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Integrating Focus Groups and Surveys: Examples From Environmental Risk Studies

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Abstract: The experience with focus groups in designing questionnaires for two environmental risk surveys demonstrated that this technique can be effective in developing visual aids, evaluating experimental design alternatives, assessing the order of questionnaire topics, constructing scales and other measures, identifying levels of knowledge among a population, and overcoming problems with troublesome language, words and phrasing. Focus groups were not effective in helping to understand the difficulties experienced by target groups of respondents many of whom could not cope with the more complex questions.

Key words: Focus group; interview; environmental surveys; perception of risk.

1. Introduction

Focus group interviews are normally associated with marketing and advertising research that seeks consumer views on pricing, packaging, quality, and other aspects of a product. The use of these small group interviews, however, is neither recent nor limited to marketing. In sociology, for example, social distance scales were measured using group interviews (Bogardus (1926)). A related technique was used in post-war studies for the military (Merton, Fiske, and Kendall (1956); Merton (1987); and Thompson and Demerath (1952)). Psychologists also have used a version of the group interview as a clinical therapeutic technique in an experimental context to test the effects of "brainstorming" (Taylor, Berry, and Black (1958)), and as a "nondirective" technique to obtain data in research on personality (Rogers (1944)).

Over the last decade, focus groups have increased in both popularity and range of application. Political pollsters and campaign managers, for example, use focus groups to probe feelings about a candidate, to note differences on campaign issues, or to test campaign commercials or themes. Lawyers use focus groups to test arguments in preparation for a trial; newspapers use them to try out ideas for news features; universities are interviewing groups of current and prospective students to evaluate recruiting strategies; and, more recently, the focus group interview is being used to assess risk, opinion, and questionnaire construction (Desvousges, Dunford, Frey, Kunreuther, Kasperson, and Slovic (1987)).

Social scientists, on the other hand, have ignored the focus group and relied primarily

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on the survey interview to provide research data. Even those who advocate qualitative research have ignored the group interview in favor of field observation and key informant interviews. Our work with hazardous and nuclear waste research suggests that focus groups can be used to complement quantitative survey research, particularly when it comes to questionnaire design.

2. The Nature of the Focus Group

In market research, focus groups are popular because they make the research less of a mystery to the client; they are affordable; they provide almost immediate feedback to the client and researcher; and they do not require sophisticated sampling and statistical analysis. This does not mean that sampling is not a consideration. The organizers will often want participants or entire groups to be drawn from relevant social categories (e.g., race, age groups). Focus groups have become so popular, in fact, that the results of the group interview are often taken as the only basis upon which decisions are made. This, of course, is a mistake, because qualitative impressions should not be substituted for statistical inferences about a target population, since each serves a different purpose.

Despite the historical connection, focus groups are quite different from psychotherapy groups or brainstorming (Fern (1983)). Focus groups are not ordinarily designed to help change the participant's attitude or behavior, which is the goal of most clinical groups. Also, focus groups are more structured than brainstorming sessions. Each of these is a "qualitative" research technique designed to gain insight into the participant's subjective experience, motivation, or feelings and all are based in spontaneous group interaction. However, in focus groups, a moderator, often working with other research team members, structures the group interviews. The moderator usually follows an interview guide, or an outline of session topics, which often is both explicit, and multipurposed. For these sessions, the group, which can vary in size from 6 to 12 members, is the unit of analysis rather than the individual. The larger the group the more complex the interaction and the greater the extent the moderator must be conscious of participation patterns, the forming of coalitions, etc.

For some researchers, especially in market research, focus groups have replaced individual interviews. When focus groups are compared to individual interviews, proponents frequently cite that focus groups:

- Take less resources (e.g., time and money) to organize (Festervand (1985); Wells (1974); Downs, Marting, and Smeyak (1980)) than other types of personal interview surveys
- Encourage a wider range of discussion without the restriction of a questionnaire format (Wells (1974); Downs, Marting, and Smeyak, (1980))
- Stimulate a respondent to offer more depth and meaning to ideas and opinions (Lydecker (1986); Wells (1974); Hutt (1979))
- Enable summary results to be provided sooner than often is possible with an interview survey (Downs, Marting, and Smeyak (1980); Szybillo and Berger (1979))
- Provide an interview that is more stimulating than the usual individual interview (Hutt (1979))
- Produce findings that are readily

understandable by clients (Wells (1974); Levy (1979))

- Help otherwise reticent or shy people to respond in meaningful ways (Wells (1974); Hutt (1979)).

