ATTITUDES TOWARD NUCLEAR ENERGY
Familiarity and Salience

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ABSTRACT: This study examined attitudes toward the building of a nuclear power station in one's locality. In a survey of 719 residents of four small rural communities that were selected as possible locations for a new nuclear power station in southwest England, we examined the effects of having lived near a nuclear power station on perceptions of the various possible consequences associated with this technology. Results showed a more favorable attitude in the community located near the existing nuclear power stations than in the three remaining communities. Experience of having lived near a nuclear power station affected not only respondents' perceptions of the various potential costs and benefits of the building and operation of a nuclear power station in one's locality, but also the importance respondents attached to the various consequences. Results indicated marked differences in perceptions of economic benefits and health and environmental risks. Furthermore, present findings suggest that psychological risks play a crucial role in local acceptance of a nuclear power station. Attitudinal differences were most closely related to anxiety factors, and the present research serves as a reminder of the importance of these factors in attitude formation for those most directly affected by the building and operation of a nuclear power station.

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STOKOLS, D. (1983) "Scientific and policy challenges of a contextually-oriented psychology." Presidential address to the Division of Population and Environmental Psychology of the American Psychological Association, Anaheim, August.

WARRINER, K., G. McDOUGALL, and J. CLAXTON (1984) "Any data or none at all?: living with inaccuracies in self-report of residential energy consumption." Environment and Behavior 16: 503-526.

WILLIAMS, R. (1970) American Society: A Sociological Interpretation. New York: Alfred Knopf.

YANKELOVICH, D. (1981) New Rules: Search for Fulfillment in a World Turned Upside Down. New York: Random House.

Prior to the mid-1970s survey data showed consistently high levels of public support for nuclear energy. The place of nuclear energy as a source of electrical power seemed assured both in the United States and in Western Europe. However, since the mid-1970s this support has gradually been eroded. Subsequent years have shown an increasing opposition to nuclear energy, as reflected in the growth of the environmental movement, the increasing length of public inquiries into the building of nuclear power stations, and various local and national referenda in the United States and Europe. Media interest in the issue has increased and public opinion polls show a consistently high level of public concern over potentially catastrophic accidents and radioactive waste.

The realization that the public will play a more important role in energy policy decisions was accompanied by a substantial number of social psychological studies attempting to improve our understanding of public attitudes toward nuclear energy. The majority of the work in this area is based on the expectancy-value model of attitude formation proposed by Fishbein and his colleagues (Fishbein, 1963; Fishbein and Azjen, 1975). This model basically assumes that the more a person believes the attitude object has good rather than bad attributes or consequences, the more favorable his or her attitude tends to be. Results of these studies confirm this assumption and show that individual attitudes are based upon perceptions of various potential negative and positive aspects of nuclear energy (e.g., Otway and Fishbein, 1976; Sundstrom et al., 1977; Sundstrom et al., 1981).

A number of studies show that separate dimensions of the issue of nuclear power appear differentially salient for different attitude groups. Otway and associates (1978) report the results of a factor analysis on a large set of belief statements about nuclear energy. Their results yielded four factors designated as "psychological risk," "economic and technical benefits," "sociopolitical risk," and "environmental and physical risk." They next compared the 50 most pro- and 50 most antinuclear respondents in order to determine the contribution of each of the four factors to respondents' overall attitudes. Results indicated that for the pronuclear group the

economic and technical benefits factor made the most important contribution, whereas the antinuclear group's attitude was determined mainly by the risk factors.

Eiser and Van der Pligt (1979), Van der Pligt and associates (1982), and Woo and Castore (1980) provide further support for the view that individuals with opposing attitudes see different aspects of nuclear energy as important or salient. Their findings showed that nuclear proponents attach greater value to the potential economic benefits of nuclear energy, but the nuclear opponents are more concerned with safety and potential health hazards. It seems, therefore, that individuals with opposing attitudes tend to disagree not only over the likelihood of the various possible consequences but also over their importance. As argued elsewhere (Van der Pligt and Eiser, 1984), the fact that separate dimensions of the issue appear differentially salient (both subjectively for the respondent, and in their contributions to the prediction of attitudes) for different attitude groups has important practical implications for theories of attitude and for our understanding of *why* people hold different attitudes.

