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Title: Types of Household Composition That Influence Energy Problem Beliefs and Home Energy Conservation Behaviors According To Resource Constraints Among Western United States' Renters

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The purpose of this study was to further the understanding of two types of renter households' energy problem belief and energy conservation behaviors. The theoretical framework for this study was Niemeyer's (1982) model of energy adjustment. Niemeyer found that resource constraints were the significant factors in the number of existing energy-saving features in the dwelling.

The 1983 Western States regional data from the Western Regional Project W-159: "Consequences of Energy Conservation Policies for Western Region Households," were used for this study. Pearson correlations and analysis of covariance statistical tests provided a method for identifying differences between jointly-headed households' and female-headed households' energy problem belief and home energy conservation behaviors.

Frequency distributions were run on unweighted data in order to describe the respondents by demographic characteristics. The sample consisted mostly of jointly-headed households (64.1%). The mean age of jointly-headed households and female-headed households was 39.8 and 43.3 years respectively. Most jointly-headed households and female-headed households had "some college" education. The median income of jointly-headed households fell within the range from $20,000 to $25,000, compared to female-headed households which was within the $10,000 to $15,000 range. The majority of jointly-headed households (54.1%) had children, while the majority of female-headed households (77.8%) had no children.

The jointly-headed households and female-headed households believed differently about the energy problem in the United States when controlled for age (p=.026), education (p=.003), and income (p=.046). This study also hypothesized that the type of renter household (jointly-headed vs female-headed) might make a difference in home energy conservation behaviors. Testing revealed a significant difference between jointly-headed and female-headed households on the mean number of home energy conservation behaviors reported, when controlled for age (p=.000), number of children (p=.019), and type of household (p=.000)

These findings could contribute to the energy conservation research and programs developed by housing

educators, researchers, and governmental housing planners.

Types of Household Composition That Influence Energy Problem Beliefs and Home Energy Conservation Behaviors According To Resource Constraints Among Western United States' Renters

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CHAPTER 1

INTRODUCTION

Problem Statement

Since the Arab oil embargo of 1973, the costs of energy have risen dramatically. Previous to this time the low cost of energy and its availability did not stimulate people to conserve. The higher costs of energy have been a stimulus for no-cost conservation behaviors and structural modifications for home energy efficiency. Energy conservation has been widely acclaimed as a principal solution to the energy shortage (Morell, 1981; Olsen, 1981). Merfeld (1984) defined energy conservation as "...a reduced consumption of energy compared to a previous level of consumption" (p. 14).

As interests in energy conservation have increased, research in home energy efficiency and conservation behaviors has been performed. Buck (1982) compared Oregon renters' and nonrenters' home energy conservation behaviors. She found that tenure does have an influence on both

energy-related beliefs and home energy conservation behavior. Beck (1984) studied the effect of structural modifications on energy conservation behaviors among homeowners. She found that energy conservation behaviors increased for residents who added energy conserving structural modifications. The most frequently added structural modifications were those which required less capital investment and for which government assistance and/or tax incentives were available. However, Buck (1982) pointed out that renters do not have strong economic incentives to improve the energy efficiency of their dwellings because of the following three reasons: they must obtain permission from the owners, they tend to be more mobile and therefore less likely to find structural changes to be cost effective, and financing for these changes is not as available as it is for homeowners. In Buck's study (1982), significant differences were found between renters' and nonrenters' beliefs about their home energy efficiency. Renters felt their homes needed improvement and were less efficient than similar homes. Nonrenters felt their homes needed little improvement and were more efficient than similar homes.

Renters tend to be in lower income groups. Lower income families tend to live in older and less weatherized housing (U.S. Department of Energy, 1982) and pay, on average, a much higher proportion of their incomes for

energy than do middle class families (Michigan League for Human Services, 1979; U.S. Department of Energy, 1980). Even though renters have been found to have relatively more disadvantages in terms of home energy efficiency and economic incentives, few studies have centered on the energy conservation behaviors of renters.

Renters are a large segment of the American population. The increasing absolute number of renters in the population might be attributed to such factors as childbearing outside of marriage; the dissolution of nuclear families through separation, divorce, and widowhood; or the desire and ability of women/men to establish and maintain independent living. In the Western United States, renters occupy 38.6 percent of all housing units, 87 percent of these being in urban areas (U.S. Bureau of the Census, 1977). Renters more often live in urban areas, in smaller and older dwellings than nonrenters, and for fewer numbers of years (Buck, 1982). The median annual income of Western United States' renters was $9,000 and for owners was $17,800 (U.S. Bureau of the Census, 1977). Renters spend 26 percent of their income on housing while owners spend 20 percent.

One of the most outstanding demographic phenomena in recent years has been the growth of the percentage of families headed by females. Although many jointly-headed households (households in which both husband and wife are present) are renters, female-headed households are more

likely to rent than are jointly-headed households (Hanna and Lindamood, 1979). Families headed by females have lower incomes than families headed by males (U.S Bureau of the Census, 1979). Female household heads, on average, have lower educational levels than do male household heads and are less likely to be members of the work force (Burgess, 1980; U.S. Bureau of Census, 1973). Morris and Winter (1982) studied the differences and similarities in a subset of norms, preferences, and actual housing conditions between jointly-headed households (households in which both husband and wife are present) and female-headed households. They found that there clearly is a difference between female-headed households and jointly-headed households in current housing conditions. Thus, there may be some differences in energy problem beliefs and conservation behaviors due to types of household composition, even if the two types of households are both renters.

Niemeyer (1982) postulated that, if the family's housing fails to meet the family's norms for energy efficiency, a deficit exists. If the energy deficit is salient, dissatisfaction occurs, and a propensity to engage in energy-saving adjustment behavior results. Of the factors that affected the occurrence of energy deficits, Niemeyer found that resource constraints were the key explanation to the number of energy-saving characteristics present in the dwelling, and that satisfaction with the

energy condition of the home was dependent on the presence of those characteristics.

Previous research found that tenure does influence both energy-related beliefs and home energy conservation behavior. Niemeyer (1982) and Olsen (1981) found that there were no consistent differences existed between men's and women's attitudes toward the energy problem, but there seemed to be a difference in energy consumption patterns. When female-headed households' and jointly-headed households' tenure is the same, do the types of household composition make a difference in energy problem belief and home energy conservation behaviors according to the resource constraints?

Purpose

The purpose of this study is to further the understanding of two types of renter households' energy problem belief and energy conservation behaviors.

Further understandings of two types of renter households' energy problem belief and energy conservation behaviors can be useful in the following ways:

1) It would be useful to local and state government policy makers in making decisions about the distribution of low-interest loans, tax credits, and grants to rental housing for the improvement of home energy efficiency.

2) Information about different types of renter households' energy conservation behaviors can aid housing educators and researchers in further investigation of disadvantaged families' wellbeing.

3) As the population of renters, particularly female-headed households, increases and if the energy crisis becomes more serious, knowledge of different types of renter households' energy-related behaviors can provide the basis for the development of effective energy assistance programs and educational programs for disadvantaged families.

Objectives

The objectives of this study are:

1. to determine possible differences between female-headed and jointly-headed renter households' energy problem beliefs

when controlled for age, education, household income, and household size, and

2. to determine possible differences between female-headed and jointly-headed renter households' home energy conservation behaviors when controlled for age, education, household income, and household size.

Null Hypotheses

The specific hypotheses developed to measure the objectives are:

Ho1: Female-headed and jointly-headed renter households do not differ in their mean belief scores about the seriousness of the United States' energy problem when controlled for possible correlated resource constraints.

Ho2: Female-headed and jointly-headed renter households do not differ in the mean number of home energy conservation behaviors when controlled for possible correlated resource constraints.

Definition of Terms

Female-headed household: persons who are widowed, divorced, separated, or never married, maintaining a household with or without children under 18 related by blood, marriage, or adoption .

Household size: number of children under 18 who live in the household.

