On the other hand, analysis of private and public expenditures over this period might, in fact, show the opposite; that much more money was spent for pollution control in 1974 than 1970. It may only be that in 1974 the public felt other areas were worthy of additional support. In concluding their article, the authors themselves note that 82 percent of the panel agreed that "much progress has been made in cleaning up the environment during the past four years." The funding question simply gets at one kind of specific environmental belief, and says little about pro environmental attitudes as a whole.

In a second paper, (Dunlap and Van Liere, 1977a) Dunlap compares responses to a 1970 Harris survey of the State of Washington with a 1976 survey where respondents were asked to select which problems were most serious. In 1970, 44.1 percent chose reducing air and water pollution as a serious problem and in 1976 this dropped to 17.7 percent. Here is additional evidence that people were less likely to hold the belief that air and water pollution were a serious problem in 1976.

To better understand these changes in belief systems, we need to consider how people obtain their beliefs and attitudes about the object “environment”. It was argued earlier that unlike many attitude objects, particularly those which are the subject of polls, people have direct daily contact with the attitude object “environment” while things like other countries, presidential candidates, and the congress are objects which exist for most people only as media objects. While there are many ways that people form their attitudes (Oskamp, 1977, Chapter 6; Bern, 1970), two are relevant here: media and direct personal experience.

The tremendous increase of media coverage of the environment in the 1960's has been well documented (McEvoy, 1972). It is also argued that while the media may not change attitudes, they do identify problems and specify the topics of public debate, or set agendas. It is this agenda setting and little more that the poll data reported here are likely to be picking up. In 1970, environmental pollution was on the public agenda; the public knew this and reported it to pollsters. It was only beginning to be on the agenda in 1968, while in the mid 70's other topics had moved to the agenda. A particular belief may have changed, but the work of Buttel, Dunlap and their associates fail to show that environmental attitudes have changed.

The findings from several studies are consistent with the explanation. Prior to the environmental crisis DeGroot (1967) reported the results from several studies measuring attitudes toward air pollution. The best predictor was the objective level of air pollution in the neighborhoods studied. On the other hand, in 1970, Murch (1971) found that the people of Durham reported that air pollution in the nation was much worse than in their community when, in fact, objectively, it wasn't. Information about national levels of air pollution came from the media which lead the public to believe pollution was serious while information about Durham came

from their own senses which told them otherwise. These differential information sources, in addition to other social and psychological factors, may have made them overrate the air quality in their own community.

Two other Dunlap studies present data consistent with this explanation. In the Dunlap and Van Liere (1977a) study previously cited, the rating of pollution as a serious statewide problem in 1970 was 44 percent and as a community problem was 23 percent, on the same survey, or a 21 percentage point difference; while in 1976, the two had dropped back to 18 percent and 15 percent, respectively, or a 3

percentage point difference. The attitude toward the non experiential environment was now no different than toward the actual environment. The media had moved on to something else. Tremblay and Dunlap (1978), trying to explain discrepant findings between rural and urban residence and environmental concern, uncover the same phenomenon. Studies which asked about environmental problems on a state or national level report few differences between rural and urban populations, while rural residents are substantially less likely to identify air and water pollution as a problem when the frame of reference was the local community. Both appear to be affected equally by information about a more distant environment, identifying pollution as a problem in areas outside their own experience.

Mitchell (1979) examines more comprehensive survey data to suggest environment al attitudes are more stable than their earlier literature implied. Rather than focusing on single item problem identification questions he examines more complex items which involve trade-offs. He concludes that "In my review of thirty such questions on twelve different national polls, I found only three questions which showed anti-environmental pluralities". In five-year M trend data from 1973 to 1978, public responses to a closed ended question showed that majorities each year felt we were spending too little money on the environment. This dropped only about ten percentage points from 1973 to 1978. Comparing 1975 data with 1978 survey data he found that over 60 percent each year supported higher prices to protect the environment. While the environment may no longer be seen as a problem in a broader sense, Americans have pro-environmental beliefs and these have remained stable over the past environmental crisis period, at least after 1973. The items considered by Mitchell tie environmental issues with a wider range of objects such as lower prices, higher taxes, more energy, growth and jobs. In doing so, he is getting at environmental attitudes rather than a single belief which has been the focus of other investigators.

