

Beliefs About Social Control and Participation in a Load Management Program

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Successful implementation of many energy conservation programs can involve individuals or agencies. Increasingly, as new conservation or efficiency programs are developed, a greater degree of direct control over energy supply is incorporated into the program. Often this control is considerably greater than individuals have experienced in the past. Gas rationing, minimum building energy performance standards and automatic load management are examples of such programs. The growing influence and control over energy choices by external authorities has raised the issue of social control to an important level in the energy debate.

Social control occurs when the behavior of individuals (or other social units) is sanctioned so as to promote compliance with socially negotiated norms—the rules of conduct which govern behavior in social settings. Norms may be relatively stable or they may be emergent properties of situations for which existing rules of conduct do not apply or appear inappropriate (Turner and Killian, 1972).

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Energy consumption patterns represent a good example of the latter, in that new standards of conduct are actively being negotiated in the public arena. Prior to the 1970's, energy consumption was oriented toward growth and individuals were rewarded for using larger quantities (or at least there was little concern if one did). In contrast, the past few years have seen a shift toward emphasis on conservation of energy, primarily as an adaptive response to changing availability of energy resources and the definition of the present energy situation as a "crisis" or "problem."

Although many individuals have long engaged in behaviors which conserve energy (e.g., turning off lights when not in use), only recently has there been a growing consensus that these are necessary as well as desirable behaviors. As a result of the changing definition of these behaviors, they are now expected for most people in a wide variety of situations (i.e., they are emerging as norms). Efforts to promote compliance with these new normative expectations regarding energy use have taken many forms. Pressure from friends and family, incentives from benefiting industries, and new government policies and programs have all worked in different situations to encourage individual energy conservation.

At the same time, however, many people do not accept the predominant view that energy problems are serious (Farhar et. al., 1979), and thus they are unwilling to accept the need for new norms and the legitimacy of attempts at social control. The problem is exacerbated by the fact that conservation is often perceived as imposing restrictions on individual autonomy and flexibility. Conservation is often associated with a more frugal lifestyle which entails giving up a variety of activities. This image of energy conservation has led many to reject conservation programs simply because they involve too much control over lifestyles, particularly with regard to more restrictive programs such as gas rationing. Apparently, only under special circumstances are some individuals willing to sacrifice personal autonomy and accept more restrictive norms and the social control policies which accompany them.

Unfortunately, the issue of social control has been neglected in research on social reaction to energy conservation. The purpose of this article is to examine the extent to which beliefs about control by external authorities are important in determining attitudes toward and willingness to engage in one type of energy conservation program—electrical load management via direct load controls. Two questions organize the discussion. First, do individuals generally reject a program they believe will result in “too much control” of their lifestyle? Second, under what conditions will individuals agree to engage in a conservation program even though they believe the program will result in too much control by others? Before discussing our study of load management in greater detail, a brief analysis of the existing energy conservation literature is provided.

Beliefs about Control and Energy Conservation

Although the issue of direct control is an important one in much of the debate over energy conservation, little direct empirical evidence is available linking beliefs about control and favorability toward conservation programs. A clear preference for voluntary action and positive incentives (as opposed to direct control or negative sanctions) has been shown to exist (Milstein, 1978; Opinion Research Corporation, 1976;

Delhoff, 1977; Zuiches, 1976). Studies which have focused on load management in particular also report a strong preference for voluntary measures, including voluntary reductions in energy use (Elrick and Lavidge, 1977). These studies provide suggestive evidence that conservation programs which entail greater direct external control of consumption are less favorably viewed by most Americans. However, beliefs about control have not been directly measured in these studies, so it is unclear whether preference for voluntary programs reflects concern about control.

Turning to the second issue, the available data suggest that individuals may accept restrictive programs under some conditions. One set of conditions concerns the perception of a crisis. When individuals perceive that a crisis exists, they are more willing to give up personal autonomy to maintain collective functioning. Rather drastic social control measures may be instituted in times of crisis with little negative reaction from the population being controlled. Thus, under conditions of crisis individuals will accept restrictive programs despite their beliefs that such programs result in too much control by external authorities.