Home energy conservation behaviors: no-cost individual actions taken in the home to conserve energy which include: 1) close off some rooms, 2) have water heaters set to 120 degrees F or less, 3) in winter, set thermostat at 65 degrees F or lower for heating, 4) in summer, set thermostat at 78 degrees F or higher for cooling, 5) change use of rooms to take advantage of sun-warmed or shaded areas, and 6) open and close window coverings to take advantage of sun and temparature differences.

Jointly-headed household: household in which both husband and wife are present (Morris and Winter, 1982).

Resource constraints: human and non-human factors (age of head, education, sex of head, home ownership, household size, subjective economic constraints, household income, expectations related to energy problem and world tensions, optimism, personal control, felxibility, and responsibility)...that restrict the family's ability to adjust housing for purposes of energy efficiency, to perceive deficits, as well as the energy conditions of the

existing dwelling, and to believe in the energy problem (Niemeyer, 1982).

Types of renter household composition: two types of renter households: female-headed households and jointly-headed households.

CHAPTER 2

REVIEW OF LITERATURE

The major topics discussed in this chapter include renters, types of household composition, resource constraints, belief in the energy problem, no-cost home energy conservation behaviors, and the theoretical model.

Renters

Kaplan (1981) described renters as those members of society least able to pay for increasing energy costs, and least able to do anything about improving their situations. Kaplan (1981) cited three reasons why renters are limited in improving their energy situation. First, United States residential energy policy has been directed at homeowners and not at renters. Therefore, renters have not been able to benefit from residential energy conservation incentive programs. Second, owners' permission must be obtained before changes may be made. Owners are legally protected if permission is not obtained prior to the improvements being made. Third, renters are often mobile and do not find energy-saving improvements to be cost-effective investments.

Rental housing is an important source of shelter for many Americans. About 26 million families,35 percent of all households, depend on rental housing as a source of shelter

(U.S. Comptroller General, 1979). The number of renters has been increasing recently. According to the U.S. Department of Housing and Urban Development's estimate, approximately 10.1 million lower income renters are living in overcrowded or substandard housing or pay excessive (more than 25 percent) portions of their incomes for rent. The Nation's rental housing inventory is relatively old. According to the 1977 Annual Housing Survey, about 41 percent of all renter-occupied housing units are in structures built in 1939 or earlier. Kaplan (1981) said that most renters live crowded into our largest urban areas and are primarily low-income people. Renters, by and large, have lower incomes than homeowners. The annual median income for homebuyers was $21,600 compared to the annual median income for renters of $8,800 (U.S. Comptroller General, 1979).

Given their low incomes, renters are also negatively affected by the rising cost of energy. Lower income families tend to live in older and less weatherized housing (U.S. Department of Energy, 1982) and pay on average a much higher proportion of their income for energy than do middle class families (Michigan League for Human Services, 1979; U.S. Department of Energy, 1980). Buck (1982) found that renters felt their homes needed improvement and were less efficient than similar homes. However, Buck (1982) pointed out that although there appears to be few incentives for renters to improve the energy efficiency of their dwellings,

there are some low cost or no-cost changes which renters can make to help reduce their energy costs as well as reduce overall energy consumption in rented dwellings.

Type of Household Composition

Several recent demographic trends have important implications for the housing needs of contemporary women. Women comprised 51 percent of the U.S. population in 1980. Well over one-half of those age 16 and over were employed outside the home, yet on average they earn about three-fifths of the male's income. The number of families headed by women increased by 78 percent from 1970-78 (U.S. Bureau of the Census, 1978). Researchers often reported female- headed households as persons who are widowed, divorced, separated, or never married, maintaining a family, and residing with one or more children under 18 years old related by blood, marriage, or adoption. Marital breakup is the major cause of single-head status but the numbers of mothers whose children were born outside marriage and single, adoptive parents are increasing.

The housing options open to a female head are dependent on her income level, race or ethnicity, household size, her's and children's ages, geographic location, and relative mobility. According to Hanna and Lindamood (1979), female-headed households are more likely to rent than are jointly-headed households. Income is the primary

determinant of both choice and housing consumption of female-headed households. Most of them have economic scarcity in common. Families headed by females have lower incomes than families headed by males (U.S. Bureau of the Census, 1979). Female household heads, on the average, have lower educational levels than do male household heads (Burgess, 1980).

Given the differences between nontraditional households, female-headed households, and traditional households, jointly-headed households, types of household composition can make differences in energy consumption patterns, energy problem belief, and energy conservation behaviors. While female-headed households spend a significantly higher percentage of their disposable income on energy than male-headed households, the energy expenditures of households headed by males were significantly higher than those of households headed by females (Brazzel and Hunter, 1979). This was due to the fact that over one-half of all low-income households were female-headed (Newman and Day, 1975).

Resource Constraints

The resource constraints include age, education of, household income, and household size.

Age

Johnson-Carroll (1986) found that the age of a consumer had a definite impact on the consumer's attitudes and beliefs toward energy conservation. Eichner and Morris (1984) reported that age was a constraint on energy conservation behavior, as older families were less adaptive and, therefore, less open to new energy conserving behavior.

Johnson-Carroll (1986) also reported that the age of a consumer also had a definite impact on the amount of energy consumed in a household. Marganus and Badenhop (1984) found that families headed by a person of retirement age spent almost twice as much, significantly ($p<.001$) more, of their income on residential energy. According to Brandt and Guthrie (1984), age was a factor in the energy efficiency of the dwelling and the type of adjustments being made. Gottlieb and Matre (1976) found that younger people tended to be more energy conserving, while older people were less so.

Education

Olsen (1981) asserted that the educational level of a consumer was the best single predictor of belief in the seriousness of the energy crisis. Educational level was positively associated with attitudes toward energy conservation (Barnaby and Reizenstein, 1975). However, Heberlein and Warriner (1980) found educational level negatively associated with energy conservation. Cramer et

al. (1983) found the effect of education was such that the more schooling the consumer had, the larger the consumer's dwelling was, and the more likely air conditioning was present in that dwelling, necessitating the use of more electricity. The less-educated, low-income, minority and ethnic groups used the least amount of energy (Cunningham and Lopreato, 1977) and well educated, higher-income, larger families in the middle stage of the life cycle, living in large homes used the most energy (Morris et al., 1978).

The impact of education on energy conservation beliefs and behavior is mixed. Johnson-Carroll (1986) pointed out researchers who reported that educational level was positively related to attitudes toward the energy problem; however, educational level was also positively related to energy consumption, and negatively related to actual energy conservation behavior. She also reported that this was because well-educated consumers tended to have higher incomes and thus more energy-consumptive dwellings, while less-educated consumers tended to have lower incomes, and thus could not afford high energy consumptive behavior.

Household Income

Newman and Day (1975) found that income was the strongest single determinant of energy consumption. They also stated that it was one of the best predictors of willingness to practice energy conservation. As income

rose, so did the amount of energy used in a dwelling (Marganus, 1984). Marganus (1984) found that even when the size of the house was accounted for, high income households paid more for energy. According to Katz and Morgan (1983), low-income groups used less energy but spent proportionately more of their income on energy. Brazzel and Hunter (1979) found that those who spent a great portion of their disposable income on energy were low-income groups, residents of black households, and female-headed households. Dillman, Rosa, and Dillman (1983) found that while the poor cut back in their energy use, it was the wealthy who invested financially in home energy conservation.

Household Size

The number of people in the household was a main determinant of the amount of energy used (Cramer et al., 1983). Morrison et al. (1978) found that large families in the middle-life cycle used more energy than younger or older families. Marganus (1984) found that the size of households was the second best predictor in explaining the amount of money spent on energy. Marganus (1984) found that there were significant ($p<.05$) differences in mean energy expenditures between families with no dependents and those with two and three or more dependents. He also summarized that the larger a family was, the more was spent for residential energy and the larger was the decline in family

well being. Johnson-Carroll (1986) reported that most researchers viewed the number of people in the household as an important determinant in the amount and way energy was used, with an increase in people accounting for greater use.

