A Brief History of Sociological Research on “Environmental Concern” (aka Environmental Attitudes, Beliefs, Opinions and/or Values)

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Early Sociological Response to the Rise of Environmental Issues in Late 1960s and 1970s

One of the first responses of sociologists to the growing attention given to environmental problems was to conduct surveys of awareness and concern about such problems, preferred solutions to them, and the like. Surveys were typically done at the state or local level, or with special populations such as college students or members of environmental organizations, although some sociologists gradually used national data from polling firms.

These efforts reflected the popularity of survey research in sociology at large.
Survey Research

For several decades survey research has been the most widely used data collection technique in sociology, although many other techniques are widely used as well. Historically face-to-face and mail surveys predominated, but first telephone and especially in recent years internet surveys have become more common. Mixed-mode surveys employing two or more of these methods are also becoming widely used.

Survey Accuracy

Surveys are popular because if probability sampling is used, then relatively modest-sized samples can provide accurate results for very large and geographically dispersed populations.

Using probability sampling techniques (variations on random sampling), results from a sample of 1000-1100 U.S. adults can provide results with a +/- 3% margin of error (confidence interval) at the .95 confidence level.

Importantly, accuracy depends primarily on sample size and not population size. E.g., to reach the above level of accuracy with samples of Maryland adults and even of Baltimore adults the sizes need be virtually the same as for a nation-wide survey.
Predicting Environmental Concern

A key sociological contribution was to identify characteristics associated with environmental concern (EC), or to identify the “social bases” of concern.

Demographic and political characteristics were the primary variables examined, and typically younger, better educated and politically liberal Americans were found to be significantly more concerned than their counterparts, with urban residents and Democrats often somewhat more concerned. Over time women and non-whites have become more concerned as well, especially regarding environmental risks.

This work continues, but has been supplemented by studies incorporating a wide range of social-psychological characteristics as we will see later.
Environmental Attitudes and Actions

Environmental surveys (by sociologists and others) were also popular because they were seen as offering insights for the solution of environmental problems.

Some surveys focused on support for various governmental policies, and others focused on willingness to take pro-environmental actions ranging from paying higher taxes to using less energy to giving money to environmental organizations.

The implicit and sometimes explicit assumption was that pro-environmental attitudes would in fact generate pro-environmental behaviors.

This assumption, while widely held, has always been problematic.
Great Introduction
# Attitudes and the Three Fixes for Environmental Problems
(adapted from Heberlein 2012)

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<th>Technological</th>
<th>Cognitive</th>
<th>Structural</th>
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<tbody>
<tr>
<td><strong>What Changes</strong></td>
<td>Environment</td>
<td>Human Behavior</td>
<td>Human Behavior</td>
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<td><strong>How Change is Achieved</strong></td>
<td>Technology influences the environment</td>
<td>Information influences human behavior</td>
<td>Structure of the situation influences human behavior</td>
</tr>
<tr>
<td><strong>Examples re Global Warming</strong></td>
<td>Proposals to ameliorate global warming via geo-engineering</td>
<td>Proposals to increase public awareness of GW’s threat</td>
<td>Proposals to institute a carbon tax</td>
</tr>
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<td><strong>Role of Attitudes</strong></td>
<td>Technology must be consistent with dominant public attitudes and values</td>
<td>Attitudes must be changed and attitudes must influence behavior</td>
<td>Policies must be consistent with dominant public attitudes and values</td>
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Attitude-Behavior Relationship

While the cognitive fix remains popular, as apparent from the “information deficit” model which assumes that increased public understanding of science will stimulate both personal behavioral changes and support for policies. However, it seldom works, because (1) it is difficult to change attitudes and (2) attitudinal change frequently fails to produce behavioral change.

I refer you to Heberlein’s book for more details, and now wish to focus on sociological contributions to understanding environmental attitudes (“concern”) and developing more sophisticated models of the factors stimulating it and pro-environmental behaviors.
Clarifying Environmental Attitudes, Beliefs and Values

“Environmental attitudes ... are based on values and built on beliefs, some of which are knowledge [or assumed to be] and some of which contain an emotional component called evaluative beliefs. Attitudes have horizontal [and vertical] structure, depending on the number of beliefs and values on which they are based. They have varying degrees of consistency and rationality.” Heberlein, 2012, p. 32

Other theorists include a “conative” component consisting of behavioral intentions, or even behaviors.
I am in love with pines.