The present study attempts to investigate attitudinal structure and salience in the context of attitudes toward the construction of a nuclear power plant in one's locality. Furthermore, we will investigate attitudinal structure and salience as a function of the experience of actually living near a nuclear power plant. A number of surveys have either compared the acceptance of a nuclear power plant among people living near one with that of people who do not or have followed local opinion in an area where a nuclear power station was being constructed and becoming operational. There is limited support for the idea that familiarity leads to greater acceptance of a reactor in one's community. Some studies show increased acceptance (e.g., Melber et al., 1977); others show that familiarity does not necessarily lead to increased willingness to accept the building of a new nuclear power station (e.g., Thomas and Baillie, 1982; Warren, 1981). Hughey and associates (1983) examined changes in attitudes and expectations about a nuclear power plant among residents of a small rural community

over a period of five years, starting with the time of initial siting through the peak construction phase. Their study showed large negative changes in attitudes toward the plant; these were accompanied by decreased expectations of positive outcomes.

Although overall attitudes are not necessarily more favorable as a function of familiarity, some evidence suggests that people actually living near a nuclear power plant tend to relatively underestimate the risks associated with nuclear energy (Ester et al., 1983). This is most likely to be a function of experience (assuming that no accidents have taken place), but is also in accordance with a simple notion of dissonance reduction (Festinger, 1957). Our own findings (Van der Pligt et al., forthcoming-b) suggest that this could be the case, because this relative underestimation of the risks of nuclear power stations is most pronounced when it concerns the power station in one's own locality as compared with nuclear plants elsewhere.

In the present study we investigated attitudes and beliefs concerning the construction of a nuclear power station in one's locality. More specifically, we studied the effects of familiarity upon attitudes and upon the various potential costs and benefits of the construction and operation of a new nuclear power plant. We further tested the notion that a consideration of both the perception of the various potential costs and benefits and their subjective importance or salience provides a more complete picture than could be obtained from consideration of either factor alone.

Finally, it seems necessary to provide further information concerning the historical context in which this study was conducted. In February 1981, the Central Electricity Generating Board (CEGB) announced the names of five sites to be considered as possible locations for a new nuclear power station in southwest England. In February 1982, the CEGB had ruled out two of those five sites on geological grounds. The present study was conducted between June and October 1982 and took place in four communities: three that were the remaining sites for a possible new nuclear power station (Bugle/Luxulyan in Cornwall, Herbury and Winfrith in Dorset)

and the site of two existing nuclear power stations (Hinkley Point in Somerset). On August 25, 1982, the CEGB, surprisingly, announced that the next station for which they intended to make planning application would be a third station adjacent to the two existing reactors at Hinkley Point. Winfrith in Dorset was selected as a possible site for the next nuclear power station after completion of Hinkley Point C.

METHOD

SAMPLE

A random sample (n = 925) was drawn from the electoral registers for four communities that were either close to the two existing nuclear power stations near Hinkley Point in Somerset or close to the three sites selected as possible locations for a new nuclear power station in southwest England. Of this sample, 69 respondents had moved from the area. A total of 719 persons agreed to participate (a response rate of 67%). All respondents received a questionnaire by mail. Two weeks later, the nonrespondents received a reminder and a copy of the questionnaire. The 35 respondents who returned questionnaires without their names and addresses were excluded from the analysis. An additional 36 were excluded for incomplete responses, leaving 648 respondents. The average age was 47.7 years: 23% were 30 years old or younger; nearly 47% were between 30 and 60 years of age; and the remaining 30% were older than 60 years. A total of 343 respondents (nearly 54%) were male.