Belief in the Energy Problem

Many Americans believe that the energy problem is real and serious. Guthrie and Brandt (1983) found that respondents with energy-efficient dwellings significantly ($p<.05$) felt the energy problem not to be serious or to only be somewhat serious. Respondents with energy inefficient dwellings felt the problem was serious or very serious. They pointed out that this could be because consumers with energy inefficient dwellings were more likely to feel the impact of increasing energy prices and, therefore, were more conscious of the United States' energy problem.

The people most likely to be concerned about the seriousness of the energy problem were younger, earned higher incomes (Olsen, 1981) and were more educated than those who were unconcerned about or did not believe in the seriousness of the energy problem (Merfeld, 1984; Olsen, 1981). In Morrison et al.'s (1978) study, wives tended to believe in the energy crisis more than their husbands did. In Merfeld's (1984) study, females were more likely to believe in the energy problem than males. Buck (1982) found that renters and nonrenters both believed that the United

States' energy problem is serious. An awareness and an understanding of the energy problem by consumers is an important factor in energy conservation (Olsen, 1981). However, even when consumers believed in the energy problem and believed energy conservation was a viable and important step to take their behavior did not always follow their attitude (Olsen, 1981).

Home Energy Conservation Behavior

Home energy conservation helps to alleviate the United States' energy problem. Since the Arab oil embargo, Americans have experienced a continual rise in energy prices resulting in an inflationary spiral of higher prices for goods and services and a greater portion of disposable income being spent for energy purposes. Improvement of home energy efficiency may result from making structural energy conserving adjustments. Home energy may also be conserved through behavior modification which results in consumption of less energy.

Dillman et al. (1983) found that as a result of higher energy prices consumers reported making energy-related cutbacks to their life-styles. Beck (1984) also differentiated between structural modifications and behavioral practices in energy conservation. No-cost energy conservation behaviors included opening or closing window coverings, closing off rooms, reducing water heater

temparature, setting the thermostat lower in winter for heating and higher in summer for cooling, and changing use of rooms. Johnson-Carroll (1986) stated that behaviorally, energy curtailment usually involved repeated or continued responses to achieve maximum energy savings. They rarely involved financial expense, but they did not involve a loss of the amenities energy produces.

Buck (1982) reported that home energy conservation adjustments were related to the family's life style, i.e., whether they rented or owned their dwellings. Buck (1982) found that renters and nonrenters did not significantly ($p<.05$) differ in their use of no-cost energy-saving efforts. They did significantly differ, however, in their addition of structural energy-saving changes. Nonrenters added structural energy-saving changes while renters did not. Buck (1982) pointed out that three reasons why renters do not add the structural energy-saving changes are: 1) they must first obtain permission from the owner, 2) they tend to be more mobile and, therefore, less likely to find structural changes to be cost effective, and 3) financing for these changes is not available as it is for homeowners.

Theoretical Model

In this section, Niemeyer's energy adjustment model and the proposed theoretical model are discussed.

Niemeyer's Model of Energy Adjustment

Niemeyer (1982) proposed that if family housing failed to meet energy efficiency norms, dissatisfaction occurred, and when the dissatisfaction became great enough, the propensity to engage in energy saving behavior occurred (Figure 1). Of the factors that affected the occurrence of energy deficits, Niemeyer tested resource constraints (those constraints that restricted the household's ability to engage in adjustment behavior) and predisposition constraints (those that restricted the household's skill and motivation to engage in adjustment behavior).

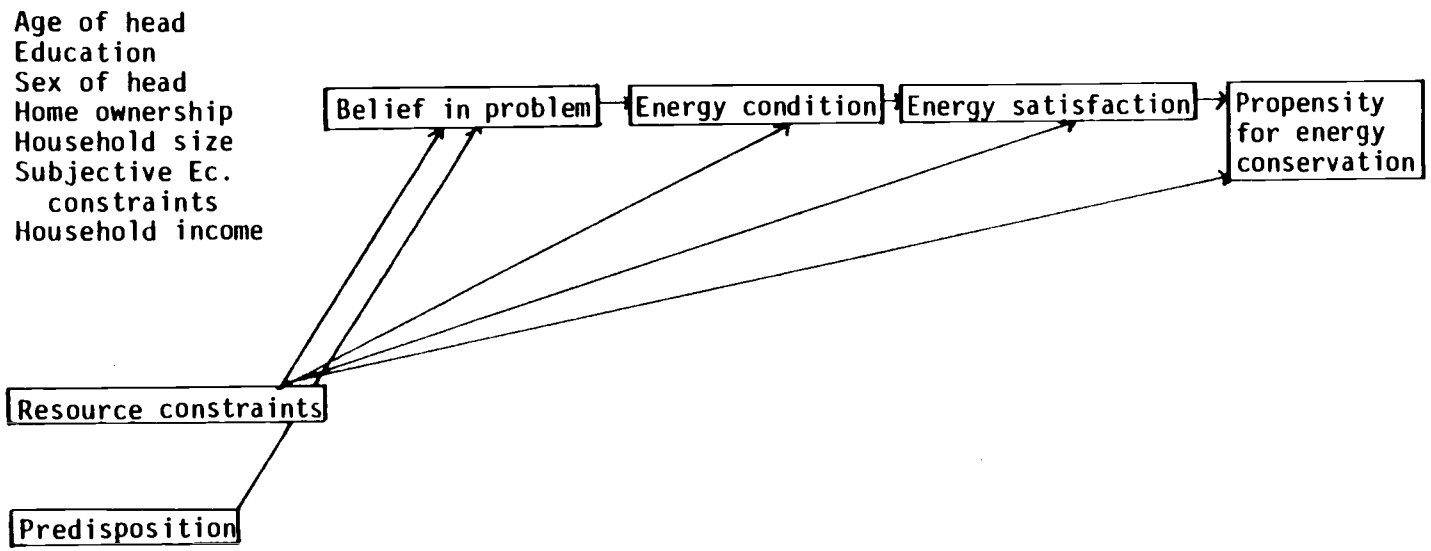
She found that resource constraints were the key factors in explaining the energy conditions, number of existing energy-saving features, in the dwelling (Figure 2). Energy satisfaction, satisfaction with the energy characteristics of the dwelling, was found to be mainly determined by the presence of the energy conditions. However, with the presence of resource constraints the energy satisfaction level was reduced below the level expected based on the energy conditions alone. The most important factor in the propensity to move to save energy was dissatisfaction with energy conditions. The propensity

to move was influenced equally by resource limitations and attitudinal predispositions.

Resource constraints as a group were the key explanation to the propensity to alter the dwelling. Attitudinal constraints played almost no role in propensity to alter the dwelling. Dissatisfaction with the energy conditions of the dwelling was a significant determinant of the propensity for energy conservation, but this relationship was weaker than the relationship between resource constraints and the propensity to save energy. Niemeyer concluded that programs that removed the effect of resource constraints on energy saving behavior should be adopted. Programs that had the aim of changing predispositions should not be suggested.

In summary, Niemeyer (1982) tested a model of energy adjustment. She looked at resource constraints and predisposition constraints, and their relationships with belief in the energy problem, energy conditions of a home, satisfaction with those energy conditions, and the propensity for energy conservation. Niemeyer concluded that programs that remove the effects of resource constraint to energy saving behavior should be recommended.