There is additional evidence that one element of cognitive structure had not shifted with the environmental crisis. Rokeach (1979) notes that a "World of Beauty" terminal value was rated 15th by a representative sample of Americans in 1968. In a similar national survey done in 1971 it was still ranked 15th. Other values had changed ranking, but a world of beauty was still third from the bottom.⁵

Yet, clearly something did happen to a global attitude toward the environment during the 1970's. First, this attitude probably became more differentiated. In the late 1960's the environment as an entity may have been a single object tied to few beliefs. As the press barrage continued, people received substantial amounts of new information. In 1970 a clean environment was defined as "good", later in the

⁵ Rokeach does find a statistically significant difference of the median rating on this value between the two periods. Large samples sizes make even small differences in medians reliable. The important observation is that during the pre-post crisis period, there was no change in rank.

decade as belief structures became more differentiated, people appeared to begin to believe that a clean environment affected jobs and other positive elements and began making trade-offs between such elements and environmental qualities. For some people who came to be called environmentalists and others called environmental sociologists, water quality planners and so on, the environment became a more central attitude object, tied to occupation, status and self-esteem. Unfortunately, none of the environmental concern studies measured either differentiation or centrality, or other aspects of structure which would test this speculation.

The content of the information also may have had an effect. I argued in 1972, based on Schwartz's norm activation theory (Schwartz; 1968b, 1970), that information in the media modified two crucial beliefs, the individual's awareness of inter personal consequences of environmental actions (i.e. changing the environment hurts people), and that individuals were personally responsible for these acts. This thrust environmental acts into the moral domain and thus it became material for public indignation. I have found the interpersonal consequences and responsibility variables useful for practicing environmental behaviors such as littering (Heberlein, 1971), lead-free gasoline purchases and energy conservation (Heberlein, 1975b). Although Van Liere and Dunlap (1978) also have found these variables useful to explain environmental behavior, they have challenged the basic theory. This has led to a minor debate in the literature (Heberlein, 1977; Dunlap and Van Liere, 1977b) which revolves around the consequences variable. Dunlap and Van Liere highlight the notion of environmental consequences in contrast to the human consequences specified by Schwartz's theory and my discussion.

Educational Studies

In addition to the social psychologists who have constructed multi-item environmental attitude scales, and the sociologists who rely on single item indicators, educators have also studied environmental attitudes. Two questions have been examined in this literature: 1) What is the structure of environmental attitudes? and, 2) Does an increase in environmental knowledge lead to more favorable environmental attitudes?

There is considerable evidence in the educational literature that environmental attitudes as measured by multi-item scales have a variety of components. Hoover and Schutz (1963b) discovered more than 10 factors in a survey of Arizona State students. Likewise, Steiner and Barnhart (1972) used a 250 item Likert scale which yielded seven interpretable factors for 305 Oregon High School seniors. Both of these studies indicate that these attitudes were tied to broader values such as individual liberties, property rights, democratic principles, personal responsibility, and regard for human life. While these studies do not explicitly build on attitude theory they are reminiscent of the Leopold example in this paper where an attitude about pine trees is based on much broader values. Horvat and Voelker (1976), also show that multifactor structure emerges from relatively shorter (25

item) scales, and that those children with higher IQ's have higher scores on the scales.

Bait (1972) has also explored structure by examining a hierarchy among attitudes. This structure is based on the percent indicating a positive response to each item and relationship of implication between attitudes which he defines from the content of the item. Thus he obtains the belief system of the sample of people rather than the belief system of a single individual which has been the focus of most other studies. Another approach to structure is illustrated in the work of Towler and Swan (1972) who try to identify the specific belief which children have toward environmental pollutants such as smoke.