QUESTIONNAIRE

Respondents were presented with a closed-ended questionnaire that was preceded by a short introduction explaining the CEGB announcements concerning the possible sites for the next nuclear power station in southwest England. All respondents in the Hinkley Point sample received the ques-

tionnaire after the CEGB had announced that the next nuclear power station for which planning application would be made would be a *third* station at Hinkley Point. Respondents of the remaining three communities were approached before and after this announcement. About 70% of these respondents were approached before the announcement that excluded their communities for the near future, whereas the remaining 30% received a questionnaire after Hinkley Point was selected and one of the remaining three sites was chosen for the next power station (after completion of Hinkley Point C). Whether respondents were approached before or after the announcement is not relevant to the present investigation and will be ignored in the analysis.[1]

First, subjects' attitudes toward nuclear energy were assessed in terms of seven categories ranging from "very strongly opposed" to "very strongly in favor." Respondents were then presented a list of eight general statements about nuclear energy (e.g., "Nuclear energy is the only practical source of energy for the future," "Britain should abandon all plans to build any more nuclear power stations"). These statements were rated on a 7-point scale ranging from "very strongly disagree" to "very strongly agree." Next, respondents were asked to indicate their involvement with the issue. Responses were given on a 4-point scale ranging from 1 (not at all) to 4 (very much).

Respondents were then presented a list of 15 immediate consequences of the construction and operation of a new nuclear power station in their community and were asked to indicate how each of these would change life in the neighborhood for the better or for the worse. Responses were given on a 9-point scale ranging from 1 (very much for the worse) to 9 (very much for the better). After completing this section subjects were asked to select the five consequences they thought to be the most important. Next subjects were presented with a list of 15 long-term consequences of the construction and operation of a new nuclear power station. Responses were indicated on a 9-point scale and subjects were again asked to select the five consequences they thought most important. After completing this section respondents were asked to in-

dicate how much importance a public inquiry should attach to five general aspects of nuclear energy: local environmental impact, political implications of a nuclear energy policy, economic arguments, risk of accidents and pollution, and feasibility of other energy technology. Answers were indicated on a 7-point scale ranging from 1 (no importance at all) to 7 (extreme importance). Finally, respondents were asked their age, sex, and occupation.

RESULTS

We first computed an attitude index score based on the eight general statements concerning nuclear energy. This scale proved reliable and consistent as indicated by a Cronbach's alpha of 0.85. This index score showed a normal distribution of attitudes with a marginally antinuclear overall mean of 30.1 (possible range from 8 to 56). The composite attitude score correlated +0.78 with the single scale attitude score toward nuclear energy, as indicated on a 7-point scale ranging from 1 (very strongly opposed) to 7 (very strongly in favor). A comparison of the attitude index scores revealed that respondents familiar with nuclear power stations had a slightly more favorable attitude toward nuclear energy than did respondents in the other communities. Mean scores were 32.9 and 28.7 respectively, $F(1, 608) = 32.57$, $p < .001$. Nonfamiliar respondents were more involved with the issue of a possible new nuclear power station than were respondents at Hinkley Point; mean scores were 2.3 and 2.0 respectively, $F(1, 640) = 12.68$, $p < .001$. Responses on the single attitude scale revealed similar differences and showed a slightly more favorable attitude in the Hinkley Point sample.

In order to investigate people's perceptions of the various potential costs and benefits, we compared the two groups with respect to their ratings of two sets of 15 potential consequences. Table 1 shows the mean ratings by familiar and nonfamiliar subjects of the 15 (mainly immediate) effects of the building and operation of a nuclear power station in the locality. Subjects were split into two groups on the basis of

TABLE 1

Perception of Various Aspects of a Nuclear Power Station as a Function of Familiarity

	Mean Score[1]			Importance[2]		
	High familiarity (n=218)	Low familiarity (n=430)	F[3]	High familiarity (n=218)	Low familiarity (n=430)	F
Excavation for pipelines	4.3	2.6	130.86	6	19	18.27***
construction traffic	3.1	2.0	55.15	42	33	5.31*
road building	5.1	3.4	57.27	18	24	3.07
conversion of land from agricultural use	3.4	2.1	81.53	37	50	10.45**
noise of construction	3.9	2.4	106.38	11	13	0.16
workers coming into the area	4.8	3.7	23.13	52	22	63.09***
noise of station in operation	4.3	3.2	54.13	13	12	0.19
general appearance of the power station	3.9	2.2	117.73	32	48	14.63***
area of land fenced off	4.0	2.3	112.05	19	26	4.48*
steam from station when operating	4.2	2.6	121.15	7	21	20.07***
increased security and policing	5.2	3.7	58.92	15	11	1.90
warming of sea water	5.0	3.7	49.21	14	12	0.36
transportation of nuclear waste	3.1	1.9	60.27	49	55	2.11
overhead power cables/pylons	3.0	2.0	48.21	40	37	0.81
overall height of buildings	3.9	2.1	162.49	15	38	38.53***