Figure 1. Niemeyer's model of energy adjustment (1982)



Expectations related to energy problem and world tensions
Optimism
Personal control -- locus of control: internal vs external locus of control
Flexibility
Responsibility

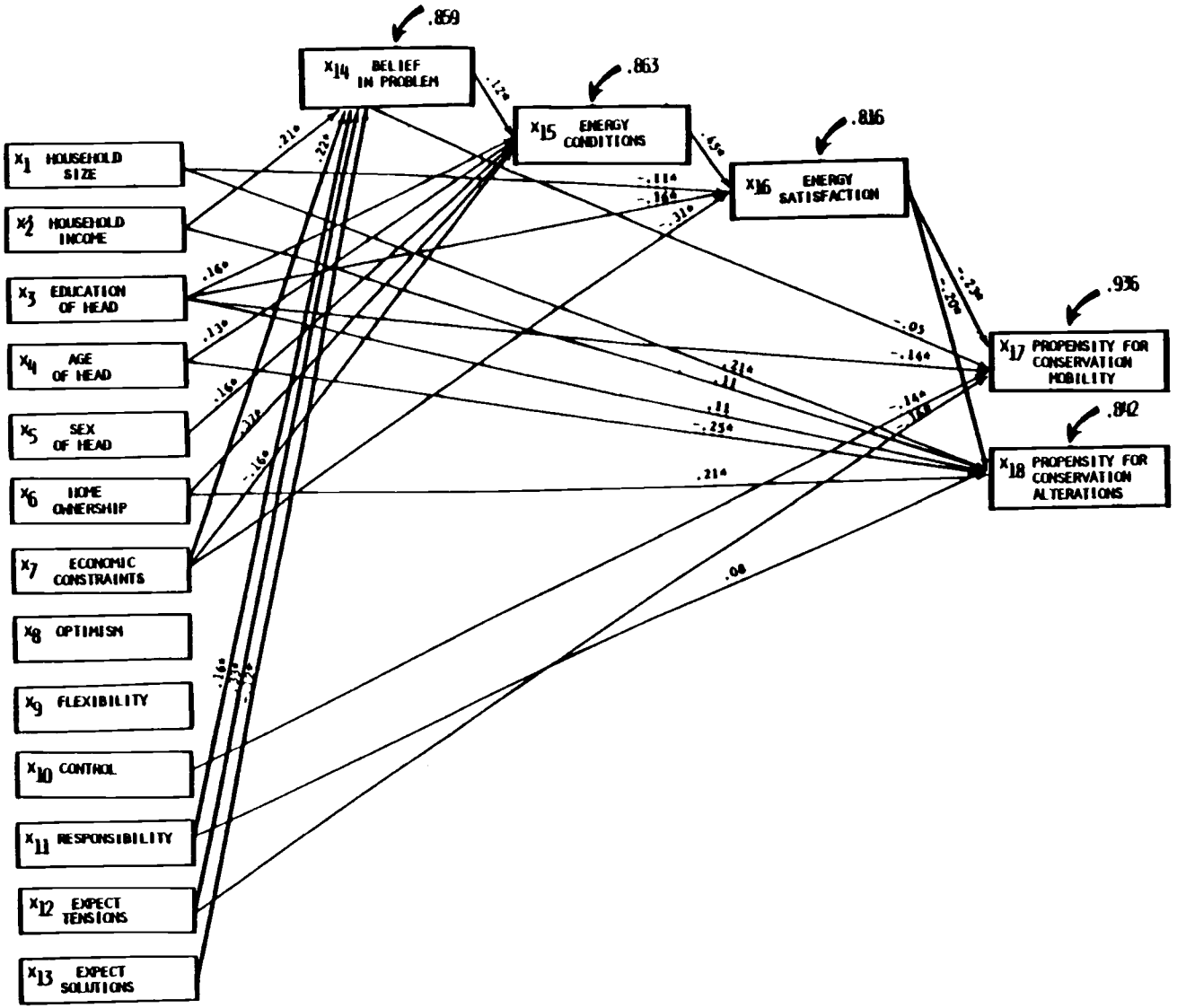
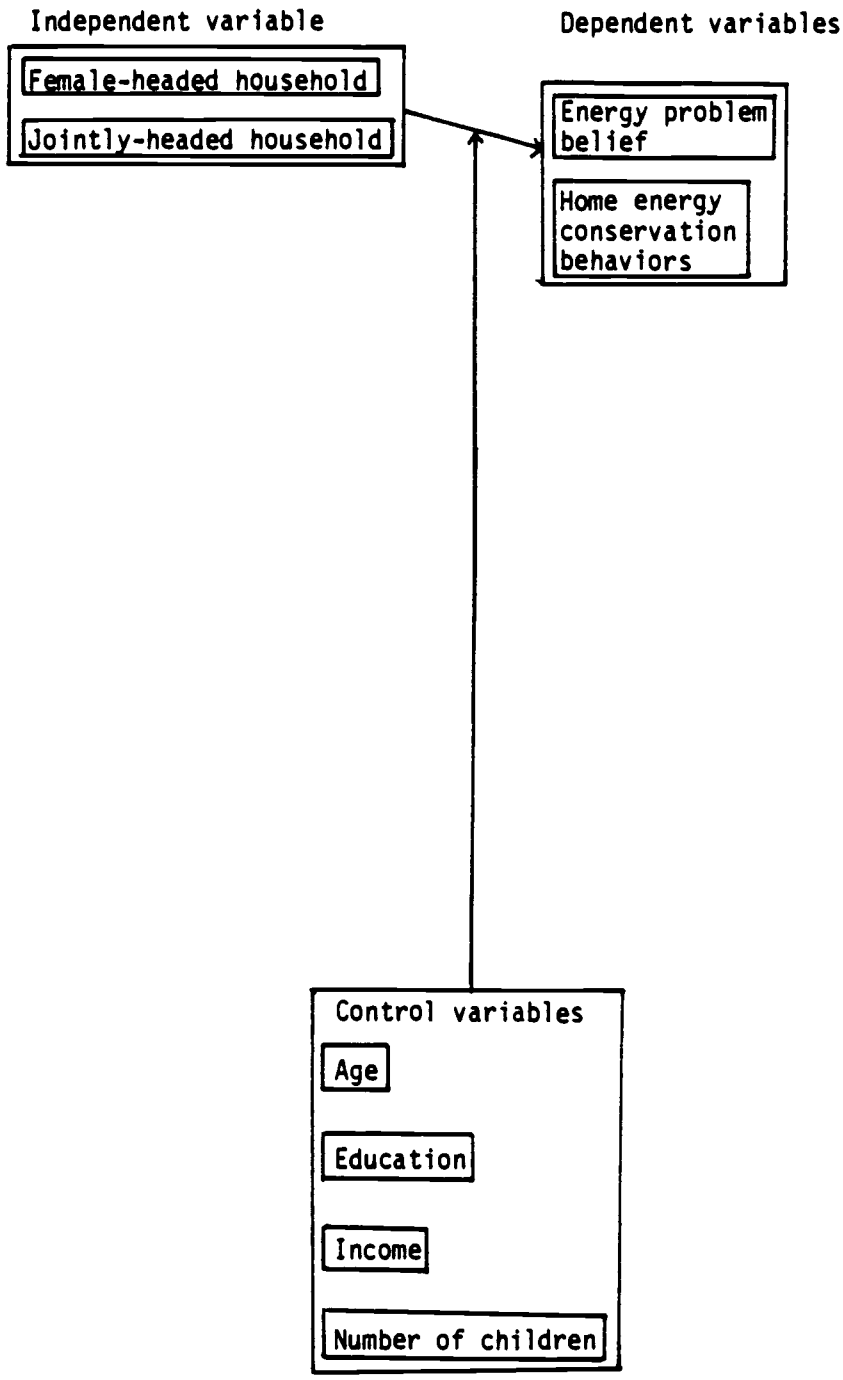


Figure 2. Niemeyer's tested model

The Proposed Theoretical Model

Based on Niemeyer's (1982) tested model of energy adjustment, proposed model (Figure 3) depicts possible differences between two types of renter households' energy problem belief and home energy conservation behaviors according to resource constraints. The resource constraints are confined to four different variables: age, education, household income, and number of children. These control variables may be working alone or together with the independent variable to create differences between female-headed and jointly-headed households with regard to the dependent variables.

Figure 3. Proposed theoretical model



CHAPTER 3

METHODOLOGY

Two major topics discussed in this chapter include the W-159 data base and the statistical analysis. A description of the questionnaire, data collection, and sample are included in the discussion of the W-159 data base.

W-159 Data Base

The data for this study were taken from a data base, "Consequences of Energy Conservation Policies for Western Region Households," obtained by the Western Regional Agricultural Experiment Station Technical Committee (W-159). Data from the 1983 Western states sample were used for analysis in this study. This was the second phase of a study that included data collection in 1981 and 1983.