Focus groups also have critics who point to a list of potential problems. In particular, they argue that:

- Individuals might easily be swayed by a perceived group consensus or by an opinion leader (Levy (1979))
- A shy individual might be intimidated by the group and not speak out (Downs, Marting, and Smeyak (1980); Levy (1979))
- The interviewer cannot explore the unique background or characteristics of the individual participants (Downs, Marting, and Smeyak (1980))
- Respondents may feel they have to "please" the moderator with their responses (Wells (1974))
- Group discussion can become so convoluted and unfocused that time is wasted and the moderator cannot get the group on track (Axelrod (1976))
- The moderators can bias the progress of the session causing response effects attributable to their presence and manner (Bellenger, Berhardt, and Goldstrucker (1976); Festervand (1985); Fern (1982))
- These groups are so small and unrepresentative that the results cannot be generalized (Calder (1977); Wells (1974); Downs, Marting, and Smeyak (1980)).

In addition, critics suggest that users of focus groups pay too little attention to the effect of group factors such as size, gender profile, familiarity, task, or other variables in group dynamics (Fern (1983)). While a systematic examination of such factors is long overdue, this paper undertakes the less ambitious task of pointing out the roles that focus groups can play in developing survey questionnaires that deal with complex environmental issues.

3. Integrating Focus Groups and Surveys

To illustrate both the strong and weak sides of focus groups, we present two case studies that describe the development of survey questionnaires. The first case involves the use of survey techniques to measure the benefits of regulations that reduce hazardous waste risks. Termed contingent valuation by the economists who developed it, these surveys ask respondents to reveal their preferences for various hypothetical situations (Schulze, D'Arge, and Brookshire (1981)). Hazardous wastes are defined as any solid, liquid, or gaseous substances that, when discarded, are ignitable, toxic, corrosive, or reactive. The lead from discarded automobile batteries or the chromium in discarded paints are examples of two common hazardous wastes.

In the case of the hazardous waste risk survey, the most important tasks were to effectively communicate the risks involved in the hypothetical situations and to encode respondents' perceptions of the risks perceived, based on where they lived and worked at the time of the interview. For this case study, focus groups were organized in six rounds. Each round led to refinements and modifications of the type and amount of information to be used in the questionnaire. The last round pretested a draft questionnaire with people from the suburban Boston target population.

The hazardous waste survey ultimately

involved in-person interviews, which had important implications for the types of issues evaluated in the focus groups. The main issues included communicating risks with visual aids, constructing realistic examples, and organizing the questionnaire flow.

The second project emerged as part of research for the State of Nevada on the socioeconomic implications of siting a high-level nuclear waste (HLNW) repository at Yucca Mountain, one of three sites nationally still in contention to house the repository. As part of the research, a nationwide telephone survey and a statewide telephone survey of Nevada residents were conducted to acquire information on people's perceptions of the risks from a HLNW repository and the role that mitigation and compensation measures can play in reducing individuals' concerns.

In the HLNW repository case study, the main objective of the focus groups was to aid the development of the telephone questionnaires. The focus group design called for three sessions in three areas of the State of Nevada that were expected to have markedly different opinions and perceptions of the repository. The areas included Pahrump, a small town about 60 miles from the proposed repository site; Las Vegas, one of the most rapidly growing urban areas about 100 miles from the proposed site; and Caliente, a very small rural town with a depressed economic climate located about 250 miles from the site. All three areas are on potential transportation corridors for the repository. In each case respondents were to represent the general public, but they were selected on a convenience basis rather than randomly since the purpose was not to generalize results but only to obtain reaction to the questionnaire elements. Each group interview was held in a location where distractions were minimized. A conference room was used, for example, rather than the living room of someone's home. Each session was audio-taped and this was not a problem for the participants. The authors served as moderators and it is suggested that the same moderator be used in all group interviews conducted on a similar topic. The moderator played a neutral yet directive role. A more active role was necessary to keep the group from being distracted and to stimulate responses from all persons. The moderator used a series of self-administered tasks to ensure that important topics were covered in the session. Occasionally, the interviewer polled participants by name to obtain responses from each participant. The start of each poll was varied to reduce the effect of opinion leaders in the group. Each session lasted approximately two hours and respondents were paid $25.00 for their participation.

CASE STUDY 1: HAZARDOUS WASTE RISKS

The hazardous waste risk survey involving in-person interviews illustrated six areas in which focus groups contributed to the development of the survey questionnaire and experimental design. These areas include:

- developing visual aids for communicating risk
- evaluating experimental design alternatives
- describing hypothetical examples
- evaluating the general order of questionnaire topics
- targeting difficult respondents.

Each of these areas is discussed below.

1. Developing Visual Aids for Communicating Risk

The use of in-person interviews provides the opportunity to support questionnaire text

with visual aids. This feature is especially important for surveys on risk because of the cognitive difficulties people have in processing risk information. Hogarth and Reder (1986); Kahneman and Tversky (1979); Tversky and Kahneman (1974); and Slovic and Lichtenstein (1983) have demonstrated this finding in laboratory settings. In a household survey, the challenges of communicating risk are even greater because the interview cannot be subjected to the same kinds of experimental controls that are possible in a laboratory. The focus groups allowed us to test devices that could be used to increase the respondent's understanding of risk levels.