Pettus (1976) suggested that attitudes must be based on knowledge, or to restate this in terms of attitude theory, a general positive or negative orientation toward the environment must be based on beliefs. The empirical question is 'do beliefs which can be changed by education influence attitudes?' Cohen (1973) found that those with more knowledge did have more favorable environmental attitudes and held themselves more responsible for pro-environmental acts. Young (1980) showed that for a sample of Illinois residents those with more knowledge had more positive environmental attitudes. In a field experiment Burris-Bammel (1978) did a more convincing test of the hypothesis by showing that those who attended a camp which increased knowledge had both greater knowledge and a more liberal attitude toward forest management than a control group.

This notion has been challenged empirically, however. Borden and Schettino (1979) note that Maloney and Ward (1973) and Maloney, Ward and Braucht (1975) find no relation between their knowledge scale and their attitude scales. In a sample of 500 Purdue University students, they also find no relationship. Ramsey and Rickson (1976) also report finding no relationship between ecological knowledge and trade off knowledge and attitude. They suggest that those with more knowledge of the complexities of the issue are less likely to be either extremely pro or anti on environmental issues.

It is possible that this inconsistency is more real than apparent. Since none of these studies rely on attitude theory to a very great extent, they measure a variety of kinds of attitudes, it may be that for some highly specific attitudes knowledge is crucial, while for global orientations such as measured by the Maloney and Ward scale, specific cognitions have little influence. The factor analytic studies, too, parallel attitude theory, but neither derive propositions from this theory nor contribute directly to it. More recent studies in the environmental literature are now beginning to draw on theory. For example, in a recent article Kiely-Brocato (1980) explicitly develops the model proposed by Fishbein and Ajzen (1975).

Some Correlates of Environmental Attitudes

A positive orientation toward the environment has been measured either by attitude scales in some studies or by single items, in both local and national opinion

surveys. Because these surveys almost always include measures of demographic characteristics, there have been a number of papers which have explored the correlates of environmental concern (e.g. Buttel and Flinn, 1974, 1976, 1978a, 1978b, Althoff and Greig, 1977). This research tells us little about the structure of attitudes but rather describes who tends to hold what attitude.

In a recent paper, Van Liere and Dunlap (1990) reviewed 21 separate studies examining age, social class, residence, and political orientation as independent variables. They conclude that the data consistently support three empirical generalizations:

„younger people, well educated people, and politically liberal people tend to be more concerned about environmental quality than their older, less educated, and politically conservative counterparts.” No consistent relationships were found for political party identification, rural-urban residence, and occupational prestige.

Analysis of election returns in California by Wohlwill (1979) from a sample of 10 percent of the state precincts show similar support at the aggregate level for the Van Liere and Dunlap “empirical generalizations”. Those precincts, more likely to favor the California coastal zone commission, were also less likely to vote for Nixon in 1972, for the death penalty, or tightening obscenity standards. They were more likely to favor legalization of marijuana and using race as a basis for assigning pupils to schools. The precincts favoring the commission also had higher levels of education. The vote totals showed some issue consistency; those which favored the coastal commission also tended to favor bonding for pollution control. It has also been consistently shown that members of pro environmental groups tend to have more positive environmental attitudes than more general samples (Dunlap and Van Liere, 1978b; Arbuthnot, 1977; Maloney and Ward, 1973; Dispoto, 1977; Weigel and Weigel, 1978; Maloney, et al., 1975; Levenson, et al., 1973). Sewell (1971) has shown that public health officials and engineers have differing beliefs about environmental issues. Constantini and Hanf (1972) report that state and local officials had higher levels of environmental concern than regional or federal officials.

Only a few studies have looked at the correlations between a pro environmental attitude and other environmental beliefs. In a widely quoted study of the attitudes of 303 individuals identified as having a significant impact on environmental decision making in the Lake Tahoe Basin, Constantini and Hanf (1972) looked at the relationships between a six item specific pro environmental attitude scale and a number of related beliefs.⁶ Those with more pro environmental attitudes (i.e. answer yes to items like “There are too many automobiles in the basin”) were also more likely to believe the basin’s environmental degradation was an important national political issue. They see deforestation and water quality as a more

⁶ Lake Tahoe is a large mountain lake in the Sierra Nevada Mountains on the California Nevada border, just west of Reno, Nevada,

important problem than those of low concern- They also believe pollution of the lake can be reduced and that there is not too much concern for restricting growth in the basin. These beliefs really differ little from the items on the scale, and probably measure the same general attitude.