Description of Questionnaire

Based on previous research, the regional research committee developed the questionnaire in 1981. Great care was taken to obtain face, content and construct validity in the 1981 questionnaire (Tripple, 1982). It was not considered necessary to pilot-test the 1983 questionnaire due to the fact that only minor changes had been made to the 1981 questionnaire. These changes were made in order to

make questions clearer to respondents and to assist in the coding of the data for analysis.

For the present study, certain questions were selected from the 1983 questionnaire. These questions dealt with tenure of the dwelling, age and education of respondent, household income, number of children, belief in the energy problem, and the actual energy conservation behaviors performed.

Data Collection

Dillman's (1978) Total Design Method (TDM) was the procedure used for the data collection. Its two guiding principles are to personalize the letter of introduction that accompanies the questionnaire and to follow-up with nonrespondents. An initial questionnaire was sent on February 15, 1983 with three follow-up steps that continued through April, 1983. Provision was not made for assessing the reliability of the W-159 responses. However, the researchers were aware that over time respondents attitudes and beliefs could be influenced by external factors. Therefore, all participating states mailed out the common questionnaire on the same date, February 15, 1983, and followed a regionally-set follow-up procedure and time schedule.

The 1983 sample consisted of two parts. In 1981, the sample was a randomly selected, 50 percent rural/50

percent urban sample within ten Western States and Pennsylvania. Participants in the 1981 data base were included in 1983 along with a new sample. The 1983 new sample was a randomly selected, 50 percent rural/50 percent urban sample, within each of eight Western States: Arizona, Colorado, Idaho, Nevada, Oregon, Utah, Washington, Wyoming, and Pennsylvania. Telephone directories served as the sampling frame in the Western States. Unweighted data were used for the descriptive statistics. Weighted data were used for null hypotheses testing. These weighted data represent the true rural/urban proportions within each state for and each state's population within the eight Western States.

Statistical Analysis

The statistical analysis for this study was completed at the Milne Computer Center, Oregon State University. The sample for this analysis includes only renters as indicated in question 18 on the 1983 questionnaire in the Western United States. The statistical analyses follow. The control and dependent variables which were categorical were indexed to be continuous variables. These included age, number of children, and number of conservation behaviors. Pearson rank order correlations between control variables and dependent variables were completed in order to determine the strength of the

relationship between each pair of variables (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975). Control variables which were not correlated with a dependent variable were dropped out in the analysis of covariance of that dependent variable. The reason to use analysis of covariance is that metric variables are used in conjunction with nonmetric factors. The term covariate is used to designate a metric variable and the term factor is used to designate a nonmetric categorical independent variable. Thus, two univariate analyses of covariance, each with one dependent variable, were completed. MCA (Multiple Classification Analysis) tables also were completed.

Description of Variables

Type of renter household composition, female-headed and jointly-headed households, was the independent variable. The four control variables were the resource constraints, which included age and education of respondent, household income, and number of children. The two dependent variables were belief in the energy problem and home energy conservation behaviors.

Type of renter household composition. Type of renter households for this study was classified by female-headed households and jointly-headed households. Marital status and sex of respondent were used to determine type of households (Question 26 and 27, Appendix A).

Age of respondent. Age of respondent measured the respondent's age in years (Question 27, Appendix A). Exact ages of respondents were indexed as the following:

1=25 or less,

2=25-34,

3=35-44,

4=45-54,

5=55-64,

6=65-74, and

7=75 and over.

Education of respondent. Education of respondent measured level of education from "0-8 grades" through "a graduate degree" (Question 31, Appendix A). Education of respondent was reported as the following:

1=0-8 grades,

2=some high school,

3=high school graduate,

4=trade school,

5=some college,

6=college (4 year) graduate,

7=some graduate work, and

8=a graduate degree.

Household income. The household income variable measured total family income before taxes (Question 33, Appendix A). Household income was reported as the

following:

1=less than $5,000,

2=$5,000 to $9,999,

3=$10,000 to $14,999,

4=$15,000 to $19,999,

5=$20,000 to $24,999,

6=$25,000 to $29,999,

7=$30,000 to $39,999,

8=$40,000 to $49,999, and

9=$50,000 or more.

Number of children. The number of children variable was measured by the total number of children who lived in the household (Question 27, Appendix A). Number of children was indexed as the following:

0=0,

1=1,

2=2,

3=3, and

4=4 or more.

Belief in the energy problem. Respondents gave their opinions as to whether or not the United States' energy needs during the next 10-20 years were a serious problem (Question 1, Appendix A). Belief in the energy problem was reported as the following:

1=not a serious problem,

2=a somewhat serious problem,

3=a serious problem, and

4=a very serious problem.

Home energy conservation behaviors. The measurement for energy conservation behavior was either done, the respondent marked the behavior as "this is done now" on the 1983 questionnaire, or not done, the respondent marked the behavior as "do not do now, but plan to do within two years" or "do not do now, and no plans for future" (Question 14 A through F, Appendix A). The six energy conservation behaviors were indexed. Each respondent received score of "1" when they marked a behavior as "this is done now" or received score of "0" if they marked the behavior as "do not do now, but plan to do within two years" or "do not do now, and no plans for future". The indexed scores ranged from zero through six. The six behaviors included: close off some rooms; have water heaters set to 120 degrees F or less; in winter, set thermostat at 65 degrees F or lower for heating; in summer, set thermostat at 78 degrees F or higher for cooling; change use of rooms to take advantage of sun-warmed or shaded areas; and open and close window coverings to take advantage of sun and temperature differences.

Preliminary Analysis

The researcher's Graduate Committee recommended that jointly-headed households should be tested for the differences that might occur between female and male respondents. Thus, two null hypotheses for the differences between female respondents and male respondents within the category of jointly-headed households were tested for differences in belief in the energy problem and home energy conservation behaviors using weighted data. This was completed before testing for the differences between female-headed households' and jointly-headed households' belief in energy problem and home energy conservation behaviors.

Ho3: Female and male respondents within jointly-headed households do not differ in their mean belief scores about the seriousness of the United States' energy problem, when controlled for possible correlated resource constraints.

Ho4: Female and male respondents within jointly-headed households do not differ in the mean number of home energy conservation behaviors, when controlled for possible correlated resource constraints.

Before testing Ho3 and Ho4, Pearson Correlations between control variables and dependent variables were completed in order to determine the strength of the relationships between control variables and dependent variables. All control variables, age, educational level,

household income, and number of children, were correlated at the $p<.05$ level with the first dependent variable, belief in energy problem and were used in the analysis of covariance (Table 1). Two control variables, age and number of children, were correlated ($p<.05$) with the second dependent variable, home energy conservation behaviors, and were used in the analysis of covariance (Table 1). Educational level and household income were not correlated ($p>.05$) with home energy conservation behaviors and were dropped before the analysis of covariance (Table 1).

Table 1. Pearson Correlation Coefficients using Female and Male-respondents in Jointly-headed Households

Dependent Variables	Control Variables			
	Age	Education	Income	Nchild
Belief in energy problem	r=.1241*	r=.1363*	r=.0708*	r=-.0650*
Home energy conservation behaviors	r=-.1704*	r=.0307	r=-.0449	r=.1009*

*=p<.05

Null hypotheses 3 and 4 were tested using the analysis of covariance statistical test. The level of significance was set at $p<.05$, indicating that there is a five percent chance that differences between the frequencies are the result of sampling error. The null hypotheses are stated and the results of the hypotheses testing are reported.

Null Hypothesis 3. Female and male respondents within jointly-headed households do not differ in their mean belief scores about the seriousness of the United States' energy problem, when controlled for possible correlated resource constraints.

The null hypothesis was not rejected at the $p<.05$ significance level (Table 2). There was no significant difference between female and male respondents' mean belief scores about the seriousness of the problem when tested by type of household ($p=.122$) or when controlled for age ($p=.136$), education ($p=.064$), income ($p=.344$), and number of children ($p=.397$).

Null Hypothesis 4. Female and male respondents within jointly-headed households do not differ in mean number of home energy conservation behaviors, when controlled for possible correlated resource constraints.