1. Possible range of scores from 1 (very much for the worse) to 9 (very much for the better).
2. The scores represent the percentage of subjects selecting each factor among the five most important. The columns do not add up to 500 because of the inclusion of subjects who chose fewer than 5 aspects.
3. All F-values were significant at the .001 level.
*$p < .05$; **$p < .005$; ***$p < .001$.

their location: one group of respondents who lived close to (within 5 miles of) the existing nuclear power stations at Hinkley Point in Somerset (n = 218) and one group who lived in the communities that were selected by the CEGB as possible locations for a new nuclear power station in southwest England (n = 430). Results in Table 1 show highly significant differences for all items. The overall picture is that nonfamiliar respondents are more pessimistic about the immediate impact of the building and operation of a nuclear power station.

The results of the statistical analyses reported in Table 1 are based on simple one-way analysis of variance. Because the two groups also differed in their attitude toward nuclear energy, we conducted a number of analyses of covariance with familiarity as an independent variable and the attitude index score as a covariate. Results of these ANCOVAs revealed that attitude was significantly related to the differing perceptions of the two groups. On average, all items showed highly significant effects due to attitude. All effects due to familiarity remained significant, although they were less pronounced than the effects reported in Table 1.

Table 1 also shows which aspects were chosen as being among the five most important by the two groups. The results show that, irrespective of familiarity, respondents attach great importance to the issue of transportation of nuclear waste: More than 50% of the present sample selected that issue among the five most important. We next conducted a discriminant analysis to learn which aspects most distinguished the two groups of respondents. The results of the stepwise solution (with Rao's V as a stepwise criterion) revealed six aspects that added most significantly to the discriminant function. The first aspect was "workers coming into the area," which was regarded as far more important by familiar respondents. The next most discriminating item was "overall height of the buildings" (regarded as more important by nonfamiliar respondents). The value of Rao's V associated with the first item is 63.09, whereas the second added 31.59 to this value (both significant at the .001 level). The next two important items

were "excavation for pipelines" and "steam from station when operating." Both were seen as more important by respondents not familiar with a nuclear power plant. Changes in V were 19.30 ($p < .001$) and 17.03 ($p < .001$) respectively. Two more aspects added significantly to the discriminant function, "road building" (change in $V = 11.36$, $p < .001$) and "area of land fenced off" (change in $V = 8.23$, $p < .005$). Again, both were seen as more important by nonfamiliar respondents. These six items yielded a Wilks's Lambda of .81 ($p < .001$).

Table 2 shows the mean ratings of the 15 (mainly long-term) effects of the building and operation of a nuclear power station in their locality. Results confirm those shown in Table 1 and indicate a more pessimistic view on the various potential consequences by nonfamiliar respondents. The most striking differences concern the effects on employment opportunities and the various consequences for the environment and public health, with the Hinkley Point sample being more optimistic about employment opportunities and less pessimistic about environmental and public health consequences. Finally, nonfamiliar respondents predicted a more negative impact on their peace of mind than did those living near the existing nuclear power stations. Both groups, however, thought their peace of mind would be negatively affected by the building and operation of a new nuclear power station. Closer inspection of the overall mean scores reveals that both groups, on average, think that most factors will have a negative impact on life in the locality. Both Table 1 and Table 2 show that the majority of the mean scores are lower than 5 (midpoint of the scale).

We again conducted a number of analyses of covariance with familiarity as an independent variable and the attitude index score as a covariate. Results of the ANCOVAs revealed that attitude had a more pronounced effect than did familiarity. The inclusion of the covariate lowered the F ratio due to familiarity. Most items, however, still showed significant effects due to familiarity.