Constantini and Hanf (1972) did look at the relationships between their concern measure and some conceptually distinct variables. For example, they find that those with high concern were more likely to define pollution in terms of a decline in the natural quality or clarity of water, while those low in concern were likely to use health hazard as an indicator. Eighty-two percent of the high concern group felt the basin had become a worse place to live in the past five years, while 26 percent of the low concern group held this belief. This may be a cause of their concern; on the other hand, it may simply be a summary of the negative evaluations of specific aspects of the basin which are represented in the scale items.

Constantini and Hanf also looked at the relationships between their measures and a number of scales developed by McKechnie (1970). Those higher on environmental concern are lower on McKechnie's environmental utility scale, higher on his cosmopolitan scale, aesthetic appreciation, ruralism, and are more critical of technology. This suggests, as will be discussed in more detail shortly, a general consistency between environmental attitudes and other logically related beliefs.

Arbuthnot (1977) included items from ten separate scales from published social psychological studies, along with environmental items supposed to represent five separate domains. He also measured environmental knowledge, group membership and several other variables. The responses from the social psychological scales and the environmental scales were factor analyzed and seven factors emerged; general conservatism, self-esteem, pro-ecology attitudes, social isolation, environmental cynicism, lack of personal control and ecological responsibility.

Cognitive Consistency

If attitude theory tells us anything, it is that cognitive structure tends toward consistency (Abelson, et.al, 1968; McGuire, 1968). Inconsistency is seen as a driving force (Festinger, 1957) which the individual tries to reduce. Of course, several theorists have noted that substantial inconsistency can exist in spite of this tendency (Rokeach, 1960; Bem, 1970). Ceteris paribus, however, most believe cognitive structure tends toward consistency.

Several studies have shown that consistency exists in environmental attitudes as well. Bruvold (1972, 1973) found that those people who used a swimming pool, park or golf course which were supplied with reclaimed water (a positive behavior in Bruvold's terms) and who believe that pollution exists, a water need exists, and technological purifications exist (which Bruvold called positive beliefs) were

more likely to have positive attitudes toward reclaimed water on a 26-item Thurstone scale.

Heberlein and Black (In press) show that most of those who buy lead-free gasoline hold two beliefs which are consistent with behavior. Comparing those with consistent attitudes and behaviors it was found that those who were consistent reported greater social support, more supporting beliefs, and showed greater behavioral commitment than those with less consistency.

In a recent study, Pierce (1979) shows a consistency between Rokeach's value ranking and more specific attitudes. On a 1979 statewide survey of Washington residents, Pierce found that a higher ranking of preservation as a water resource use priority was positively associated with the ranking of a "world of beauty" value ($r = .34$). This was the highest zero-order correlation of any terminal or instrumental value with this variable. Pierce's finding lends some credibility to Rokeach's (1979) claim that the World of Beauty item measures an environmental value, or that at least something in this item has to do with the environment.

He also reports a finding which illustrates the conditions which promote cognitive consistency. For certain groups, namely lake shore property owners and those who use water, there is a greater consistency between the value and a preservation belief than for nonowners and low users. The property owner role and the water use behavior supposedly make water more salient and important for the individual. Theorists would argue that people have a greater need to make salient beliefs more consistent than those beliefs and values which are unimportant to them,

Davidson and Jaccard (1975) show that attitudes toward family planning behavior are based on a belief about consequences and one's beliefs about the expectations of others as postulated by Fishbein's theory of attitudes (Fishbein and Ajzen, 1975). Arbuthnot and Lingg (1975) measured the environmental attitudes of Athens and Zanesville, Ohio, USA adults, matched with a small sample from Tours and Saint-Pierre des Corps, France. The U.S. sample was found to have more consistent attitudes and the environmental attitudes of this group showed greater consistency with a reported behavior than the French sample. Small sample sizes and differential response rates (32 percent in France, and 85 percent in the United States) make this conclusion tentative at best,

