

CONSTRUCTING AND RECONSTRUCTING RESPONDENT ATTITUDES DURING A TELEPHONE SURVEY

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Key Words: Survey design, Constructing attitudes,
Decision making

The Problem

Our society is experiencing the increasing influence of public attitudes and opinions on public policies and programs, especially in the area of technological hazards and environmental risks. In seeking to understand public attitudes toward risk and to evaluate their influence on political, administrative, and management activities, many parties have turned to survey research and especially telephone surveys for additional information. This, in turn, has highlighted some basic questions about how attitudes and opinions are formed, how they are expressed in surveys, and how well they can predict public support for specific proposals to manage technological hazards.

Survey designs make explicit or implicit assumptions about the attitudes and opinions held by a respondent. Traditionally, attitudes were considered to be important because they "in some way, guide, influence, direct, shape, or predict actual behavior."¹ Moreover, attitudes are often thought to be defined and stable. Cacioppo and Berntson, for example, define attitudes as "general and enduring favorable or unfavorable feelings about, evaluative categorizations of, and action predispositions toward stimuli."² Certainly for many questions, these conditions are accurate and useful.

However, in many cases respondents do not have stable attitudes and opinions, which a survey interview attempts to solicit. Attitudes range from well-defined and stable to vague and labile. This is because many of the central questions to be addressed are complex, involving scientific uncertainty, controversial political positions, and a range of decision options that are not familiar to the public.

The Design of the Survey Experiment

Attitudes are constructed through complex and often obscure psychological processes. An ideal condition for a survey is to elicit a respondent statement about an attitude, which is an end result of those processes. However, the degree of attitude formation on a given issue will not be the same for everyone and there can be significant variation across respondents. We also know that respondents will answer questions even if they have a very indistinct attitude or if they must construct their attitude on the spot in order to provide their response. The problem with such answers is that they often are subject to change and sometimes to reversal under different conditions.³ Responses that are subject to sudden and unpredictable change are not helpful for policy and program purposes and may be misleading.

Our goal was to design an experiment and see if we could apply behavioral decision theory within a telephone interview and construct considered responses to a difficult issue. We wanted to provide a way for respondents to clarify their thinking and, as far as useful, to deliberately construct and reconstruct their attitude during the process of being interviewed. The experiment was included during a series of telephone survey interviews, with respondents from three samples, conducted in Ontario, Canada during the Autumn, 1994.⁴ The subject of these experimental survey questions was the use of herbicides in forest-vegetation management.

We called this experiment a decision-pathways design since it was based upon behavioral decision theory and recognizes the constructive nature of forming multidimensional attitudes.⁵ In practice the decision-pathways design asks a series of interrelated and linked questions, each of which has several answers. The choice of answers

¹Kraus, S. 1995. "Attitudes and Prediction of Behavior: A Meta-analysis of the Empirical Literature." *Personality and Social Psychology Bulletin* 21(1):58-75.

²Cacioppo, J. and G. Berntson. 1994. "Relationship Between Attitudes and Evaluative Space: A Critical Review, with Emphasis on the Separability of Positive and Negative Substances." *Psychological Bulletin* 115(3):401-23.

³Slovic, P. 1995. "The Construction of Preference." *American Psychologist* 50:364-71.

⁴Decision Research. 1995. *Vegetation Management in Ontario's Forests: Survey Research of Public and Professional Perspectives*. Sault Ste. Marie, Ontario: Ontario Ministry of Natural Resources.

⁵Gregory, R. and R. L. Keeney. 1994. "Creating Policy Alternatives Using Stakeholder Values." *Management Science* 40:1035-48.

creates a single path for each respondent, which in turn reveals the preferred position on a policy or management option. Our approach used a CATI system to link the series of questions together and it allowed the respondents to consider factual, ethical, social, and economic characteristics.

An important point is, “where do the questions come from?” In this case, the questions came from interviews with forest managers in Ontario, focus groups, experimental studies with students in Oregon and Ontario, a literature search, and our combined professional, research, and survey experiences. The objective of this preparation was to obtain a full range of key issues, concerns, and perspectives on the subject of using herbicides for forest-vegetation management and use this information to write the decision-pathways question set.

The three objectives of the question set were to: (1) Help frame the decision; (2) Identify key objectives held by the respondents, and (3) Structure tradeoffs and resolve respondents’ potential internal conflicts.