Table 2 also shows which items were chosen among the five most important by the two groups of respondents. The results show marked differences between the two groups on

TABLE 2

Perception of Various Aspects of a Nuclear Power Station as a Function of Familiarity

	Mean Score[1]			Importance[2]		
	High familiarity (n=218)	Low familiarity (n=430)	F[3]	High familiarity (n=218)	Low familiarity (n=430)	F
Employment opportunities	8.2	6.6	106.31***	61	31	56.73***
tidiness of the village	4.4	3.6	21.86***	8	13	2.88
standard of local recreational facilities	5.3	4.9	5.03*	7	8	0.07
social life in the neighbourhood	5.1	4.7	4.18*	17	10	6.83*
wild life	3.6	2.2	74.72***	33	57	34.89***
marine environment	4.1	3.0	37.18***	23	28	1.85
farming industry	3.8	2.5	75.87***	30	45	13.92***
security of local electricity supplies	5.5	5.6	0.35	19	9	12.14***
health of local inhabitants	4.2	3.2	42.93***	36	40	1.34
landscape	3.4	2.0	97.58***	31	53	28.94***
holiday trade	4.8	3.2	96.29***	7	18	13.86***
business investment	6.3	5.0	47.87***	22	15	3.89*
your personal peace of mind	3.9	2.7	54.12***	33	35	0.49
standard of local transport and social services	5.5	5.5	.00	20	10	11.71***
standard of shopping facilities	5.4	5.4	.00	17	1	14.67***

1. Possible range of scores from 1 (very much for the worse) to 9 (very much for the better).
2. The scores represent the percentages of subjects selecting each factor among the five most important. The columns do not add up to 500 because of the inclusion of subjects who chose fewer than 5 aspects.
*$p < .05$; **$p < .005$; ***$p < .001$.

a number of items. Again, we conducted a discriminant analysis to determine which aspects most distinguished the two groups. The results of the stepwise solution revealed four items that had considerable predictive power in separating the two groups. The first item concerned employment opportunities (seen as far more important by familiar respondents) and resulted in a Rao's V of 56.73 ($p < .001$). Further significant contributions were made by three items seen as more important by nonfamiliar respondents; that is, "wild life" (change in V = 39.54, $p < .001$), "holiday trade" (10.71, $p < .001$) and "landscape" (9.31, $p < .001$). These four items yielded a Wilks's Lambda of .85 ($p < .001$).

ATTITUDES AND SALIENCE

In this section we will take a closer look at the contribution of perceived importance or salience to the understanding of the attitudinal differences between the two groups. Inspection of Tables 1 and 2 suggests that the inclusion of both the perception of the various potential consequences of a nuclear power station and the perceived importance attached to each of these consequences provides a more complete picture of the attitudinal differences between the two groups.

Results shown in Table 1 suggest that nonfamiliar subjects are generally more pessimistic about the immediate impact of a nuclear power station. More specifically, these respondents are more pessimistic about workers coming into the area and the appearance of the buildings and also find the latter aspect more important than do respondents at Hinkley Point. Table 2 shows that nonfamiliar respondents see the various risks of nuclear power stations as both more serious and more important than does the Hinkley Point sample. This group, on the other hand, is more optimistic and attaches greater value to the economic benefits.

We also asked respondents to indicate how much importance should be attached to the various aspects if there were a public inquiry into the building of a nuclear power station in their locality. Results are summarized in Table 3.

TABLE 3
Perceived Importance as a Function of Familiarity

aspect	Familiarity: high (n=199)	Familiarity: low (n=416)	F
local environmental impact	5.5	6.1	18.49**
political implications of a nuclear power station	4.1	3.9	1.09
economic arguments	5.2	4.8	6.11*
risks of a nuclear accident and pollution	6.1	6.2	0.80
feasibility of other energy technology	5.6	5.6	0.1

NOTE: Possible range of scores from 1 (no importance at all) to 7 (extreme importance).
*$p < .05$; **$p < .001$.