In the early focus group sessions, probability was explained using two circles (see Figure 1). The first circle represented the risk of exposure, and the second, the risk of an effect. Simple examples of risky events such as "rain," "IRS audit," and "car acci-

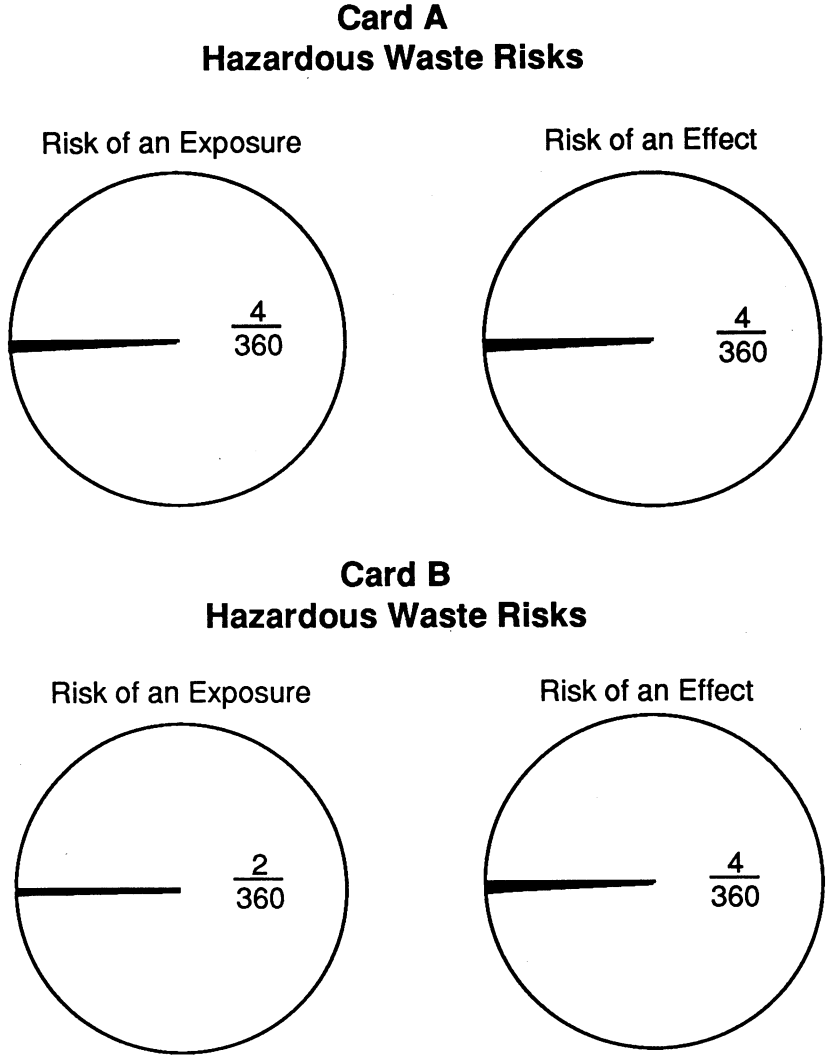

Fig. 1. Preliminary version of risk circles

dent" were listed beside the exposure circle, and the effects "get wet," "pay more money," and "get hurt," respectively were listed beside the effect circles. Each circle had a different portion shaded to indicate the probability of the events occurring. The entire area of the circle represented a 100% probability.

There were many problems with the presentation described above. First, participants indicated that the shaded circles did not do a good job of relaying the idea of chance. Adding a device in the shape of an arrow to the circles that respondents could spin with a twist of their finger was an improvement suggested by many participants. Second, participants indicated that they did not understand how the combined probability was formed. This meant that they did not understand (a) that the chance of exposure and the chance of effect were separate, or (b) that the combined probability was the result of multiplying the exposure by the effect probability. This is consistent with experimental work in psychology that indicates that individuals have difficulty with multistage lotteries (Schum 1980)). Third, participants could not relate the simple examples to the problems of risks from hazardous waste exposure. They indicated that the attributes of everyday chances were so different from those of hazardous waste that one did not help explain the other. The following is a sample of comments:

- There were too many examples preceding the hazardous waste example. I understand the examples of the rain, etc., but I don't understand the great relationship between your chance here and hazardous wastes.
- For hazardous waste risks you go through a process of reasoning which is different from that of the simpler examples, like the chance of rain.

Finally, participants had trouble believing that the hazardous waste exposure probabilities were real. In general, they felt they were too small. One respondent stated:

> "I wondered if what you were presenting was unbiased because of the extremely small chance of being exposed to hazardous wastes. I wondered if you were trying to program the results."