Indirect evidence supporting this line of reasoning is reported in a number of energy opinion studies. Brunner and Bennett (1977) report that individuals who were “concerned” about energy problems were less likely to oppose gas rationing and higher gas prices than individuals who were “unconcerned.” A Gallup poll (Gallup, 1977) found that individuals who believed the energy crisis was serious were more likely to favor gas rationing (45 percent) than individuals who did not believe the crisis was serious (22 percent). In a 1976 survey of residents in Lansing, Michigan, 46 percent of the respondents who believed the energy crisis was serious indicated that gas rationing was either acceptable or very acceptable, while only 14 percent of these who believed the crisis was not serious felt that rationing would be acceptable or very acceptable (Zuiches, 1976).

A second type of condition which might lead to acceptance of restrictive programs can be referred to as “rational exchange.” Generally, individuals will give up personal autonomy (in spite of their beliefs about control) if they are adequately compensated for

the loss. Research indicates that individuals are more likely to carpool, buy smaller cars, shift electrical use to off-peak hours, install energy saving equipment like insulation, and employ other conservation measures when significant positive or negative incentives are attached (Warkov, 1978). However, the attractiveness of economic measures varies in important ways. First, studies indicate that individuals prefer programs which give positive sanctions for conserving rather than programs which involve negative sanctions for not conserving. Opinion studies, for example, show that individuals are more favorable toward tax incentives for installing insulation than they are toward raising electricity rates. In contrast, opinion surveys also indicate that many people believe increases in energy prices are more effective than the provision of positive incentives. Thus, individuals prefer positive incentives but believe that costs associated with rising prices would be more effective (Farhar et. al., 1979). In either case, there is likely to be increasing conservation activity as the individual perceives increasing economic benefit, and such benefits may counterbalance concerns about the loss of autonomy.

A third possible condition for the acceptance of restrictive programs is social pressure. A number of studies indicate that changing beliefs about the energy crisis or attitudes toward conservation do not always lead to conservation behavior (Olsen, 1978). Instead, actual behavior may be stimulated by observing the conservation behaviors of others (Darley and Beniger, 1981). The activities of neighbors, relatives, coworkers and other associates may bring social pressure to bear on the individual to conform to new behavioral standards. Warren (1974: 88-89), for example, concludes: "If people have great distrust in the reality of the energy crisis, but many individuals around them are taking action regarding conservation, then . . . their behavior may move more in line with these publicly defined norms than with their own attitudes." The work of Warren and others (Pallack and Cummings, 1976) suggests the importance of the local environment and social pressure for a conservation behavior if it is to be widely accepted.

A fourth condition for acceptance of restrictive programs consists of equity concerns. Given a choice

between indirect control through pricing and direct control of energy uses, it is possible that many individuals would favor direct control. Olsen (1978), for example, notes that pricing strategies are inherently inequitable because they impose greater hardships on low income people. In this vein, a Harris poll (Harris, 1974) found that three-fourths of a national sample felt it was "wrong" to control consumption by raising energy prices, citing inequitable distribution of the negative impacts as a reason. As noted earlier, most individuals prefer voluntary programs, but where restrictive programs must be implemented the limited evidence suggests that individuals often prefer direct control to indirect control through pricing. Thus, individuals may accept a loss of personal autonomy to maintain equitable distribution of resources, particularly where they will suffer in an inequitable exchange (Leik and Kolman, 1978).

Our review points to a number of possible conditions under which individuals might accept restrictive programs despite the belief that such programs result in too much control by others and are generally undesirable. The research reviewed above has not examined this issue directly and is only suggestive of the link between perceptions of control and willingness to participate in such programs. The analysis presented below is intended to explore these linkages in greater detail.

The Study

Electrical load management by utilities is one type of energy program which is receiving increased attention, particularly as applied to the residential sector. Load Management (LM) generally refers to programs which alter the shape of an electrical load curve for a given utility over some period of time. It is generally recognized that electricity use is not constant during the day, week or year. For example, electricity use in households generally peaks in the morning and evening hours during the day, and during the winter and summer months during the year. Electrical utilities buy or generate electricity to meet peak demand during a given period. In fact, most utilities are required by regulations to have enough power to avoid blackouts and brownouts. However, generating sufficient

electricity for peak use periods means that a great deal of electricity is wasted during off-peak periods. Further, the higher the peaks, the more generating capacity is needed to meet peak demand.