The null hypothesis was not rejected at the $p<.05$ significance level (Table 3). There was no significant difference between female and male respondents' mean number

of home energy conservation behaviors when tested by type of household ($p=.077$) or when controlled for age ($p=.088$) and number of children ($p=.816$). Because both null hypotheses 3 and 4 were not rejected at $p<.05$ level, null hypotheses 1 and 2 were tested.

Table 2. Belief in Energy Problem By Female-respondents and Male-respondents within Jointly-headed Households: Ancova

Source	df	ss	ms	F	F prob.
Covariates	4	20.269	5.067	2.609	.035
Age	1	4.329	4.329	2.229	.136
Education	1	15.947	15.947	8.211	.064
Income	1	1.741	1.741	.896	.344
Children	1	1.395	1.395	.718	.397
Main Effects (a)	1	4.653	4.653	2.396	.122
Explained	5	22.284	4.457	2.295	.045
Residual	421	817.114	1.942		
Total	426	839.398	1.970		

(a) Independent variable, female and male-respondents in jointly-headed households.

Table 3. Home Energy Conservation Behaviors by Female-respondents and Male-respondents within Jointly-headed Households: Ancova

Source	df	ss	ms	F	F prob.
Covariates	2	9.311	4.655	1.694	.185
Age	1	8.027	8.027	2.921	.088
Children	1	.150	.150	.054	.816
Main Effects (a)	1	8.663	8.663	3.152	.077
Explained	3	22.262	7.421	2.700	.045
Residual	423	1161.920	2.748		
Total	426	1184.183	2.780		

(a) Independent variable, female and male-respondents in jointly-headed households.

CHAPTER 4

FINDINGS

This chapter includes a description of the sample and dependent variables, null hypotheses findings, and discussion of the findings.

Description of the Sample and Dependent Variables

The sample of renters from the eight Western States: Arizona, Colorado, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming are described in categories using unweighted data. Frequency distributions using unweighted data are used to describe the dependent variables: energy beliefs and home energy conservation behaviors.

Demographic Characteristics of the Sample

The demographic variables used to describe Western United States renters (N=666) include type of household, age, educational level, household income, and number of children.

Type of household. The majority of households were jointly-headed (64.1%). The female-headed households were 35.9 percent of the sample (Table 4).

Table 4. Type of Household Composition Among Western U.S. Renters

Type of Household	n	(%)
Jointly-headed households	427	(64.1)
Female-headed households	239	(35.9)
Total	666	(100.0)

Age. The ages of respondents from jointly-headed households ranged from 18 years through 96 years and of female-headed households, 18 years through 96 years. The mean age of respondents from jointly-headed households was 39.8, compared to a mean age of 43.3 years for female-headed respondents.

Educational level. The educational level of both jointly-headed and female-headed households was fairly evenly distributed (Table 5). Higher frequencies and the median range for both female-headed households and jointly-headed households were in the "some college education" category.

Household income. The median income of jointly-headed households fell within the range of $20,000 through $24,999, which was higher than that for female-headed households' ($10,000 through $14,999) (Table 6).

Number of children. Although 45.9 percent of the jointly-headed households had no children, 21.7 and 18.9 percent, respectively, had 1 or 2 children. The majority of female-headed households (77.8%) had no children; 14.2 percent had 1 child in the home (Table 7).

Energy Beliefs and Conservation Behaviors

The majority of both jointly-headed households (69.5%) and female-headed households (70.6%) believed there

is a serious or very serious energy problem in the U.S. (Table 8). The mean energy belief score for jointly-headed households was 3.25 (between serious and very serious), compared to that of female-headed households, which was 3.35. The mean number of home energy conservation behaviors reported by jointly-headed households was 3.32, compared to a mean of 2.78 behaviors cited by female-headed households (Table 9).

Table 5. Educational Level of Respondents

Educational Level	Types of Household			
	Jointly-headed		Female-headed	
	n	(%)	n	(%)
No formal education	1	(0.2)	0	(0)
0-8 Grades	19	(4.4)	6	(2.5)
Some high school	28	(6.5)	16	(6.6)
High school graduate	98	(22.9)	48	(20.0)
Trade school	34	(7.9)	12	(5.0)
Some college	131	(30.6)	78	(32.6)
College (4 year) graduate	53	(12.4)	35	(14.6)
Some graduate work	23	(5.3)	18	(7.5)
A graduate degree	36	(8.4)	25	(10.4)
No response	4	(0.9)	1	(0.4)
Total	427	(99.5)*	239	(99.6)*

*Percentages do not equal 100.0 because of rounding error.

Table 6. Income of Respondents

Income	Types of Household			
	Jointly-headed		female-headed	
	n	(%)	n	(%)
Less than $5,000	15	(3.5)	43	(17.9)
$5,000 to $9,999	41	(9.6)	43	(17.9)
$10,000 to $14,999	55	(12.8)	51	(21.3)
$15,000 to $19,999	58	(13.5)	45	(18.8)
$20,000 to $24,999	80	(18.7)	27	(11.2)
$25,000 to $29,999	69	(16.1)	13	(5.4)
$30,000 to $39,999	60	(14.0)	9	(3.7)
$40,000 to $49,999	21	(4.9)	0	(0)
$50,000 or more	16	(3.7)	2	(0.8)
No response	12	(2.8)	6	(2.5)
Total	427	(99.6)*	239	(99.5)*

*Percentages do not equal 100.0 because of rounding error.

Table 7. Number of Children in the Household

Number of Children	Types of Household			
	Jointly-headed		Female-headed	
	n	(%)	n	(%)
0	196	(45.9)	186	(77.8)
1	93	(21.7)	34	(14.2)
2	81	(18.9)	13	(5.4)
3	35	(8.1)	3	(1.2)
4	17	(3.9)	1	(0.4)
5	3	(0.7)	2	(0.8)
6	2	(0.4)	0	(0)
Total	427	(99.6)*	239	(99.8)*

*Percentages do not equal 100.0 because of rounding error.

Table 8. Belief in Energy Problem in the U.S.

Belief	Types of Household			
	Jointly-headed		Female-headed	
	n	(%)	n	(%)
Not serious	15	(3.5)	2	(0.8)
Somewhat serious	98	(22.9)	55	(23.0)
Serious	180	(42.1)	103	(43.0)
Very serious	117	(27.4)	66	(27.6)
No response	17	(3.9)	13	(5.4)
Total	427	(99.8)*	239	(99.8)*

*Percentages do not equal 100.0 because rounding error.

Table 9. Home Energy Conservation Behaviors

Number of Energy Conservation Behaviors done	Types of Household: Jointly-headed n	Jointly-headed (%)	Female-headed n	Female-headed (%)
No response	26	(6.0)	25	(10.4)
1	30	(7.0)	28	(11.7)
2	57	(13.3)	41	(17.1)
3	110	(25.7)	59	(24.6)
4	91	(21.3)	45	(18.8)
5	72	(16.8)	23	(9.6)
6	41	(9.6)	18	(7.5)
Total	427	(99.7)*	239	(99.7)*

*Percentages do not equal 100.0 because of rounding error.

Null Hypotheses Findings

Weighted data were used for all hypotheses testing. Two null hypotheses were used to test female-headed households' and jointly-headed households' 1) beliefs about the United States' energy problem and 2) frequency of home energy conservation behaviors. Pearson rank order correlations were completed prior to testing the hypotheses. All control variables were correlated at the $p<.05$ level with the first dependent variable, belief in energy problem and were used in the analysis of covariance (Table 10). Two control variables, age and number of children, were correlated ($p<.05$) with the second dependent variable, home energy conservation behaviors, and were used in the analysis of covariance. Educational level and household income were not correlated ($p>.05$) with home energy conservation behaviors and were dropped before the analysis of covariance.

Hypothesis 1. Female-headed and jointly-headed renter households do not differ in their mean belief scores about the seriousness of the United States' energy problem, when controlled for correlated resource constraints of age, education, income, and number of children.