Some Methodological Results of the Decision-Pathway Experiment

Data were collected from a randomly selected subset ($n = 303$) of the Ontario general-population survey ($n = 1500$), and from a sample of “timber-dependent” communities ($n = 208$), and from forest professionals ($n = 204$).; Altogether, the question set was administered to 715 respondents. Figure 1 is a schematic of the questions and shows 13 pathways. It also shows the outcome of responses for the Ontario general-population sample. The question set begins with a scenario description and asks the same first question of all respondents. This is a simple inquiry about support for forest managers to control vegetation growth in an area that has been replanted following timber harvesting. All respondents are also asked Question 24, second from the bottom, which provides four response options in a revised form of the first question. Question 25, also asked of every respondent, elicits selection of a response to the vegetation program if the respondent disagrees with the choice made by pro-

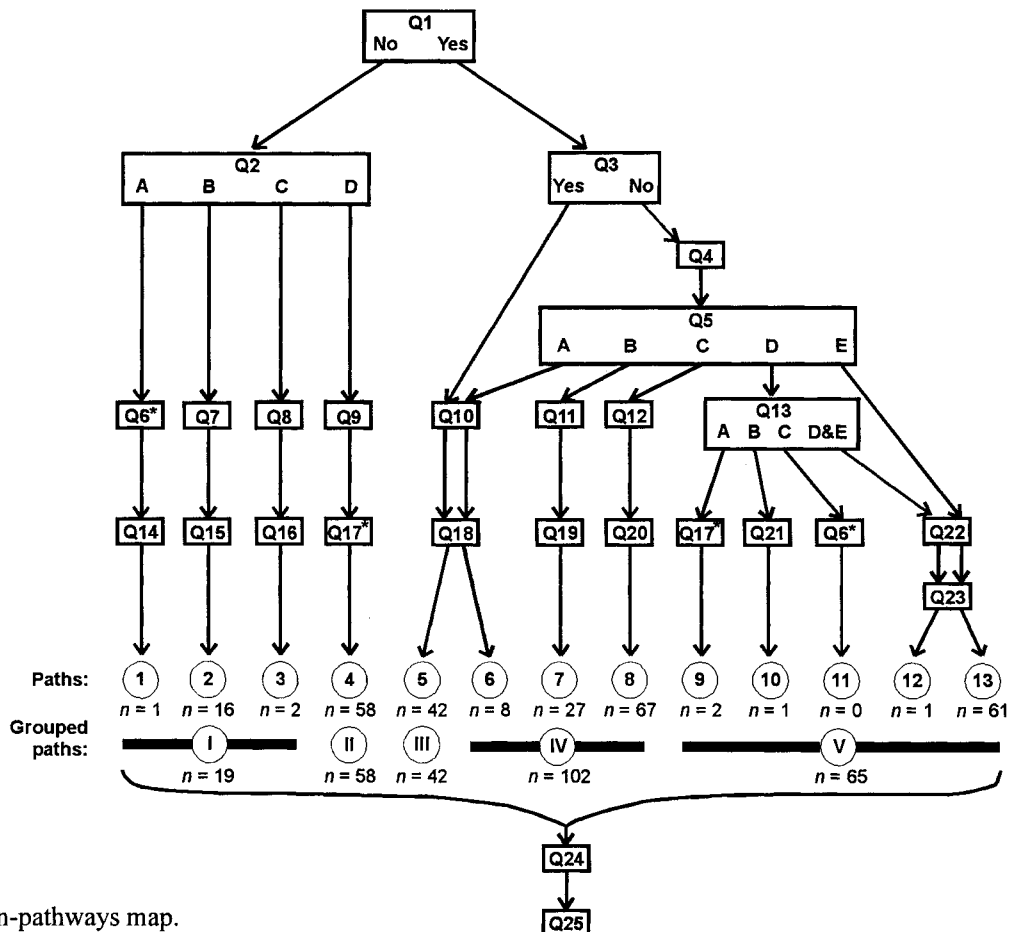


Figure 1. Decision-pathways map.

Table 1. Grouped Paths Resulting from Content Analysis of Decision Paths

► *Grouped Path I* ($n = 19$; 6.6%), **Distrust Forest Management.** These respondents were cautious about making forest policy suggestions because they considered their own level of knowledge about forest vegetation management options to be low. They also lacked faith in the knowledge of forest professionals due to the perceived complexity of forest environmental conditions and gaps in current scientific knowledge. For these respondents, forest ecology and the health of nearby community residents are important concerns. Economic costs are not considered as important.

► *Grouped Path II* ($n = 58$; 20.2%), **Nature is too Complex.** These respondents oppose management interventions. They see nature as complex and believe that professionals lack the basic understanding and knowledge to effectively manage forest systems. They place a high priority on forest health and a low priority on the economic implications of management policies. This group favors a “hands-off” approach: Let nature take care of itself and, in many cases, let it return to unmanaged and wilderness conditions.

► *Grouped Path III* ($n = 42$; 14.7%), **Support Aerial Spraying.** This group supported vegetation management and the use of aerial herbicide spraying under normal conditions. Human health is an important concern but concerns about environmental conditions, at least in a relative sense, are less significant. Support for aerial spray-

ing is based on its effectiveness, broad coverage, and limited human intrusion into the forest. Economic costs are not considered to be an important factor in this choice.