Ironically, the probabilities were quite high, ranging from risk magnitudes comparable to lifetime automobile travel to lung cancer risks for heavy smokers. We used the higher risks at the outset to make the shaded areas more visible.

Figure 2 is the final figure used for risk communication that emerged from the focus group process. This figure contrasts sharply with the earlier versions. It eliminates the simple risk examples, puts everything in the context of hazardous wastes, and adds a third circle to show the linkages between exposure, heredity, and the risk of death if exposed. This figure also uses a combination of visual information such as the circles and slices and verbal information such as the descriptions of the circles and the numerical fractions and percentages. The percentages were added only after seeing that participants had calculated them to use in developing their examples. Subsequent followups supported this point as shown by the following sample of remarks:

- They could be converted into percentage relationship.
- That I could read.
- I kept wondering why you didn't put percentages here.
- 1/50 doesn't mean anything to me but 2% does.

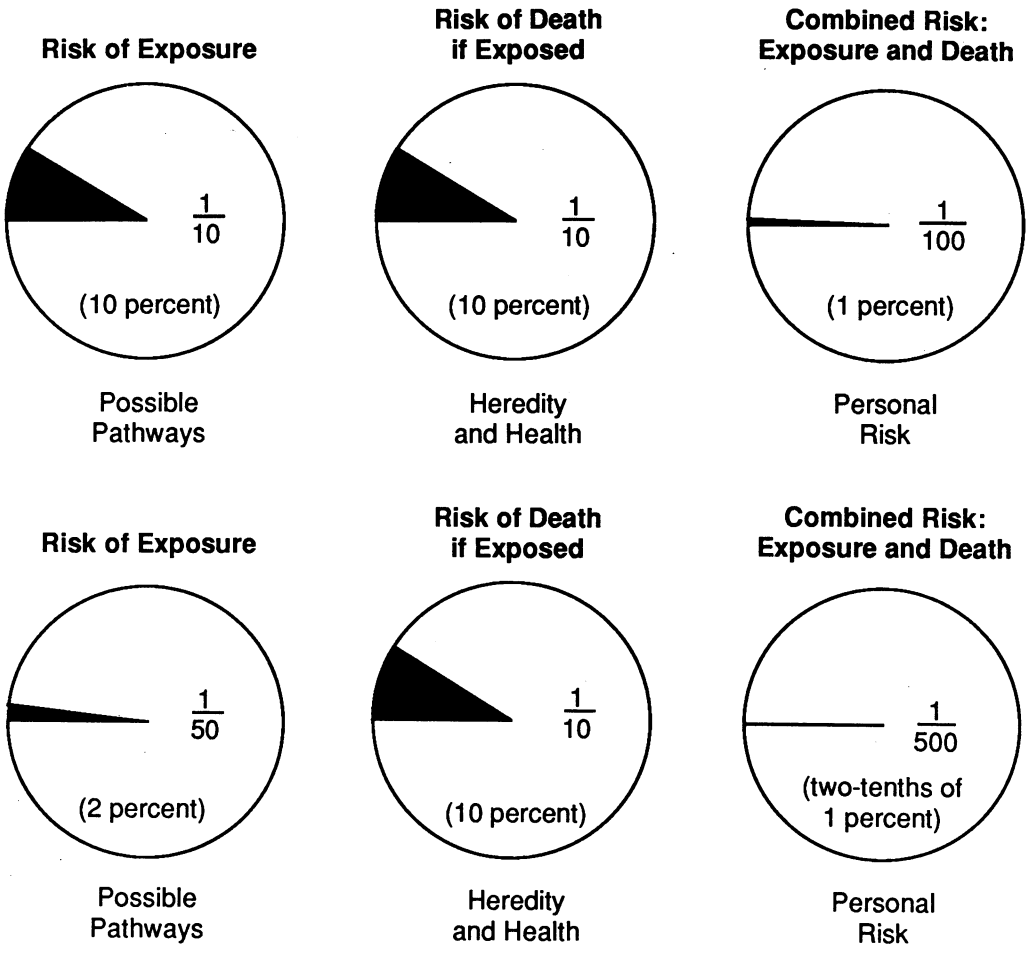

Fig. 2. Final version of risk circles

Thus, the focus groups helped to develop visual aids for communicating the risk from exposure to hazardous wastes. While these sessions enabled the risk circles to be clarified in several significant ways, their qualitative nature makes it difficult to develop final conclusions about their effectiveness. A more formal evaluation would involve quantitative research using an experimental design that is administered either in the controlled setting of a laboratory experiment or in a well-designed field survey. Because of other research design considerations, the effectiveness of risk circles was not compared with other risk communication visual aids such as risk ladders or the chances of living to various ages which were used by Kunreuther et al. (1978) and Smith and Desvousges (1987). These comparisons could be tested in future research on risk communication.