Specificity

Studies of environmental attitudes appear to have made at least one contribution to attitude theory in the past decade, and that is to illustrate and explore the implications that attitudes range from very general to very specific. For example, the attitudes we have been most concerned with in this paper have been global, general attitudes, rather than the highly specific beliefs toward some particular aspect of the environment. Heberlein and Black (1976) found when a specific behavior was used as a criterion, a highly specific belief was a much better

predictor than the modified version of the scale developed by Dunlap, et.al. (1973). Weigel, et.al. (1974) had demonstrated this same phenomenon in an early study. Weigel and Newman (1976) went on to show that Weigel's general measure predicts well to a general multi-item measure of behavior. Based on this reasoning, it is speculated that the low correlations found in studies of attitudes and behaviors is due to the differences in specificity of the attitude and behavior measures. Usually the attitude is very general, measured with multiple items, while the behavior is a highly specific single act. Attitude specificity has come to be an organizing category in reviews (see Schuman and Johnson, 1976) and evidence from the environmental studies is now beginning to be quoted in more general social psychology texts (e.g. Jones, et.al. 1979).

Conclusions

From this review of studies on environmental attitudes, most of which were conducted in the seventies, several rather unpalatable conclusions seem warranted. The conclusions do not necessarily (although they may) apply to the literature which was explicitly omitted from this review, namely the environmental perception studies and a multitude of studies which focus on specific topics, like energy, wildlife population and so on.

The literature on environmental attitudes broadly defined is remarkably atheoretical and ad hoc. It neither builds on nor, with several exceptions, contributes to attitude theory. This is so much the case that it seemed necessary in the first part of this paper to briefly review some aspects of attitude theory and present an example since these ideas are so universally absent in the published literature on environmental attitudes. For the most part, work on environmental attitudes is not cumulative. There were few, if any, specific issues early in the seventies which attracted a set of studies that built on each other. With the exception of the work by Dunlap and Buttel and their associates on the decline of environmental concern and some of the studies done by educators, the literature is best characterized by single studies done by one author or team of authors, never to be replicated or followed up. Maloney and Ward, for example, published what seems to be a useful scale, but neither they nor others have gone on to use it very effectively. Weigel's publication of a scale came at the end of two studies and may represent either the beginning of a tradition or accumulation of his work. Beyond the specificity question, it is not clear that crucial theoretical issues have emerged from his work. In spite of the apparent relevance of the study of environmental attitudes for policy, there is no evidence that the general studies have had any impact on decision making. It is possible more specific inquiries may have been more useful for the public and decision makers.

The existence of five unidimensional multi-item scales suggests that it is possible to operationally define a general orientation toward the environment. The most serious criticism of this literature is that after a decade of research little is known about environmental attitudes. There are no systematic studies which describe what beliefs people hold, how they feel (affect) toward different environments,

nor is there much information about how these beliefs and feelings are organized into belief systems. The basic job of science, to first simply describe reality, has largely been neglected in this area.

The central argument in this paper has been that the study of environmental attitudes could have benefited from closer contact with attitude theory. In my own work I have found such theory helpful for understanding attitudes toward wilderness and natural hazards (Heberlein, 1974); for predicting a number of environmental behaviors such as littering (Heberlein, 1971), the purchase of lead-free gasoline (Heberlein and Black; 1975b, 1976), energy conservation (Heberlein; 1975b, 1980); and for understanding the failure of attitude change campaigns to produce energy conservation (1975).

This does not mean that theory is always useful. Leon Festinger's theory of cognitive dissonance (Festinger, 1957) has been the most influential paradigm in social psychology during the last two decades. As a result, almost everyone with even a passing acquaintance with the behavioral sciences has some knowledge of the theory. Furthermore, its seemingly simple proposition that people act to reduce inconsistency has wide application. What situation does not contain some inconsistency? Thus the finding of DeGroot and Murch that people view the air quality in their own area as better than it is, is described as a dissonance effect (Murch, 1971). It may be, but this is simply a post-hoc interpretation. Dissonance theory is very handy for explaining things that have already happened, but it is less useful for prediction. Until one designs a clear field test where dissonance theory or its derivatives predict changes in environmental attitudes, one should draw on this theory with caution.⁷