Load management programs are designed to modify the consumption of electricity so that the peaks and valleys are less disparate. There are two basic types of LM programs—direct and indirect load controls. Direct load control programs are those in which a mechanical or electrical device is attached to the house or key appliances in the house and the device turns the electricity off during specified periods. Appliances are “turned off” for a few minutes each hour during these periods, thus “freeing up” as much as 10 percent of the system’s capacity, to be distributed to other users during the period. Indirect load control programs, on the other hand, are designed to influence consumption patterns in a passive manner. The most familiar example of this type of program is off-peak or time-of-day pricing in which individuals are encouraged to use electricity during off-peak periods by receiving special rates during these periods.

The present study examines public reactions to direct load control as a method of managing household energy use. Direct load control is of particular interest because it represents an extreme form of social control in that the utility can directly control household consumption patterns. Although intervention by the utility is usually implemented in such a way that it minimizes inconvenience to the customer, the nature of the control remains unchanged. For many individuals, this type of control appears extreme, raising “Orwellian” questions about “Big Brother” watching. Thus, examining public reaction to direct load control should provide a useful context for studying the influence of beliefs about control.

Data for this study were collected via face to face interviews with electric customers in Athens and Bristol, Tennessee. Interviews were conducted between December of 1980 and March of 1981. A systematic probability sample of 949 customers in Athens and 655 customers in Bristol were selected for interviews. Interviewers were instructed to contact each household three different times in their efforts to complete the interview. Usable interviews were received from 680 respondents in the Athens sample and 445 re-

spondents in Bristol. These represent response rates of 72.2 and 68.1 percent respectively. Comparisons of the sample and population data for the two cities indicate that the sample data are reasonably representative of the relevant populations (see Van Liere et. al., 1981).

The interview schedule included a wide variety of questions designed to elicit beliefs, attitudes and intentions with regard to load management and related issues. For this analysis we focus on beliefs about control, attitudes and intentions toward direct load control, and measures of the four conditions for accepting load management when control is believed to be excessive. Items used to measure each variable are discussed with the results.

Results

The first results concern the extent to which respondents believe that too much control by the utility is a likely consequence of participation in a direct load control program. One portion of the instrument asked respondents to indicate the extent to which they felt a series of potential outcomes were likely to be associated with their participation in a load management project. For example, they were asked to judge on a 5-point scale, ranging from extremely likely to extremely unlikely, the probability that participation would be associated with running out of hot water, inconvenience during installation of equipment, and disruption of daily routines. Also included in this list of positive and negative outcomes was the statement “too much control by the utility,” and responses to this item serve as the primary measure of beliefs about control (referred to as the perceived likelihood of control in the following discussion).

As we anticipated, many individuals believe that direct control of electricity use may result in too much control by the utility. In the Athens sample, 19.4 percent of the respondents believed that too much control was “extremely likely” and another 28.7 percent believed that too much control was “likely”. In Bristol, the corresponding percentages are 21.3 and 33.7 respectively. Thus, in both communities approximately one-half of the respondents believed that too much control was likely to occur. In contrast, very

few respondents believed that too much control was “extremely unlikely” (1.2 percent in Athens and 1.8 percent in Bristol) and less than twenty percent believed it was “unlikely” (14.4 and 19.7 respectively). Finally, there were a significant number of respondents who were unsure of the likelihood of too much control occurring and they gave a “perhaps” response (23.1 percent of the Athens sample and 22.5 percent of the Bristol sample).

These results substantiate the expectation that many individuals will be concerned about control when they are faced with direct manipulation of electricity by the utility. However, concern about control is not spontaneous. In another question, respondents were asked in an open-ended fashion to indicate what advantages and disadvantages they felt might be associated with a direct load control program. In this item, only 6.0 percent of the Athens sample and 5.2 percent of the Bristol sample mentioned loss of freedom/control by the utility as a major disadvantage. In addition, respondents were asked to indicate why they would or would not participate in a load management project. Of the individuals who said they were unlikely to participate, 12.0 percent mentioned control by the utility as a reason in Athens and 9.2 percent gave a similar reason in Bristol.