2. Evaluating Experimental Design Alternatives

Most social science research is constrained

by the resources available for collecting the data and testing the hypotheses. These constraints require researchers to make trade-offs in the number and range of alternatives that can be considered in the experimental design. Our experiences suggest that focus groups can help in making these trade-offs by identifying alternatives that have the highest research potential (Smith and Desvousges (1986, 1987)). An example will help to illustrate our point.

In the hazardous waste focus groups, we asked the participants how much they would be willing to pay to reduce the risk of exposure from a hypothetical landfill that contained hazardous wastes. Our question design started with an existing risk level, and then asked them about "purchasing" successively lower levels of risk. Over the course of these sessions, the participants consistently remarked that it made a substantial difference to them whether they were being asked to pay for lower levels versus paying to avoid having a low level of risk increase. Their comments consistently suggested that they perceived an "entitlement" to the existing level of risk. This situation is analogous to the psychological research that suggests people have different preferences for gains versus losses (Tversky and Kahneman (1986)). Because of the consistency and intensity of the comments among groups with markedly different participants, we developed an experimental design that allowed us to compare preferences for risk decreases with those for risk increases. Subsequent empirical research showed that people were willing to pay five times more for risk decreases than they were willing to pay to avoid an equivalent risk increase (Smith and Desvousges (1986, 1987)). This finding was also demonstrated in subsequent research by Viscusi and Magat (1987).

3. Developing an Understandable Hypothetical Example

Focus groups were very helpful in discerning which aspects of the hypothetical situation were important in valuation decisions. Additionally, they were invaluable in helping to determine how the information had to be presented so participants could keep the hypothetical situation in mind while determining their answers. As the groups progressed, it became apparent that presenting vague facts in the hypothetical situation would not be sufficient. In contrast, being too specific about too many facts caused participants to overreact to the hypothetical situation. Figure 3 shows the initial version of the situation description and the revised version that reflected the changes resulting from participant reactions. The final version uses incidents similar to those that had occurred in the area and provides very specific information about the most important aspects: the type of landfill and the type of waste in the landfill.

4. Determining the Proper Order of the Information Presentation

The order in which information was presented affected focus group participants' perceptions and understanding of the problem. Therefore, the focus groups served as a good tool for assessing the best order for presenting the information. At first, general notions of probability were discussed followed by a discussion of the types and kinds of products that produce hazardous wastes, how you get exposed to them, and how you pay to regulate them. By the end of the six rounds, we found that the best way was to first describe how hazardous wastes are generated and managed, then probability, and then how we pay for managing these wastes. The hazardous waste background information helped introduce people to the

Initial Version
Situation 1

Landfill Location:	Your community 5 miles from residential district
Sources of waste:	Electronics and agriculture industries
Effects from wastes:	Heart damage Lung damage Cancer e.g., leukemia
How long before effects are known?	30 years
Regulations:	Best possible control practices Insurance bond Monitoring

Final Version
Exposure Risk Circumstances

- Electronic parts company
- Located 3 miles from your home
- Generates 2,000 gallons of hazardous waste each day
- Company disposes of the wastes in a landfill at company site
- If you are exposed, there is a chance you will die in 30 years

Fig. 3. Comparison of hypothetical example descriptions

problem and then see how risks might develop and subsequently how the risks could be reduced.

5. Targeting Difficult Respondents

Finally, the focus group sessions for the hazardous waste risk study suggest that trying to select groups of respondents who might have difficulty answering the survey questions did not work. The sessions which included only elderly participants or less educated rural participants yielded very few

insights. The moderator used several self-administered exercises to help structure discussion among participants. Even with these techniques, participants were unable to verbalize their reactions or to conceive of themselves in hypothetical situations. As became evident, there is nothing longer than a two-hour focus group in which participants respond: "yes," "no," "I don't know," and "I've never thought about that." Subsequent analysis of the survey data showed that older and less educated people continued to have problems answering risk questions (Smith and Desvousges (1987)). For these types of respondents, one-on-one sessions may be the better alternative. The laboratory-based research on the cognitive aspects of survey methodology would seem to offer a more promising avenue for targeting respondents who are likely to have difficulty with a complex questionnaire (Lessler and Sirken (1985)). Some caution is advised in generalizing this experience because it relied heavily on hypothetical situations.

CASE STUDY 2: HIGH-LEVEL NUCLEAR WASTE REPOSITORY RISKS

The U.S. Department of Energy (DOE) and Congress chose Yucca Mountain in Nevada as the potential site for a HLNW repository. As provided in the Nuclear Waste Policy Act of 1982, Nevada is eligible for Federal funds to conduct its own evaluation of the socioeconomic implications of placing the repository at Yucca Mountain. Part of this evaluation involves understanding people's perceptions of the risks from a HLNW repository and the role that mitigation and compensation measures can play in reducing individuals' concerns.