Besides building on theory, future work in environmental attitudes should use standardized measures where possible. I also believe that the concept of attitude needs to be broken down into a number of separate concepts which are all operationalized in the same study. Some beliefs are highly specific and refer directly to behavior, others are very general, like the environmental orientations discussed in this paper. These all may be grounded in values. Using the conventions of path analysis (Duncan, 1975; Heise, 1975), it is possible to describe cognitive systems empirically; to draw out the linkages between values, general beliefs, and specific beliefs and behavior. We have been working on such models (Black, 1974, 1978; Heberlein, 1975; Heberlein and Warriner, 1980;

⁷ This does not mean that I disagree with the dissonance interpretation suggested by Murch. The more recent variations of dissonance theory have stressed the role of self concept. The community one lives in is an important part of this concept and to avoid loss in self-esteem it may very well be that people modify their perception of air quality. It may also be due to the information inputs from the media, and the public's lack of experience with judging air quality around our homes. I did try a classroom pilot experiment which suggested some promise for the dissonance interpretation. We found those people who were less satisfied and less committed to their neighborhoods were more accurate in their judgments of local air pollution.

Warriner 1980) and found them more helpful in understanding a variety of pro-environmental behaviors than a single overall measure of an environmental orientation.

So what is the bottom line? In the 1970's standardized measures of environmental attitudes were developed, suggesting that some broad measurable disposition exists, but these measures have not been widely used other than by those who developed them. Studies in the educational literature suggest that environmental attitudes have several dimensions. Studies by rural sociologists documenting the rise and fall of environmental attitudes were published, but work by Mitchell at the end of the decade calls the decline into question. I suspect the debate will be resolved on definitional grounds (how one defines attitudes) or technical grounds (question wording, comparisons between alternatives, populations sampled, etc.). It has been established that younger, more well educated political liberals have more positive environmental attitudes. Environmental attitudes like most attitudes show an internal cognitive consistency, and pro attitudes are related to the number of accurate beliefs one holds about the attitude object. Finally, a specific attitude has been shown to be a better predictor to pro behavior than a general orientation. While the literature might not have lived up to one's hopes, some basic ground has been covered and we enter the 1980's on much more solid footing than we entered the last decade.

Zusammenfassung

Zusammenfassung

Umwelteinstellungen werden als Zusammensetzung aus Überzeugungen und Affekten einem Objekt gegenüber konzeptualisiert. Es ist schwer, die Umwelt als Objekt zu definieren – ein Umstand, der sich auf die Untersuchung allgemeiner Umwelteinstellungen auswirkt.

Einstellungen basieren auf Werten, sie haben eine horizontale und eine vertikale Struktur und tendieren vom allgemeinen zum spezifischen. Die übergreifende affektive Äußerung steht als Zusammenfassung dieser Struktur. Mit Hilfe der Forschungsergebnisse aus den USA scheint es möglich zu sein, globale Umwelteinstellungen zu messen, da fünf generelle Umwelteinstellungsskalen vernünftige Realibilität und ein Maß an Validität aufweisen. Sorge um die Umwelt scheint eine spezifische Überzeugung zu sein, die kaum in der kognitiven Struktur eingebettet ist und daher eher als Meinung denn als Einstellung aufgefaßt werden sollte. Obwohl sich Änderungen dieser Meinung dokumentieren lassen, ist daraus nicht zu schließen, daß tatsächlich ein Einstellungs- oder Wertwandel stattgefunden hat, obgleich diese Einstellungen im Laufe des letzten Jahrzehnts sicherlich differenzierter geworden sind. In den USA zeichnet sich eine Tendenz zur Übereinstimmung positiver Umwelteinstellungen mit verwandten Überzeugungen und Verhaltensweisen ab. Es wird der Schluß gezogen, daß die Erforschung von Umwelteinstellungen weitgehend atheoretisch und unkumulativ gewesen ist. Obwohl es möglich ist, solche Einstellungen zu messen, wissen wir doch wenig über die ihnen zugrundeliegenden Überzeugungen, Affekte oder die Verknüpfung dieser Komponenten.

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