Table 1 presents the correlations between perceived likelihood of control and perceived effectiveness of, favorability toward, and intentions to engage in a direct control project. First, respondents were asked to indicate on a 4-point scale how effective (not effective to very effective) they thought load management would be as a way of providing energy, and how favorable (strongly favor to strongly oppose) they felt toward it. The first two rows of Table 1 present the correlations between these effectiveness and favorability ratings and their perceptions about the likelihood that load management would lead to “too much control by the utility.” The results indicate that there are small but significant relationships between perceived likelihood of control and favorability. The weakest correlations occur for the perceived effectiveness variables (Pearson’s r of $-.07$ and $-.15$ for Athens and Bristol respectively). The negative sign indicates that perceiving higher probabilities of control are associated with lower effectiveness ratings.

Thus, individuals who believe direct load control will lead to too much control are likely to give it a lower effectiveness rating.

The correlations for favorability are slightly stronger and, as expected, show that respondents who believe load management will lead to too much control are less favorable toward direct load control programs. These results suggest that beliefs about control have some influence on attitudes toward load management, although the correlations are not very strong.

The third row of Table 1 presents the correlations between perceived likelihood of control and intentions to participate in a direct load control project. Intentions to participate were assessed by asking individuals: “If given the opportunity, how likely is it that you would participate in a load management demonstration?” Responses were on a 5-point scale ranging from extremely likely to extremely unlikely. In response to the question, 58.8 percent of the Athens respondents and 51.5 percent of the Bristol respondents indicated that they were either “extremely” or “somewhat” likely to participate. Thus, over half of both samples were willing to participate. The correlations presented in the bottom row of Table 1 show that perceived likelihood of control is moderately related to intentions to participate (Pearson’s r of $-.33$ and $-.26$ in Athens and Bristol respectively). Those respondents who believe that too much control

Table 1—Bivariate Correlations between Perceived Likelihood of Control and Perceived Effectiveness of, Favorability Toward, and Intention to Participate in a Direct Load Control Project

	Athens Sample	Bristol Sample
Perceived effectiveness of direct load control	-.07	-.15*
Favorability toward direct load control	-.17*	-.21*
Intentions to participate in a direct load control project	-.33*	-.26*

* $p < .001$.

by the utility is likely are less willing to participate in a load management project.

Based on the above analysis, the results suggest that the issue of control is relevant to load management as many individuals believe that a direct load control program will result in too much control by the utility. However, the correlations shown in Table 1 indicate that beliefs about control are only slightly to moderately associated with attitudes toward load management and willingness to participate in a load management demonstration project. The relationships are strong enough to conclude that public acceptance of load management is affected by perceptions of control, but other factors must also be balanced with concern about control. This brings us to the second issue of interest—under what conditions will individuals accept programs which they believe infringe on their personal autonomy?

To examine this issue we focus on the respondents in the two samples who perceived that too much control by the utility was either extremely or somewhat likely. Within this group, we examine the differences between individuals who were likely to participate in the direct load control project (i.e., gave an extremely or somewhat likely response to the intention item), and those who were unlikely to participate (i.e., gave an extremely or somewhat unlikely response).

Four sets of conditions which might differentiate these two groups were reviewed above. Briefly, these four sets of conditions are perceptions of the energy crisis, rational exchange, social pressure, and equity concerns. Tables 2 and 3 provide a comparison of items which reflect these four conditions. These tables include only individuals who reported that “too much control by the utility” was either likely or extremely likely. The purpose of the analysis is to identify factors which differentiate willing from unwilling participants among this group.

The first factor shown in Table 2 is perception of the energy crisis. The review of literature suggested that individuals who reject programs which involve direct control may be more likely to accept these programs if they believe that the energy shortage is a serious problem. To the extent that this type of logic explains why some respondents report willingness to engage in load management despite their beliefs about

control, we should find that respondents who intend to participate perceive greater severity in the energy crisis than respondents who do not intend to participate. By observing the difference between these two groups we can examine this hypothesis.

The results in Table 2 only partially confirm this hypothesis. In the Athens sample, there is almost no difference in the percentage of respondents who “strongly agree” that the energy shortage is “presently very serious” or “will be very serious in ten years.” In the Bristol sample there are stronger differences as 22.6 percent of the willing-to-participate group perceived the energy shortage as very serious, while only 11.8 percent of the unwilling-to-participate group strongly agreed that the shortage is very serious. The percentage difference for the beliefs about the energy shortage in ten years are also greater for Bristol (5.9 percent) than for Athens (1.6 percent), but the difference is relatively small in both cases. These results suggest that perception of an energy crisis is not a primary differentiating factor in willingness to participate in the load management program.