These findings show less clear-cut differences than those obtained by respondents' selection of the most important factors. Nonfamiliar respondents regard the environmental impact as more important and economic arguments as less important than do respondents familiar with the existing nuclear power stations. Overall, the political implications of a nuclear power station are seen as the least important factor by both groups of respondents.We further analyzed these scores by analysis of covariance with the attitude index score as a covariate. Results showed only one factor yielding a significant effect due to familiarity over and above attitudinal effects. Perceived importance of local environmental impact was significantly affected both by attitude, $F(1, 560) = 42.27$, $p < .001$ and by familiarity, $F(1, 560) = 10.24$, $p < .001$. All other factors showed significant effects due to attitude only.

The more antinuclear respondents' attitude, the more importance they attached to political implications, $F(1, 560) = 9.16$, $p < .005$, and to feasibility of other technology, $F(1, 560) = 90.14$, $p < .001$. Pronuclear respondents attached greater

importance to economic arguments than did relatively antinuclear respondents, $F(1, 560) = 13.30$, $p < .001$. Attitude also had a marked influence on the importance attached to the risks of a nuclear accident and pollution. The more antinuclear respondents saw this factor as far more important than did the pronuclear respondents, $F(1, 560) = 45.20$, $p < .001$. Finally, we conducted a stepwise multiple regression analysis with subjects' attitude toward nuclear energy (as measured by the 8-item attitude scale) as a dependent variable and their ratings of the 30 possible consequences as predictors. Results are summarized in Table 4.

These findings show that the factors "peace of mind" and "nuclear waste" are most predictive in relation to respondents' attitude to nuclear energy and point to the fact that people's estimation of the risks of this technology are the prime determinant of attitudes toward nuclear energy, with people's perception of the economic benefits playing a slightly less important role. The scores on the "peace of mind" item were most closely related to the perceived threats to the environment, public health, and the farming industry. Correlations (simple r's) were .59, .68 and .59 respectively. In other words, anxiety as expressed by the "peace of mind" item seems a function of the perceived consequences for the environment, public health, and one's livelihood (farming). Factors such as "workers coming into the area" are less important.

DISCUSSION

The results of the present study show that attitudes toward the building of a new nuclear power station in one's locality are a function of its perceived consequences and the importance attached to these consequences. Our findings show that, overall, pronuclear respondents are more optimistic about, and attach greater value to, the importance of the possible economic benefits to the locality. Antinuclear respondents, on the other hand, are more pessimistic about the

TABLE 4
Multiple Regression Analysis of Attitudes Toward Nuclear Energy

Predictor variable	simple r	multiple r	Multiple r^2	change in r^2
personal peace of mind	.62	.62	.38	.38
transportation of nuclear waste	.53	.65	.43	.05
employment opportunities	.42	.68	.46	.03
health of local inhabitants	.58	.70	.49	.03

risks and attach greater value to the various risks of the building and operation of a new nuclear power station in the locality. It seems, therefore, that the same factors underlying people's attitudes toward nuclear energy in general determine attitudes to a local nuclear power station (see Eiser and Van der Pligt, 1979; Woo and Castore, 1980; Van der Pligt et al., 1982; Hughey et al., 1983).

Present findings show a marginally more favorable attitude toward nuclear energy in general and toward the building of a nuclear power station in one's locality among people who are presently living near a nuclear power station. Our results show that this familiarity with nuclear power stations affects the perception of the various consequences. Those living near a nuclear power station were less pessimistic about the immediate impact (e.g., workers coming into the area, height of the buildings, excavation for pipelines, etc.). A cautionary note seems in order: The simple fact that the sample near existing nuclear power stations will contain people employed at the nuclear stations and will *not* contain people who have moved or decided not to move there because of the power station could create a biased sample.

Familiarity also affected respondents' views of the long-term consequences. People living near a nuclear power station were more optimistic about employment opportunities and found this factor more important than did those not living near a nuclear power station. The latter group was more pessimistic about the various risks and attached greater value

to these factors. These findings are in accordance with studies on people's attitudes toward nuclear energy in general and the corresponding differences in beliefs about possible consequences.