We discovered that focus group experiences can affect a survey in several ways. Each will be discussed below. These effects include:

- Possibly contaminating survey opinions if focus group results are made known prior to the conduct of the survey
- Issue orientation of respondents to guide researcher in questionnaire construction
- Informing the researcher
- Scaling construction
- Identifying knowledge levels and
- Identifying troublesome language.

1. Contaminating Opinion

We would not ordinarily expect that views expressed in a focus group discussion would influence opinions solicited in a subsequent survey. However, it is possible for this to take place if the group interview and the survey are conducted on a small or rural community or on a special group characterized by frequent interaction among members. In both cases opinion leaders are known individuals; and, if their views, either as members of a focus group or in response to focus group results, become known, others may be influenced to express a similar view that may not reflect their true feelings. To prevent this from happening, three precautions can be taken. First, the members of the group should be advised that their remarks will be held in confidence by the researchers and they should also treat the discussion with the same manner. Again, in large communities or diverse groups this may never be an issue because the group members are strangers and because they do not usually socialize with each other. This was a major concern, however, in the rural, small town focus groups. Second, the researcher can restrict the distribution of the audio or video-tape recording of the focus group session to the research team. These tapes or transcripts would not be available for general distribution and thus the question

of biasing public opinion is circumvented. Furthermore, to distribute the tapes or transcripts would violate the dictions of confidentiality. Third, sufficient time can lapse between the focus group interview and the scheduling of the survey. In the case of the HLNW repository statewide survey, a period of five months passed before the surveys were conducted.

2. Lines of Reasoning

The HLNW focus groups produced information on several themes on perceptions of risk associated with the repository, a major research issue. These themes served as guidelines for questionnaire development; that is, we knew that these issues had to be addressed in the questionnaire. To omit them would be a significant oversight. Without the focus groups, at least some might have been overlooked. The themes included:

a. That the presence of the nearby nuclear testing facility formed the baseline for risk perception. All southern Nevadans already live near a high-risk facility that not only provides significant reason for concern but also is a primary contributor to the economic health of the area.

b. That transportation risks were of greatest concern, not risks associated with storage.

c. That the trade-off between the risks associated with the repository and its economic benefit was viewed in a different light by different groups. Rural respondents living in depressed economic areas near the repository viewed the potential for economic gain as much more important and more probable than the urban respondents in the more prosperous Las Vegas area. Thus, this line of reasoning produced more variability than was originally expected.

d. That locating the site in Nevada gave a sense of fatalism. That is, there was the general feeling that no matter how hard the state worked against placing the repository in Nevada, it would be overruled, and the HLNW facility would be placed at Yucca Mountain. This perception had not been documented previously. We determined that this view had to be addressed in the survey as did the other themes.

Not only does the focus group interview bring out themes or concepts not necessarily considered by the researchers in their analytic construction of the problem, but these groups also confirm prior notions of the problem. For example, we anticipated that there would be rural-urban differences and variation by economic health. These views were affirmed.

3. Informing the Researcher

Focus group interviews not only aid the questionnaire development process, but, they also aid the researcher. These interviews are an excellent tool for making an unfamiliar topic familiar to the research team that must write questionnaires and interpret results. Thus, focus groups can help the researcher "get closer to the data." As a result, questionnaire items should more accurately reflect opinion or attitude variability and complexity. The identification of these themes mentioned above, and including questions related to those themes, illustrates the educational function of focus group interviews for a research team. The group interviews can also help form the research by identifying not only important, but unimportant points. For example, the research team felt that the HLNW effect on tourism might be a major concern to Nevada residents. In reality, tourism was hardly mentioned. This caused the research team to

pause and re-evaluate its view on the effect of the HLNW site on the tourist economy. In addition, subsequent questionnaires used in national and regional surveys included a reduced number of questions on vacation or tourism activity. The issue of tourism just was not important to the general public.

4. Scaling Construction

Focus group interviews can be excellent indicators of the comprehensibility of test scales and indexes and visual presentation of scales. We tested, for example, the ten- and five-point scales on perceived seriousness of certain risks. We wondered if the ten-point scale tended to produce polar responses because of the difficulty of conceptualizing so many scale locations. The group had no difficulty with the ten-point scale or the five-point scale. Each produced acceptable distributions of responses. The ten-point scale was eventually used because it provided a wider selection of scale values.

We learned a valuable lesson, when we asked for an evaluation on a scale of 1 to 100. The question was in reference to the probability of locating the HLNW repository in Nevada:

> On a scale of 1 to 100, with 1 being "no way it's coming to Yucca Mountain" and 100 being "it is coming for sure," what is your view on whether or not the repository will be sited in Nevada?

The first respondent stated, "I would say 9 because it is the only thing that is logical." None of the participants responded in terms of the 1 to 100 scale; each used a 1 to 10 scale. At this point we abandoned the 1 to 100 scale when a visual representation of that scale was not to be used.