The jointly-headed households (3.25) and the female-headed households (3.35) differed in their energy problem belief mean scores when controlled for age ($p=.026$), education ($p=.003$), and income ($p=.046$) (Table 11). The

independent variables, type of household (p=.350) and number of children (p=.885) did not explain the difference in energy problem beliefs. In other words, there is a significant difference in energy problem belief mean scores between jointly-headed and female-headed households when controlled for age, education, and income.

Hypothesis 2. Female-headed and jointly-headed renter households do not differ in mean number of home energy conservation behaviors reported, when controlled for possible correlated resource constraints of age and number of children.

The jointly-headed households (3.32) and the female-headed households (2.78) differed in the mean number of home energy conservation behaviors reported, when controlled for age (p=.000) and number of children (p=.019) (Table 12). The independent variable, type of household (p=.000), also explained the difference in home energy conservation behaviors. In other words, there is a significant difference in the mean number of home energy conservation behaviors reported between jointly-headed and female-headed households when controlled for age, number of children, and type of household.

Table 10. Pearson Correlation Coefficients using Female-headed and Jointly-headed Households

Dependent Variables	Control Variables			
	Age	Education	Income	Children
Belief in energy problem	r=.1241*	r=.1363*	r=.0708*	r=-.0650*
Home energy conservation behaviors	r=-.1704*	r=.0307	r=-.0449	r=.1009*

*=p<.05

Table 11. Belief in Energy Problem By Jointly-headed Households and Female-headed Households: Ancova

Source	df	ss	ms	F	F prob.
Covariates	4	29.080	7.270	3.493	.008
Age	1	10.376	10.376	4.986	.026
Education	1	18.275	18.275	8.781	.003
Income	1	8.294	8.294	3.985	.046
Children	1	.044	.044	.021	.885
Main Effects (a)	1	1.822	1.822	.876	.350
Explained	5	30.903	6.181	2.970	.012
Residual	717	1491.251	2.081		
Total	722	1522.154			

MCA	n	Adjusted Mean
Type of Household		
Jointly-headed	427	3.25
Female-headed	296	3.35
Total	723	

(a) Independent variable, female-headed and jointly-headed households.

Table 12. Home Energy Conservation Behaviors by Jointly-headed Households and Female-headed Households: Ancova

Source	df	ss	ms	F	F prob.
Covariates	2	79.360	39.680	15.057	.000
Age	1	46.277	46.277	17.560	.000
Children	1	14.542	14.542	5.518	.019
Main Effects (a)	1	44.929	44.929	17.049	.000
Explained	3	124.289	41.430	15.721	.000
Residual	719	1893.561	2.635		
Total	722	2017.850	2.795		

MCA	n	Adjusted Mean
Type of Household		
Jointly-headed	427	3.32
Female-headed	296	2.78
Total	723	

(a) Independent variable, female-headed and jointly-headed households.

Discussion of the Findings

Renters' (including both jointly-headed and female-headed households) energy use and conservation behavior has not received much attention. The energy-related beliefs and home energy conservation behaviors reported by jointly-headed households and female-headed households of various ages, educational levels, incomes and number of children were analyzed in this study.

Energy Problem Belief

Olsen (1978) suggested that it was necessary to understand beliefs about the energy situation before being able to understand energy conserving behavior. In this study, the mean scores representing seriousness of beliefs held by jointly-headed households and female-headed households differed significantly when controlled for age ($p=.026$), education ($p=.003$), and income ($p=.046$). Type of household ($p=.350$) and number of children ($p=.885$) did not explain the difference in energy problem beliefs. Thus, variables that did make the difference in energy problem belief mean scores between the two types of households are age, education, and income.

According to Johnson-Carroll (1986), the age of a consumer had a definite impact on the consumer's attitudes and beliefs toward energy conservation. She also reported

that the age of a consumer also had a definite impact on the amount of energy consumed in a household. In this study, the mean age of jointly-headed households was younger (39.8 years) than female-headed households' (43.3 years). While these findings revealed a difference based on age, further analyses would be needed to identify the specific age levels that vary.

Olsen (1981) asserted that the educational level of a consumer was the best single predictor of belief in the seriousness of the energy crisis. According to Barnaby and Reizenstein (1975), educational level was positively associated with attitudes toward energy conservation. This study also found that education made a difference in energy problem belief mean scores between jointly-headed households and female-headed households.

According to Newman and Day (1975), income was the strongest single determinant of energy consumption. They also stated that it was one of the best predictors of willingness to practice energy conservation. In this study, the median income category for jointly-headed households ($20.000 through $24,999) was higher than that of female-headed households' ($10,000 through $14,999). These findings showed a difference based on income, and further analyses might identify the exact income levels that differ.

Therefore, this study's finding of energy problem belief brought the need to further research how age,

education, and income influence energy problem beliefs of various type of renter households. Two-way analyses of variance could enrich the understanding of energy problem beliefs between type of household.

Home Energy Conservation Behaviors

While improvement of home energy efficiency may result from making structural energy conserving adjustments, home energy may also be conserved through behavior modification which results in consumption of less energy. Buck (1982) found that renters and nonrenters did not significantly ($p<.05$) differ in their use of no-cost energy-saving efforts. This study questioned whether jointly-headed and female-headed households who were both renters might have differences in the number of home energy conservation behaviors reported. The findings showed that the mean number of home energy conservation behaviors reported by jointly-headed households and female-headed households differed when controlled for age ($p=.000$), number of children ($p=.019$), and type of household ($p=.000$). Thus, the variables that made the difference in mean number of home energy conservation behaviors reported by the two types of households are age, number of children, and type of household.

Morris (1984) reported that age was a constraint on energy conservation behaviors, as older families were less

adaptive and, therefore, less open to new energy conserving behavior. Marganus and Badenhop (1984) found that families headed by a person of retirement age spent almost twice as much, significantly ($p<.001$) more, of their income on residential energy. This study also found that age made the difference in number of home energy conservation behaviors reported between jointly-headed households and female-headed households.

Marganus (1984) found significant ($p<.05$) differences in mean energy expenditures between families with no dependents and those with two and three or more dependents. Most researchers viewed the number of people in the household as an important determinant in the amount and way energy was used, with an increase in people accounting for grater use. In this study, while the majority of jointly-headed households (54.1%) had children, the majority of female-headed households (77.8%) had no children. Number of children was also one of the variables that made the difference in home energy conservation behaviors mean scores between jointly-headed households and female-headed households.

Therefore, this study's findings on number of home energy conservation behaviors reported brought the need to further the research on how age, number of children, and type of household influence home energy conservation behaviors. Two-way analyses of variance could be used to

further the understanding of home energy conservation behaviors as they vary between jointly-headed and female-headed households.