The second set of items deal with the concept of rational exchange. Each item shown in Table 2 represents an advantage or positive outcome for which respondents were asked to judge the likelihood of occurrence (on a 5-point scale ranging from extremely likely to extremely unlikely). If a rational exchange is taking place, then we would expect to find that respondents who intend to participate are willing to submit to utility control because they perceive advantages to participating which outweigh the loss of control to the utility. By examining the items in Table 2 we are able to judge the extent to which the willing-to-participate group does in fact believe that the three advantages listed are more likely to occur than the unwilling-to-participate group.

The results indicate that for all three items, in both the Athens and Bristol samples, there are relatively strong percentage differences between the willing and unwilling sub-groups. For example, in the Athens sample 44.6 percent of the respondents who were willing to participate believed that participation was likely to reduce their electric bill while only 22.3 percent of the unwilling-to-participate group reported

the same belief (a percentage difference of 22.3 percent). The largest percentage difference in the Athens sample is found for the item concerning reduction of the electric bill, while the largest percentage difference for the Bristol sample involves beliefs about saving energy. Overall, the results suggest that the willing and unwilling groups do differ significantly in the perception of relative advantages. Thus, a major reason for accepting a program which the individual believes will result in too much control by the external authorities appears to be the perception of relative advantages which counterbalance the loss of autonomy.

The emergence of new norms is an interactive process in which social participants develop new standards for behavior. When individuals are faced with a situation characterized by ambiguity or lack of clear behavioral standards, much greater attention is focused on cues or pressure from significant groups (Turner and Killan, 1972). Lack of information and ambiguity about the object will result in individual attention to cues by significant groups. Thus, in terms of accepting load management, individuals may believe a program will lead to excessive control by others, but will accept the program because they perceive social pressure to participate and are not able or willing to make a judgement on any other basis (e.g., attitudes).

The results shown in Table 2 provide strong support for the contention that social pressure will influence participation despite negative beliefs about control. Individuals were asked to rate the likelihood that each of several reference groups would "think you should participate in a load management project," on a 5-point scale (ranging from extremely likely to extremely unlikely). The results indicate that respondents who reported willingness to participate were much more likely to perceive pressure to participate, particularly from families, friends, and neighbors, than were individuals who reported being unlikely to participate. The percentage differences for these three groups range from 34.3 to 40.8 in Athens and 33.2 to 52.6 in Bristol. These are by far the largest differences shown in Table 2. The only exception to this pattern occurs for "the Utility Board" where the percentage differences are relatively small when com-

pared to the other reference groups (17.2 in the Athens sample and 4.0 in the Bristol sample) though they are in the direction expected. Overall, differences in perceived pressure to participate appear to be the most important factor differentiating the willing and unwilling-to-participate sub-groups among individuals who believe too much control is likely to occur.

The fourth variable which might discriminate the two groups involves equity concerns. Our survey instrument includes only one item which appears to tap this concern. Individuals were asked to agree or disagree with the statement that "Individuals have the right to use as much energy as they want even in times of crisis." We assumed that a strongly disagree response to this question is an indication that individuals believe energy resources should be allocated in some fair manner and thus reflects a concern with equitable distribution of resources. The results show that, contrary to our expectations, respondents who were unwilling to participate were slightly more likely to disagree with this statement than were respondents who were willing to participate. However, the differences are relatively small. These results suggest that equity concerns do not significantly differentiate the two groups, though this observation requires further examination with better measures before a reliable conclusion can be reached.

The results in Table 2 provide an item by item comparison of the willing and unwilling sub-groups among those who believe too much control is likely. It is also useful to examine the relative effects of the various items in differentiating the willing and unwilling sub-groups. To accomplish this, a discriminant function analysis was conducted using the willing and unwilling sub-groups as the dependent variables. The discriminant analysis provides a measure of the relative influence of each item and an assessment of the extent to which these two groups can be differentiated by the set of items.