There are, however, two important differences. First, although the Hinkley Point sample was slightly less unfavorable to the building of a new nuclear power station, present results show that people—irrespective of experience with living near a nuclear power station—are of the opinion that the building of a new nuclear power station will have a negative impact on life in the locality. These findings are in accordance with those of Hughey and associates (forthcoming). Their longitudinal study showed a significant decrease of expectations of favorable outcomes during the construction phase of a nuclear plant.

Overall, our respondents' perceptions of the various short-term and long-term *local* consequences were generally unfavorable. One of the few exceptions concerns economic aspects such as employment opportunities, which are rated more favorably both by the more pronuclear respondents and by those who live near a nuclear power station. The remaining respondents were relatively neutral in their perception of the economic benefits of a local nuclear power station. This group also found these aspects less relevant to the issue of building a nuclear power station. These findings support public opinion research and show that attitudes toward building a nuclear power station in the locality are more negative than are attitudes toward nuclear energy in general (e.g., Nealey et al., 1983; Van der Pligt, 1985).

One cautionary note is in order. The obtained negative attitudes are not necessarily specific to nuclear power. Our own findings (Van der Pligt et al., forthcoming-a) indicate that hypothetical prospects for other large-scale local developments—most notably the idea of a chemical factory—also elicited considerable opposition. The prospect of a wind-powered station, however, seemed relatively acceptable.

The second difference between our findings and other studies on this issue concerns the impact of what Otway and associates (1978) called "psychological risk" (anxiety, stress,

etc.). The considerable predictive power of the "peace of mind" and "transportation of nuclear waste" items in relation to overall attitude, suggests that differential perception of these potential costs plays a crucial role in attitude formation. One reason for this could be that the present samples were or would be very close (all within a 5-mile radius) to a nuclear power station. Other studies (e.g., Woo and Castore, 1980) used much wider areas around the proposed nuclear power station. Present findings show the importance of these psychological risks and indicate that people—irrespective of experience with living near a nuclear power station—see the building and operating of a new nuclear power station as having a negative influence on their peace of mind. This finding is in accordance with various studies on the impact of the nuclear accident of Three Mile Island (e.g., Baum et al., 1982; Baum et al., 1983). Although the context of the present study is less extreme than at Three Mile Island, both contexts contain elements of uncertainty concerning the effects of a relatively unknown technology. Similarly, all subject groups were concerned about the consequences of the transportation of nuclear waste. The latter finding is in accordance with a number of surveys showing that a large majority (about 80%) of the public now says that it is concerned with waste management issues (Kasperson et al., 1980). The present research serves as a reminder of the importance of anxiety factors in people's acceptance of nuclear energy. Too often the debate about nuclear energy has tended to focus on the environmental and public health risks versus the anticipated economic benefits. For those living near a nuclear power plant, psychological factors such as anxiety and stress could well be more important than risks—as assessed by experts—and potential economic benefits.

NOTE

1. Comparison of the subjects approached before the final announcement with those approached after the announcement revealed a slightly less unfavorable attitude for the latter group.

REFERENCES

BAUM, A., R. FLEMING, and J.E. SINGER (1982) "Stress at Three Mile Island: applying psychological impact analysis," in L. Bickman (ed.) Applied Social Psychology Annual, Vol. 3. Beverly Hills, CA: Sage.

BAUM, A., R.J. GATCHEL, and M.A. SCHAEFFER (1983) "Emotional, behavioral, and physiological effects of chronic stress at Three Mile Island." J. of Consulting and Clinical Psychology 51: 565-572.

EISER, J. R. and J. VAN DER PLIGT (1979) "Beliefs and values in the nuclear debate." J. of Applied Social Psychology 9: 524-536.

ESTER, P., C. MINDELL, J. VAN DER LINDEN, and J. VAN DER PLIGT (1983) "The influence of living near a nuclear power plant on beliefs about nuclear energy." Zeitschrift für Umweltpolitik (J. of Environmental Policy) 6: 349-362.

FESTINGER, L. (1957) A Theory of Cognitive Dissonance. New York: Harper & Row.

FISHBEIN, M. (1963) "An investigation of the relationship between beliefs about an object and the attitude towards that object." Human Relations 16: 233-240.