Trees planted oneself are better.

I planted the pine myself.

The birch planted itself.

Family security (paternalism)
“... our understanding of environmental attitudes is limited because the attitude object ‘the environment’ is, alas, especially slippery.” Heberlein, 2010, p. 48.

In the suggested reading, Dunlap and Jones (2002), we note that there are (obviously) two components of “environmental concern,” the *environmental* and the *concern* components, and both have many *facets*. The result is that a bewildering array of items are employed in measures of EC, leading to ambiguity due to non-comparability and inconsistent findings.
Environmental Component

For example, various facets of the environment include:

1. Atmosphere, hydrosphere, lithosphere, flora and fauna—aspects of the biophysical world.
2. Waste repository (pollution), resource depot (natural resources) and living space (land)—functions for humans.
3. Resource depletion vs. conservation, pollution generation vs. abatement, and development vs. preservation—outcomes of human activities.
Complicating matters, each of these and other facets can be measured at:

1. Varying levels of specificity—e.g., pollution, air pollution, acid rain.

2. Differing spatial scales—e.g., local, regional, national and global.

3. And sometimes with reference to the past, present or future.
Concern Component

There are two major approaches to measuring the concern component:

1. Various versions of attitude theory, leading to a focus on attitudes, beliefs, and behavioral intentions (and sometimes even values) as the key facets.

2. A more policy-relevant (but less theoretical) approach that focuses on facets such as the seriousness of environmental problems, their primary causes, preferred solutions, and willingness to support various solutions from governmental regulations to “green” behaviors.
Resulting Ambiguities

So not only is “environment” a slippery attitude object, but the attitudes and opinions toward it can be conceptualized and measured in a huge variety of ways. The result is that *multi-item scales* of “environmental concern” have often included a diverse set of items tapping both different facets of the environment and reflecting differing approaches to measuring concern.

For the first couple of decades a number of scales with weak content validity were employed, and often broke into distinct “dimensions” with factor analysis reflecting either major environmental facets, or differing conceptualizations of concern.
Improved Measurement

More recently improved methodological techniques, such as confirmatory factor analysis (CFA), have allowed for the construction of measures of EC that better capture its complexity.

CFA allows one to hypothesize a measurement model consisting of several multi-item components (facets) all thought to provide indicators of the underlying (latent) construct of EC, and then test it.

Here is an example using items from Gallup’s Health of the Planet Survey, which I designed to tap various policy-relevant facets along with differing geographical facets plus basic beliefs reflecting an ecological worldview (NEP). Structural equation models (SEM) allow for the inclusion of predictor variables as well.
Facets of Environmental Concern
(Xiao & Dunlap 2007)

1. Importance of environmental problems (three items).
2. Support for environmental policies (five items).
3. Environment-economy tradeoffs (four items).
4. Environmental behaviors and activism (two multi-item indexes plus additional item).
5. The New Ecological Paradigm (eight items).
6. Global environmental problems (seven items).
7. National environmental problems (seven items).
8. Local environmental problems (seven items).
CFA Model
(Xiao & Dunlap 2007)
Explanatory Models of Environmental Behavior

A few sociologists have gone beyond (1) identifying the predictors of EC and (2) improving the conceptualization and measurement of such concern.

Their goal has been to develop explanatory models that can predict EC and especially pro-environmental behaviors—models that recognize the complexity of the link between attitudes and behaviors.

The two crucial efforts are the “norm-activation model” and its successor, the “value-belief-norm” model.
Norm-Activation Model/NAM
(Heberlein, 1972)

- Moral Norms (Golden Rule)
- Environmental Norms
- Awareness of Consequences (AC)
- Ascription of Responsibility (AR)
- Pro-Environmental Behaviors
Land Ethic or Golden Rule?

In the process of testing the NAM in a study of yard burning in Spokane in the mid-1970s, I questioned Heberlein’s claim that the development of environmental norms was evidence that Leopold’s “land ethic” was emerging.

In an commentary (with this slide’s title) Van Liere and I noted that he was measuring primarily human rather than environmental consequences with his AC items, and only a powerful effect of the latter would indicated a land ethic.