Table 3 presents the standardized discriminant function coefficients for each item. These coefficients can be interpreted as the relative effect of each variable in differentiating the two groups. In this regard the coefficients are similar to standardized regression coefficients. The patterns of coefficients are somewhat

Table 2—Comparison of Likely- and Unlikely-to-Participate Sub-Groups among Respondents who Believed “Too Much Control by the Utility” is Extremely or Somewhat Likely in Terms of Potential Differentiating Conditions (Percent)

Potential Differentiating Conditions	Athens Sample ^a			Bristol Sample ^b		
	Likely to Participate	Unlikely to Participate	PD ^c	Likely to Participate	Unlikely to Participate	PD ^c
Perception of the Energy Crisis						
The energy shortage is presently very serious (percent strongly agreeing)	22.6	22.2	.4	22.6	11.8	10.8
The energy shortage will be very serious in ten years (percent strongly agreeing)	21.4	19.8	1.6	15.7	11.8	3.9
Rational Exchange						
Participation is likely to reduce my electric bill (percent responding very likely or likely)	44.6	22.3	22.3	53.9	20.0	33.9
Participation is likely to save energy (percent responding very likely or likely)	64.2	44.4	19.8	62.6	25.4	37.2
Participation is likely to reduce dependence on foreign oil (percent responding very likely or likely)	42.2	30.2	12.0	42.6	19.1	23.5
Social Pressure to Participate						
Family thinks you should participate (percent responding very likely or likely)	68.6	27.8	40.8	65.3	12.7	52.6
Your close friends think you should participate (percent responding very likely or likely)	59.8	23.0	36.8	55.7	15.4	40.3
Neighbors think you should participate (percent responding very likely or likely)	54.1	19.8	34.3	48.7	15.5	33.2
The Utility Board thinks you should participate (percent responding very likely or likely)	74.3	57.1	17.2	50.4	46.4	4.0
Equity Concerns						
Individuals have the right to use as much energy as they want even in times of crisis (percent strongly disagreeing)	10.1	11.1	-1.0	6.1	10.0	-3.2

^aThe likely-to-participate group has an N of 159 and the unlikely-to-participate group has an N of 126.

^bThe likely-to-participate group has an N of 115 and the unlikely-to-participate group has an N of 110.

^cPD refers to Percentage Difference.

different for the Athens and Bristol samples. In the Athens sample, the social pressure variables and perceived likelihood of reducing the electric bill have the strongest effects. The coefficients for the remaining variables are near zero. Thus, among individuals who believe too much control is likely, social pressure from key reference groups and the likelihood of reducing the electric bill are most important in the decision to participate.

In the Bristol sample, the relative effects are more evenly distributed over the full set of items. In this sample, none of the groups of variables stand out as most important; rather, items from every group have important relative effects. The strongest coefficient occurs for perceived social pressure from the family (.67), and this effect is much larger than any other

variable. Beyond this, a number of variables have similar relative effects, including perceived seriousness of the present energy problem (.20), likelihood of reducing the electric bill (.26), saving energy (.32), and perceived social pressure from neighbors (.24).

A few of the items in the Bristol sample have negative effects when the effects of all other variables are controlled. For example, the coefficient for the perceived seriousness of the energy crisis in ten years has a coefficient of -.23. This means that the more serious the respondent believed the crisis would be in ten years, the less willing they were to participate in the direct load control project. A similar negative effect was found for social pressure from friends (-.14), meaning that the greater pressure they felt from

Table 3—Standardized Discriminant Function Coefficients for a Function Differentiating the Likely- and Unlikely-to-Participate Sub-Groups among Respondents who Believed that “Too Much Control by the Utility” is Extremely or Somewhat Likely

Independent Variables	Athens Sample	Bristol Sample
Perception of the Energy Crisis		
The energy crisis is presently very serious	.04	.20
The energy shortage will be very serious in ten years	.02	-.23
Rational Exchange		
Participation is likely to reduce electric bill	.32	.26
Participation is likely to save energy	.01	.32
Participation is likely to reduce dependence on foreign oil	.09	-.04
Social Pressure to Participate		
Family thinks you should participate	.48	.67
Close friends think you should participate	.23	-.14
Neighbors think you should participate	.28	.24
The utility board thinks you should participate	-.15	.17
Equity Concerns		
Individuals have the right to use as much energy as they want even in times of crisis	-.02	.15
Canonical Correlation	.48	.62

friends, the less willing they were to participate.