———and I. AZJEN (1975) Belief, Attitudes, Intention, and Behavior: An Introduction to Theory and Research. Reading, MA: Addison-Wesley.

HUGHES, J.B., J.W. LOUNSBURY, E. SUNDSTROM, and T.J. MATTINGLY (1983) "Changing expectations: a longitudinal study of community attitudes toward a nuclear power plant." Amer. J. of Community Psychology 11: 655-672.

HUGHEY, J.B., E. SUNDSTROM, and J.W. LOUNSBURY (forthcoming) "Attitudes toward nuclear power: a longitudinal analysis of expectancy-value models." Basic and Applied Social Psychology.

KASPERSON, R.E., G. BERK, D. PIJAWKA, A.B. SHARAF, and J. WOOD (1980) "Public opposition to nuclear energy: retrospect and prospect." Sci., Technology, and Human Values 5: 11-23.

MELBER, B.D., S.M. NEALEY, J. HAMMERSLA, and W.L. RANKIN (1977) Nuclear Power and the Public: Analysis of Collected Survey Research. Seattle, WA: Battelle, Human Affairs Research Centers.

NEALEY, S.M., B.D. MELBER, and W.L. RANKIN (1983) Public Opinion and Nuclear Energy. Lexington, MA: Lexington Books.

OTWAY, H.J. and M. FISHBEIN (1976) The Determinants of Attitude Formation: An Application to Nuclear Power. Research Memorandum RM-76-80. Laxenburg, Austria: International Institute for Applied Systems Analysis.

OTWAY, H.J., D. MAUER, and K. THOMAS (1978) "Nuclear power: the question of public acceptance." Futures 10: 109-118.

RANKIN, W.L., B.D. MELBER, T.D. OVERCAST, and S.M. NEALEY (1981) Nuclear Power and the Public: An Update of Collected Survey Research on Nuclear Power. Seattle, WA: Battelle, Human Affairs Research Centers.

SUNDSTROM, E., J.W. LOUNSBURY, R.C. DeVAULT, and E. PEELLE (1981) "Acceptance of a nuclear power plant: applications of the expectancy-value model," in A. Baum and J.E. Singer (eds.) Advances in Environmental Psychology, Vol. 3. Hillsdale, NJ: Lawrence Erlbaum.

SUNDSTROM, E., J.W. LOUNSBURY, C.R. SCHULLER, J.R. FOWLER, and T.J. MATTINGLY, Jr. (1977) "Community attitudes toward a proposed nuclear

power generating facility as a function of expected outcomes." J. of Community Psychology 5: 199-208.

THOMAS, K. and A. BAILLIE (1982) "Public attitudes to the risks, costs, and benefits of nuclear power." Presented at a joint SERC/SSRC Seminar on Research into Nuclear Power Development Policies, Britain (June).

VAN DER PLIGT, J. (1985) "Public attitudes to nuclear energy: salience and anxiety." J. of Environmental Psychology 5: 87-97.

——— and J. R. EISER (1984) "Dimensional salience, judgment, and attitudes," pp. 161-177 in J. R. Eiser (ed.) Attitudinal Judgment. New York: Springer-Verlag.

VAN DER PLIGT, J., J. R. EISER, and R. SPEARS (forthcoming-a) "Construction of a nuclear power station in one's locality: attitudes and salience." Basic and Applied Social Psychology.

———(forthcoming-b) "Nuclear waste: facts, fears, and attitudes." J. of Applied Social Psychology.

VAN DER PLIGT, J., J. VAN DER LINDEN, and P. ESTER (1982) "Attitudes to nuclear energy: beliefs, values, and false consensus." J. of Environmental Psychology 2: 221-231.

WARREN, D.S. (1981) Local Attitudes to the Proposed Sizewell 'B' Nuclear Reactor. Report RE19. Food and Energy Research Centre (October).

WOO, T.O. and C.H. CASTORE (1980) "Expectancy-value and selective exposure as determinants of attitudes toward a nuclear power plant." J. of Applied Social Psychology 10: 224-234.