5. Identifying the Level of Knowledge

The focus group interviews also told us that even with the extensive publicity associated with the repository and the vested interest Nevadans had in the site's placement, few persons had sufficient or adequate technical knowledge of the repository and the storage procedures. This meant that the survey should include questions on the respondent's technical knowledge and that we might have to provide some technical information to obtain intelligent responses. For example, we asked the following question in the state and national HLNW survey:

> One method the Federal government is considering for storing these nuclear wastes is an underground repository. The repository would store high-level wastes from nuclear power plants over 1,000 feet below the earth's surface. The wastes would be stored underground in specially sealed containers. Do you think the high-level nuclear wastes repository will be designed to store wastes for __ years?

This question provided factual information on type of facility, type of waste, and underground specifications. Without the focus group findings, we might have asked the question like this:

> One method the Federal government is considering for storing nuclear wastes is an underground repository. Do you think the high level nuclear waste repository will be designed to store waste for __ years?

Our concern that a lack of technical knowledge might produce a significant number of item nonresponses was verified in pretests where persons asked a lot of questions like "What is a repository?" and "How deep is underground?" This was a very important question where we wanted responses to reflect an informed opinion rather than an uninformed opinion.

6. Identifying Troublesome Language or Terms

We discovered some difficulty in separating the association of a waste repository and a nuclear power plant. Very often we had to caution the focus group participants about lumping the two together. For example, some respondents talked about "fall out" when discussing the repository. This suggested that the survey questions would also have to be careful about this distinction.

Another term that proved troublesome in the HLNW group was "radon" or naturally occurring radioactivity. This was raised as another environmental risk involving radiation. The Nevada groups had no idea what radon was and each group had to be informed. When respondents were asked to rate the risks associated with radon, they usually put it in the category of "no risk." This reflected an unfamiliarity rather than any considered assessment of the risk. An explanatory note would be necessary if radon were referred to in the state and national surveys. This was not a problem in the East Coast groups since they had been dealing with this issue for some time.

4. Conclusion

The environmental risk studies demonstrated how focus groups can be a valuable tool in the questionnaire development process. The groups helped to identify how people view different issues and how they process risk information based on their perceptions and level of knowledge. The research team was in a better position to evaluate new ideas, to reconsider preconceived notions, and to search for underlying themes as a result of the focus group discussions. The groups also helped to relieve problems or confusion that were associated with language, question order, scale construction, wording, and visual aids. The focus group contribution on these points improved the quality of the questionnaires that were eventually administered in a statewide and a national telephone survey.

The use of focus group interviews in the process of questionnaire development cannot be viewed as a complete substitute for the conventional pretest. The group interview is normally conducted prior to the formal pretest of the questionnaire. The pretest is useful because it provides a final check of the questionnaire in the actual interview setting, e.g., either a telephone call or in person.

Focus groups can be a valuable tool in the questionnaire development process, but they are not a substitute for the survey itself. While providing extremely useful qualitative insights, focus groups cannot provide statistically valid quantitative findings that represent a target population. Their importance lies primarily in helping researchers develop an effective and understandable survey instrument. These may also contribute ideas for organizing the experimental design, or suggest hypotheses to be evaluated in the formal statistical analysis. Participant comments can also illustrate the more abstract findings from the survey. While focus groups can provide excellent qualitative data and be very helpful in questionnaire design, there are, however, drawbacks.

The researcher, for example, has less control of the interview and response patterns, particularly when compared to individual interviews (Morgan (1988)). Thus, a great deal of the information brought out in the interview may be irrelevant or unusable. You also cannot be sure that the response a person gives in a group setting is the same as one that would be given in an individual interview. The results can be influenced by the interviewer or a strong personality in

the group. Finally, the moderator or interviewer may be unfamiliar with the effect of group size, group setting, or other aspects of group dynamics. As a result, outcomes will not accurately reflect the feelings or attitudes of participants. Researchers using focus groups need to be certain that the topic of their investigation is amenable to the group interview and that the moderator or interviewer is trained to be sensitive to group dynamics. In some cases the popularity of the focus group interview technique has led to improper implementation and unwarranted reliance on the results.

5. References

Axelrod, M.D. (1976): The Dynamics of the Group Interview. Advances in Consumer Research, 4, pp. 437–441.

Bellenger, D.N., Berhardt, K.L., and Goldstrucker, J.L. (1976): Qualitative Research in Marketing. American Marketing Association, Chicago.

Bogardus, E.S. (1926): The Group Interview. Journal of Applied Sociology, 10, pp. 372–382.

Calder, B.J. (1977): Focus Groups and the Nature of Qualitative Marketing Research. Journal of Marketing Research, 14, pp. 353–364.