► *Grouped Path IV* ($n = 102$; 35.7%), **Ground-applied Herbicides Only.** These respondents support vegetation management but are concerned about adverse environmental effects. They initially vetoed the idea of using herbicides to control forest vegetation but in the face of the threat from the invasive weed, purple loosestrife, agreed to limited herbicide use. Even in this extreme case, however, these respondents accepted spraying only if applied from backpacks or tractors, rather than from helicopters or airplanes used for aerial spraying. Primary concerns with this group are damage to wildlife, human health, and preservation of a healthy forest environment.

► *Grouped Path V* ($n = 65$; 22.7%), **Use Alternatives to Herbicides Only.** This group supported vegetation management but was opposed to the use of herbicides. They thought that better alternatives existed under all circumstances. The preferred management options included use of cover crops, natural toxins, or control of vegetation growth by grazing domestic animals, when possible. Health benefits and economic costs are reasons for favoring herbicide alternatives. This group has considerable confidence in their knowledge and believe that other members of the public fail to agree with them due to incorrect information about non-herbicide options.

gram managers. Attachment A shows the introductory scenario and the text for one pathway.⁶

My intention here is not so much to provide the substantive results as it is to give a short view of how well the decision-pathways design seemed to work. First, almost everyone was able to complete the complex question set, for the general population 286 out of 303 respondents (94.4%) finished. This involved answering between 6 and 9 of the 25 questions in the set. Second, the paths appear to offer a wide scope for respondents to choose from and express their answers. As shown in Figure 1, 6 of the 13 paths were chosen by only a few respondents (from 0 to 2 people). Other paths were chosen quite often. In our analysis, we used a content analysis to identify Grouped Paths, also shown in Figure 1. The description of these combined paths is shown in Table 1.

⁶Space limitations preclude providing the full text of the question set here. However, the text is available in Decision Research, note 4 above, or from the author.

The Grouped Paths results for the Ontario general-population sample are shown in Figure 2, which also records the distinct differences in attitude structure across the samples. There is substantial similarity between the general population and the timber-dependent communities and distinct differences between these public samples and the forest professionals. The point here is not to enter into a cross-sample analysis but merely to show that significant differences were recorded.

Do people make adjustments within the question set; i.e., from the first to the last position? The answer to this question is “yes,” for which I will provide just one example. Of the 144 general-population respondents who chose some form of herbicide use to control purple loosestrife, an invasive, nonnative weed (Question 5, which is not included in Attachment A), 48 (one-third) changed their position and no longer supported herbicide use at the end of the pathway. Most of these 48 respondents still supported vegetation management without herbicides but 8 respondents from this group moved to a “hands-off-the-forest” position. Other respondents also recorded shifts

in their positions during their progress through the decision-pathways question set.

Implications and Related Questions

There is a danger in trying to help people structure better responses, since it is possible to influence their thinking (whether intentionally or not) in a direction favored by the analyst or policy makers. Some survey designers have addressed this problem by attempting to avoid setting a frame or context that might provide a cognitive structure to the respondent. Our response in this experiment was quite different. We believe that preferences for complex policy options often do not exist prior to elicitation but, instead, are the inevitable product and creation of the survey-response process. As a result we have sought to find a way to make the context-creating aspects of our environmental-policy survey experiment as transparent as possible.

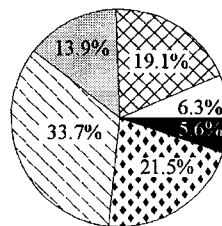
Experiments often raise as many questions as they answer. In the short time left here, I would like to note just a few of the concerns we have identified in our thinking about a decision-pathways design. And of course I would be grateful for any comments or observations.

- ▶ How would we know if the decision pathways produced a better response?
- ▶ How should a respondent path be treated as a variable? Is it essentially a qualitative variable or can it be used as a quantitative variable?
- ▶ What are suitable topics for a survey-interview schedule to construct respondent attitudes and opinions?
- ▶ What criteria should be applied to development of the answers in a question set? What process would be most useful in developing those answers?
- ▶ Is this approach, or something like it, a useful development for future survey research?

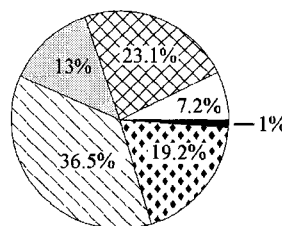
Acknowledgements

We are grateful for the funding for this paper, which was provided by the Vegetation Management Alternatives Program, Ontario Forest Research Institute, Ontario Ministry of Natural Resources and by the National Science Foundation, Grant SBR-9321029 to Decision Research. We would especially like to thank Dr. Robert Wagner, our project officer from the Ontario Forest Research Institute, who worked as our colleague on this project. We also appreciate the voluntary peer-review comments provided by Dr. Eleanor Singer, Institute for Social Research, University of Michigan. Other study team members at Decision Research—Robin Gregory, Paul Slovic, C. K. Mertz, Stephen Johnson, and Terre Satterfield—made important contributions to this paper and the research project. Finally, this manuscript and the earlier report (*Vegetation Management in Ontario's Forests: Survey Research of Public and Professional Perspectives*) were prepared by Kari Nelson and Leisha Mullican at Decision Research. Naturally only the author is responsible for the content of this paper.