The debate and distinction between human and environmental consequences was credited by Stern, Dietz and colleagues with stimulating the distinction between biospheric and altruistic values, which has become increasingly used in current work.
## Causal Model of Environmental Behavior
*(Stern et al. 1995)*

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<th>Position in social structure</th>
<th>Institutional constraints</th>
<th>Incentive structure</th>
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<td>Values</td>
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<td>General beliefs</td>
<td>Worldview (NEP)</td>
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<td>Specific beliefs</td>
<td>Specific attitudes</td>
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<td>Behavioral commitments and intentions</td>
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<td>Behavior</td>
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The Value-Belief-Norm Model (VBN) (Stern et al. 1999)

- Altruistic Values
- Egoistic Values
- Traditional Values
- Openness to Change Values

- NEP
  - Awareness of Consequences
  - Ascription of Responsibility
    - Proenvironmental Personal Norm
      - Environmental Activism
      - Environmental Citizenship
      - Policy Support
      - Private-Sphere Behaviors
The VBN (sometimes with modifications) has become the most widely used predictive model for environmental behavior (or concern, when behavior is not measured).

And, importantly, over time progress has been made in measuring biospheric values as a separate dimension of values—especially by Dutch psychologists deGroot and Steg.

(Other models such as Ajzen and Fishbein’s Theory of Planned Behavior are also used, especially by psychologists.)
Three Value Orientations (deGroot and Steg 2007)

Egoistic Values:
- Social Power
- Wealth
- Authority
- Influential
- Ambitious

Altruistic Values:
- Equality
- A World at Peace
- Social Justice
- Helpful

Biospheric Values:
- Preventing Pollution
- Respecting the Earth
- Unity with Nature
- Protecting the Environment
In reality, much of the early work by sociologists on EC consisted of analyses of opinions, not attitudes, especially when using data collected by public opinion polling firms like Roper, Cambridge and Gallup as well as NORC’s General Social Survey (GSS).

This work continues, as sociologists are often forced to use available data, especially for trend studies. Attitude theorists like Heberlein tend to view such work skeptically, especially when it employs single-item indicators of EC that have limited validity and reliability.

Nonetheless, we are often forced to use available data, and I think we can still produce valuable knowledge.
Opinions

When attitudes have little cognitive structure, they are weak and often easily changeable. These are opinions. Attitudes tend to be relatively enduring, but opinions can change fairly quickly.

“The problem with most polls is that they ask only one question to measure the like-dislike, favor-oppose dimensions that opinions share with attitudes. When we get an answer to one question, it’s much like nibble on a fishing line…. To determine what’s nibbling our bait, and determine the attitude’s size and heft, we must ‘set the hook’ with many questions.”

Longitudinal Studies of EC

A major benefit of using polling data is that we can track the general public’s level of EC over time. Documenting trends in EC has been a major focus of environmental sociologists, and I, e.g., published several articles employing results from several polls up through 2002. Unfortunately some firms stopped using their items, and these days the only one we have is the GSS environmental spending item. Recent studies have become more methodologically sophisticated, employing cohort analysis to provide more in-depth understanding of how levels of EC have changed over time.
Tracking Changes in the Socio-Political Bases of EC

A key concern has become tracking changes in the correlates of EC, and the most notable change since the 1970s has been for political orientation.

While ideology was always a significant, but modest (.03 or less) correlate, party was sometimes not significantly related.

By the mid-1990s noticeable patterns of polarization began on both party and ideology, and nowadays they are typically the two best predictors of EC (with independent effects despite being strongly correlated), and especially for climate change.
Percentages of Liberals and Conservatives Reporting that National Spending on Environmental Protection Is “Too Little,” 1974-2012 (McCright et. al., 2014)
Percentages of Democrats and Republicans Reporting that National Spending on Environment Protection Is “Too Little,” 1974-2012 (McCright et. al., 2014)
Percentage of Americans Saying the Effects of Global Warming Have Already Begun (McCright & Dunlap, 2011)
Percentage of Americans Saying the Effects of Global Warming Have Already Begun (McCright & Dunlap, 2011)
Cross-National Surveys of EC

In the early 1990s a major development occurred, as three sets of cross-national data on EC became available in quick succession:

1. Gallup’s 1992 Health of the Planet Survey
2. The ISSP’s 1993 Environmental Module
3. The 19902-93 World Values Survey

For the first time sociologists and other social scientists could examine EC across 24 (HOP) to 40+ nations. This led to many tests of competing perspectives on the sources of international EC.
Post-Materialism and the Affluence Hypothesis

Inglehart’s theory of value change, from “materialist” values (promoting economic growth, fighting higher prices, etc.) to “post-materialist” values (e.g., protecting freedom of speech, giving people more say in decision-making) values, had proven useful in explaining the rise of Green Parties and anti-nuclear activism in W. Europe, and was thus it was widely assumed that EC depended on growing affluence and P-M values.

It was widely assumed that citizens in poorer nations would be much less concerned about environmental quality than their counterparts in wealthy ones.

The assumption was shared by social scientists and policy-makers like Larry Summers.
Conflicting Results

The HOP and some WVS results showed, however, that citizens of poor nations were often more environmentally concerned than those in wealthy nations, setting off a debate over the role of affluence and P-M values versus awareness of and exposure to environmental degradation. Often conflicting results stem from uses of differing indicators of EC, with items measuring WTP being more likely (not surprisingly) to be correlated with affluence and P-M values. I think the bulk of the evidence suggests that national affluence is not related to levels of EC, but P-M values still tend to be at the personal level.
Multi-Level Modeling (MLM) and Studies of EC

The growing use of MLM has allowed researchers to examine the relative effects of personal characteristics and contextual factors (e.g., national-level affluence) on EC, now common in cross-national research.

This has enabled researchers to examine a wide-range of factors such as urbanization, inequality, democratization, World Polity position and location in the World System along with personal characteristics in cross-national studies.

And vitally, national-level measures of environmental conditions are sometimes employed as well, at last turning studies of EC into studies of “societal-environmental interactions.” The role of such conditions is thus far ambiguous, given often poor indicators and the huge level of aggregation employed.
MLM and Climate Change

MLM can be used with contextual data from various spatial scales, and is increasingly employed to address a crucial issue—the potential impact of weather/climatological phenomena on the public’s views of climate change.

In the U.S. studies have examined the weather/climate variables (e.g., temperature deviations) at the regional, state, and more localized areas in efforts to see if experiences/perceptions of “actual” weather/climate affects individual’s views of climate change.

Those concerned about climate change are very hopeful that experience with abnormal temperatures and other extreme weather events will lead to greater public acceptance of the reality, seriousness and urgency of climate change.
Reality vs. Ideology

Thus far results supporting this hope are ambiguous to say the least, as I’ll note in more detail tomorrow.

For example, in a study combining Gallup’s national data on views of “global warming” with data on statewide temperature deviations (the abnormally warm 2012 Winter relative to the 30-year average for each state), colleagues and I found that actual temperature was strongly related to residents rating last Winter’s temperature as “warmer than average.” However, among those who gave this response, actual temperature deviations were not related to attributing the warming winter to global warming. Instead, political party and ideology were the strongest predictors of this response.
Thanks.
Naïve Views of Public Opinion

It is an exaggeration to say that pollsters can find whatever they want by wording items in certain ways.

But it is likewise naïve to believe that a single item can provide an accurate reflection of the state of public opinion—what Howard Schuman calls the “referendum” view of polling for two reasons:

1. Using different items can produce *somewhat* different results, and

2. Many issues are complex, and require more than a single item to measure opinions toward them.
Appropriate Uses of Polling Results

Schuman argues that opinion items are best suited for making comparisons:

1. Across differing segments such as males and females, young and old, and
2. Over time with longitudinal data.

Even sophisticated measures like the “Six America’s” segmentation of American’s views of global warming are best used for these two purposes, as the original (and subsequent” distributions of respondents into these six segments would vary a bit if one or two of the 36 items had been deleted or altered.
Yale Climate Change Project’s Six America’s

2014 Results

Alarmed - 13%
Concerned - 31%
Cautious - 23%
Disengaged - 7%
Doubtful - 13%
Dismissive - 13%

Trends show a decline in the Alarmed and Concerned segments and a rise in the Dismissive and Doubtful segments from 2008 to 2010, and then relative stability since then.