Desvousges, W.H., Dunford, R.W., Frey, J.H., Kunreuther, H., Kasperson, R., and Slovic, P. (1987): High-level Nuclear Waste Repository Risks: Focus Group Findings and Implications for Surveys. Report prepared for the State of Nevada, Nuclear Waste Project Office.

Downs, C.W., Marting, E., and Smeyak, G. (1980): Professional Interviewing. Harper and Row, New York.

Fern, E. (1982): The Use of Focus Groups for Idea Generation: The Effects of Group Size, Acquaintanceship, and Moderator on Response Quantity and Quality. Journal of Marketing Research, 19, pp. 1–13.

Fern, E.F. (1983): Focus Groups: A Review of Some Contradictory Evidence, Implications, and Suggestions for Future Research. In: Advances in Consumer Research, Vol. X, edited by R.P. Bagozzi and A.M. Tybout. Association for Consumer Research, Ann Arbor.

Festervand, T.A. (1985): An Introduction and Application of Focus Group Research to the Health Care Industry. Health Marketing Quarterly, 2, pp. 199–209.

Hogarth, R.M. and Reder, M.W. (1986): Editors' Comments: Perspectives from Economics and Psychology, The Behavioral Foundations of Economic Theory. The Journal of Business, 59, pp. S185–S208.

Hutt, R.W. (1979): The Focus Group Interview: A Technique for Counseling Small Business Clients. Journal of Small Business Management, 17, pp. 15–19.

Kahneman, D. and Tversky, A. (1979): Prospect Theory: An Analysis of Decision Under Risk. Econometrica, 47, pp. 263–291.

Kunreuther, H.R., Ginsberg, R., Miller, L., Sagi, P., Slovic, P., Borkan, B., and Katz, N. (1978): Disaster Insurance Protection: Public Policy Lessons. John Wiley and Sons, New York.

Lessler, J.T. and Sirken, M.G. (1985): Laboratory-based Research on the Cognitive Aspects of Survey Methodology: The Goals and Methods of the National Center for Health Statistics Study. Milbank Memorial Fund Quarterly, 63, p. 3.

Levy, S.J. (1979): Focus Group Interviewing. In: Focus Group Interviews: A Reader, edited by J.B. Hiddenbotham

and K.B. Cox. American Marketing Association, New York.

Lydecker, T.H. (1986): Focus Group Dynamics. Association Management, 38, pp. 73–76, 78.

Merton, R.K. (1987): The Focussed Interview and Focus Groups: Continuities and Discontinuities. Public Opinion Quarterly, 51, pp. 550–556.

Merton, R.K., Fiske, M., and Kendall, P.L. (1956): The Focused Interview. The Free Press, Glencove.

Morgan, D.L. (1988): Focus Groups as Qualitative Research. Sage Publications, Newbury Park, Ca.

Rogers, C.R. (1944): The Non-directive Method as a Technique for Social Research. American Journal of Sociology, 50, pp. 279–283.

Schum, D.A. (1980): Current Developments in Research on Cascaded Inference Processes. In: Cognitive Processes in Choice and Decision Behavior edited by T.S. Wellsten. Lawrence Erlbaum Associates, Hillsdale, New Jersey.

Schulze, W.D., D'Arge, R.C., and Brookshire, D.S. (1981): Valuing Environmental Commodities: Some Recent Experiments. Land Economics, 57, pp. 151–173.

Slovic, P. and Lichtenstein, S. (1983): Preference Reversals. American Economic Review, 83, pp. 596–605.

Smith, V.K. and Desvousges, W.H. (1986): Measuring Water Quality Benefits. Kluwer-Nijhoff, Boston.

Smith, V.K. and Desvousges, W.H. (1987): An Empirical Analysis of the Economic Value of Risk Changes. Journal of Political Economy, 95, pp. 89–114.

Szybillo, G.J. and Berger, R. (1979): What Advertising Agencies Think of Focus Groups. Journal of Advertising Research, 196, pp. 29–33.

Taylor, D.W., Berry, P.C., and Black, C.H. (1958): Does Group Participation, When Using Brainstorming, Facilitate or Inhibit Creative Thinking? Administrative Science Quarterly, 3, pp. 23–47.

Thompson, J.D. and Demerath, N.J. (1952): Some Experiences With the Group Interview, Social Forces, 31, pp. 148–154.

Tversky, A. and Kahneman, D. (1974): Judgment Under Uncertainty: Heuristics and Biases. Science, 185, pp. 1124–1131.

Tversky, A. and Kahneman, D. (1986): Rational Choice and the Framing of Decisions. Special Issue of the Journal of Business, 59, pp. S251–S278.

Viscussi, W.K. and Magat, W.A. (1987): Learning About Risk: Consumer and Worker Responses to Hazard Information. Harvard University Press, Cambridge.

Wells, W.D. (1974): Group Interviewing. In: Handbook of Marketing Research, edited by R. Ferber. McGraw-Hill, New York.

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