Ontario General Public



Timber-Dependent Communities



Forest Professionals

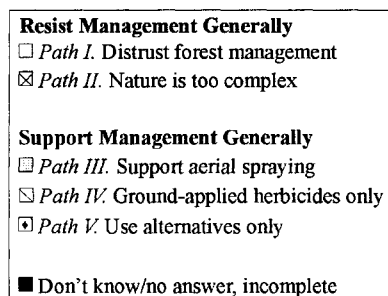
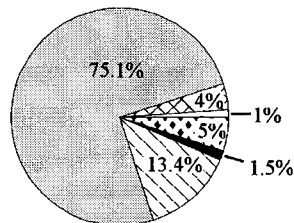


Figure 2. Distribution of grouped paths by subsamples from three survey properties.

Attachment A. Decision-Pathway Survey Questions: Path IV

This final series of questions asks you to think again about the decisions faced in management of Ontario's forests. Often forest management decisions are linked: first one thing needs to be decided, then something else, and then something else again. So we will be asking you to think like a forest manager and make several decisions, one after the other.

Here is the context. The provincial government oversees the management of a large tract of land in northern Ontario. Most of the trees on the property are mature spruce and pine, between 60' and 80' tall. Birds and wildlife are common and there are several small lakes. Although no one lives on the property, nearby areas are occasionally used by campers during the summertime and by snowmobilers and cross-country skiers in winter.

The land has never been cut but has been managed for timber production since the 1930s. It is scheduled to be harvested for the first time later this year and, after the merchantable timber has been removed, the area will be replanted with a mixture of fir and spruce.

Q1. *The first decision is a common one for foresters in Ontario: should managers try to control weeds and other vegetation that might compete with the trees that have been replanted?*

- Yes, managers should control unwanted vegetation
- No, managers should not control unwanted vegetation

Q2. *We'd like to know more about why you are opposed to controlling unwanted forest vegetation. Which of the following four reasons is the most important in explaining your opposition to vegetation management?*

- A. Ontario's forest managers don't know enough to distinguish good from bad plants
- B. I don't know enough about forest management to make an informed choice
- C. I don't trust the recommendations of Ontario's forest managers
- D. Nature is complex and should be left to manage itself.

Q9. *Other people in Ontario also feel like you do—that nature is complex and should be left to manage itself. Which one of the following reasons do you think gives the best description of why you feel this way?*

- Nature's wisdom is greater than human's wisdom
Managed forests should be left alone so they can return to wilderness
- Forest management is too expensive, given the current state of the economy
- Nature is too complex for humans to manage forests effectively

Q17. *Many people in Ontario would argue that nature, and forests in particular, produce valuable raw materials and that forest managers need to make tradeoffs, balancing the needs of nature against the needs of people for jobs and forest products. Which one of the following statements best describes how you feel about this point of view, in light of your earlier statement that nature is complex and should be left to manage itself?*

- Economic tradeoffs must be faced—jobs and forest products are also important concerns
- Economic success is not important—if people can't work in the forests, then they will just do something else
- In the long run, a more natural forest will bring in even more money to Ontario
- Forest managers should be responsible for the ecological health of the forest, not the financial health of the forest industry

Q24. *Thank you for your answers. Now let's come back to the original question. Foresters could either do nothing to control unwanted vegetation or, if something is done, they could choose from a variety of different vegetation management techniques. Which one of the following four types of actions do you feel would be most appropriate?*

- Don't do anything to control forest vegetation; just let nature alone
- Control unwanted forest vegetation, but don't use any herbicides
- Use herbicides when necessary, but only if applied from tractors or by forest workers using backpack sprayers
- Use aerial spraying of herbicides because it's the cheapest form of control

Q25. *Suppose that you live in or frequently visit an area of Ontario where a decision has been made to undertake a vegetation management program that you disagree with. Which one of the following options best describes your most likely reaction?*

- I'd ignore it; there are lots of more important things for me to worry about
 - I'd be somewhat upset and might talk about it with others in my neighborhood
 - I would be quite upset and try to change the policy by calling a reporter from the local newspaper
 - I would be very upset and try to change the policy by calling the Minister or someone else high up in the government
 - I would be extremely upset and would work with a lawyer to challenge the decision in the courts
-