Finally, it is important to point out that the discriminant equations for both samples are significant; that is, they do discriminate the willing from the unwilling to participate subgroups ($\chi^2 = 71.58$, $df = 15$, $p < .001$ in Athens and $\chi^2 = 98.71$, $df = 15$, $p < .001$ in Bristol). The canonical correlation for the Athens sample is .48 and it is .61 for the Bristol sample. Thus, the set of variables included in the two functions do provide useful information for identifying key differences between the two sub-groups.

Summary and Conclusions

Changing energy consumption behavior in the direction of greater conservation has become an important national goal, and the idea has received widespread public support. Although many individuals dispute the existence of a "real" energy crisis, frequent attention to shortages, price increases, and energy issues (e.g., the safety of nuclear power and energy/environment trade-offs) by the media and other information channels has reinforced the need for conservation-oriented behavior. Consequently, new expectations regarding how energy should be used by consumers have emerged. Individuals and families now are often "expected" to engage in behaviors which may lead to conservation such as driving less, buying fuel efficient cars, adding insulation to the home, and keeping thermostats at lower settings in the winter.

How to enforce conformity to these new consumption standards has been a key issue in the energy debate. The social control mechanisms built into various conservation programs range from appeals to altruism and economic rationality in voluntary programs to direct control of consumption. Which type of control strategy is most effective in encouraging conservation has been the topic of much research and debate. However, our review of the literature suggests that public beliefs about different types of control have not been widely examined, particularly whether the perception of control is systematically related to acceptance of conservation programs, and

under what conditions programs which involve greater external control of consumption are acceptable.

Our analysis of these two issues with regard to a direct load control program points to a number of conclusions. First, the results indicate that perception of control is systematically related to acceptance of the direct load control program (though the correlations are moderate at best). Individuals who perceived that too much control would result from such programs were less favorable to the program and less likely to participate. Although perception of control was not necessarily the main reason for willingness to participate, it does appear to have entered the decision process of many respondents.

In addition to this general finding, the research shows that there are important differences between respondents who are likely to participate and those who are not, among the group that believes too much control is likely to occur. Individuals who believed that too much control was likely and who were willing to participate differed significantly from the respondents who were unlikely to participate, in that they perceived more relative advantages to participation and felt considerably more social pressure to participate. Especially important was the influence of the family, which was the best discriminating variable in both samples. The strong effects of family pressure probably reflects respondents' sensitivity to the fact that a direct load control program would impact the whole household and not just the individual being interviewed. Social pressure from neighbors also had consistently strong effects in both samples. Finally, the most important relative advantage appears to be beliefs about reducing energy costs which had strong relative effects in both samples. Thus, social pressure and to some extent a rational exchange are the major impetus to gaining positive intentions toward participation in the face of negative beliefs about control. These results support research which has emphasized the importance of social networks (as opposed to information campaigns) in gaining acceptance of new conservation practices (Darley and Beniger, 1981).

Results regarding the discriminating power of beliefs about the energy crisis and equity concerns are less clear cut. In the Athens sample these two sets of variables have relatively little effect, while in the

Bristol sample their effects are somewhat stronger. Further research is required to more adequately sort out the importance of these variables.

The results of this study provide some insight into the processes by which energy conservation programs are accepted by the public. The results must be considered preliminary, however, because of limitations to the study. Most important of these limitations is the fact that we have examined beliefs about control in relation to only a single type of energy conservation program. Energy conservation programs differ in many respects that are relevant to social control and public acceptance. At least three dimensions emerge as important in future considerations of these issues. First, conservation programs differ in the extent to which they incorporate direct control of energy use versus indirect applications of incentives or education to encourage conservation. This dimension is different from direct versus indirect control in that even direct control programs, like the direct load control program examined in this study, can be based on voluntary participation, and indirect controls, such as energy efficiency standards for appliances, may be mandatory. Finally, conservation programs differ in the extent to which they require major changes in the behavior of consumers. Many conservation programs are aimed at improving efficiency in the use of energy so that changes in the consumer's behavior is minimal. In contrast, other programs are designed to save energy by changing individual behavior so that less energy is consumed.

In this context, we have examined only one of six possible combinations of program characteristics: the load management program has a high degree of control, but is voluntary, and implies little behavioral change for participants. A fuller understanding of public acceptance of conservation programs will require comparative studies of existing and proposed measures to determine the relative contributions of these dimensions in explaining program effectiveness. Energy analysts and social scientists should be encouraged to take these steps.

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