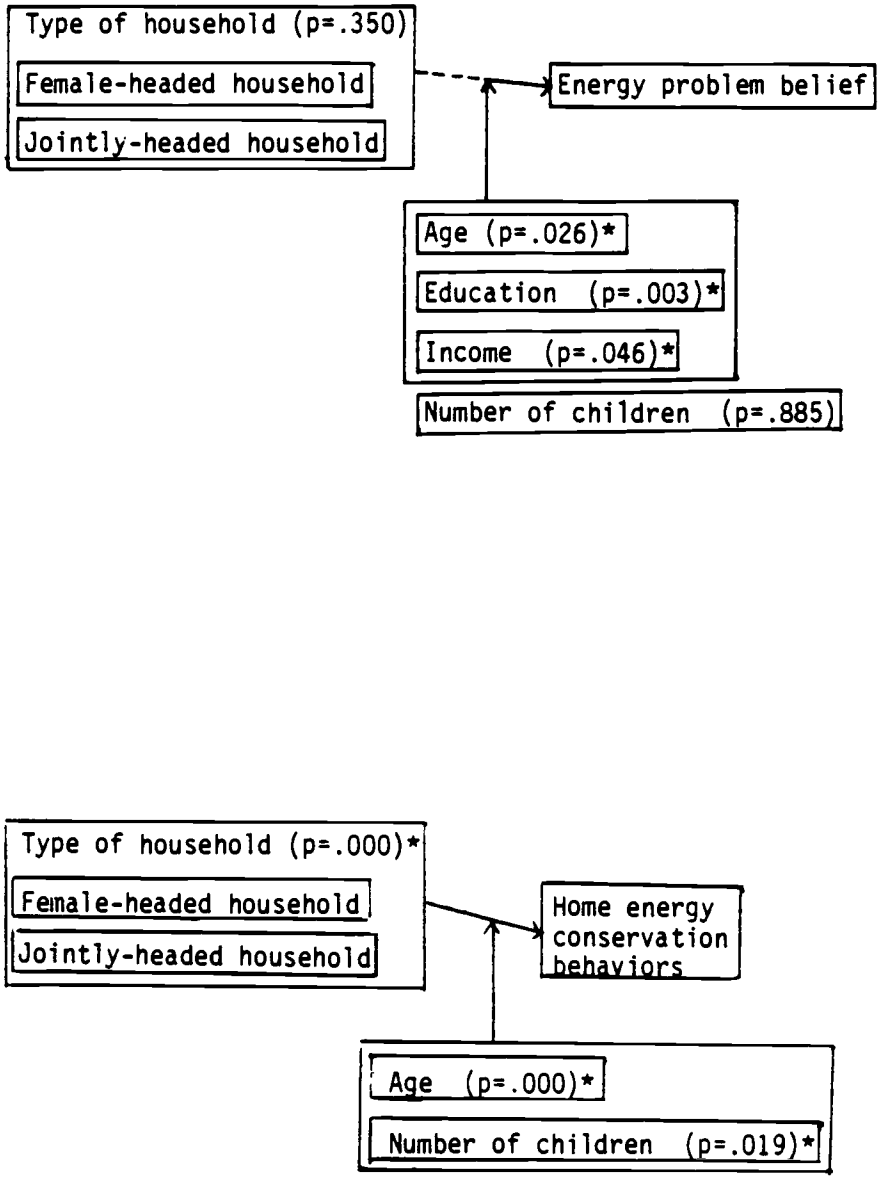
Tested Proposed Theoretical Model

The theoretical framework for this study was Niemeyer's (1982) model of energy adjustment. The proposed model (Figure 3) questioned possible differences between two types of renter households' energy problem belief and home energy conservation behaviors, when controlled for resource constraints. In this study, there was a significant difference between jointly-headed households' and female-heaed households' belief mean scores about the seriousness of the problem when controlled for age, education, and income (Figure 4). However, type of household and number of children did not explain the difference in energy problem beliefs (Figure 4). Additionally, there was a significant difference in the mean number of home energy conservation behaviors reported by jointly-headed households' and female-headed households', when controlled for age and number of children (Figure 4). Type of household also explained the difference in home energy conservation behaviors (Figure 4).

In summary, the variables that made the difference in energy problem belief mean scores between jointly-headed households and female-headed households are age, education, and income. The variables that made the difference in mean number of home energy conservation behaviors reported between jointly-headed households and female-headed households are age, number of children, and type of

household.

Figure 4. Tested Proposed Theoretical Model



*=p<.05

CHAPTER 5

SUMMARY AND IMPLICATIONS

Following the summary, the implications and recommendations for further study are discussed.

Summary

The purpose of this study is to further the understanding of two types of renter households' energy problem belief and energy conservation behaviors.

The objectives were: 1) to determine possible differences between female-headed and jointly-headed renter households' energy problem belief when controlled for age and educational level of respondent, household income, and household size, and 2) to determine possible differences between female-headed and jointly-headed renter households' home energy conservation behaviors when controlled for age and educational level of respondent, household income, and household size.

A thoeretical model, based on Niemeyer's energy adjustment model, was developed. Niemeyer (1982) proposed that if family housing failed to meet energy efficiency norms, dissatisfaction occurred, and when the dissatisfaction became great enough, the propensity to engage in energy-saving behavior occurred. Of the factors

that affected the occurrence of energy deficits, Niemeyer tested resource constraints and predisposition constraints. She found that resource constraints were the significant factors in the number of existing energy-saving features present in the dwelling. The model developed for this study was propoed to determine possible differences between two types of renter households' energy problem belief and home energy conservation behaviors when controlled for resource constraints.

The 1983 Western States regional data from the Western Regional Project W-159: "Consequences of Energy Conservation Policies for Western Region Households," (the second phase of a project begun in 1981) were used for this study. The 1983 sample consisted of two parts. In 1981, the sample was a randomly-selected, 50 percent rural/50 percent urban sample within ten Western States and Pennsylvania. Participants in the 1981 data base were included in the 1983 survey along with a new sample. The new sample was a randomly-selected, 50 percent rural/50 percent urban sample, within each of eight Western States and Pennsylvania.

The Total Design Method for Mail Surveys (TDM) was employed in collecting the data. The data analyzed for this study consisted of responses from 666 renter households in 8 Western Staes (427 jointly-headed households and 239 female-headed households). All statistical testing, except

that used for the sample description, was weighted based on the true rural/urban proportions within each state and each state's population within the eight Western States. Pearson correlations and analyses of covariance tests were used to test the hypotheses. MCA (Multiple Classification Analysis) was also completed.

The majority of the sample consisted of jointly-headed households (64.1%). The median ages of respondents from jointly-headed households and female-headed households were 39.8 and 43.3 years respectively. Most jointly-headed households and female-headed households had "some college" education. The median income of jointly-headed households fell within the range from $20,000 to $25,000, compared to that of female-headed households which was within the $10,000 to $15,000 range. The majority of jointly-headed households (54.1%) had children, while the majority of female-headed households (77.8%) had no children at home.

The jointly-headed households and female-headed households believed differently about the energy problem in the United States when controoled for age (p=.026), education (p=.003), and income (p=.046). This study also hypothesized that the type of renter household (jointly-headed vs female-headed) might make a differencein home energy conservation behaviors. Testing revealed a significant difference between jointly-headed and

female-headed households on the mean number of home energy conservation behaviors reported when controlled for age (p=.000), number of children (p=.019), and type of household (p=.000).

Implications

The results of this study provide statistical evidence that age, education, and income have an influence on energy-related beliefs of different type of renter household. In addition, the results of this study provide statistical evidence that type of household, age, and number of children have an influence on the number of home energy conservation behaviors reported by consumers.

Understanding these energy-related beliefs and energy conservation behaviors can be beneficial in the following ways. First, local and state government planners and housing officials base policy decisions, in part, on needs of analyses. This study showed that there was a significant difference between jointly-headed and female-headed households' energy problem belief mean scores when controlled for age, education, and income. There was also a significant difference between jointly-headed households' and female-headed households' mean number of home energy conservation behaviors reported when controlled for age and number of children. Therefore, local and state government planners and housing officials may wish to make

efforts to recognize or change these differences in energy problem belief and energy conservation behaviors. They could target or promote energy conservation programs by age groups, educational and/or income levels, and number of children. Additionally, decisions at the local and state level regarding the promotion of energy-saving behaviors, the distribution of tax benefits, low-interest loans, and grants could be based on these findings concerning differences between type of renter household.

Second, housing and energy educators could also use these findings when disseminating information about home energy conservation to the increasing numbers of renters and female-headed households. In addition, researchers can develop instruments to measure different energy problem beliefs and energy conservation behaviors to augment these findings. For example, measurement of energy problem beliefs could include such questions as how the respondents feel energy problem in their own households and why or how do energy conditions in their housing affect their beliefs. Measurement of home energy conservation behaviors might include such items as "Turn off unnecessary lights," ets.

Third, educators and policymakers need information of energy-related beliefs and conservation behaviors for educational programs. As the population of renters, particularly female-headed households, increases and as the consequences of energy costs become more serious, knowledge

of different type of households' energy-related behaviors can be used to target energy assistance and educational program content toward the special needs and housing situations of female-headed families.

Recommendations for the Further Study

1. This study revealed that jointly-headed households and female-headed households believed differently regarding the energy problem and behaved differently in terms of energy conservation. Further research such as two-way analysis of variance is needed to identify how various age groups, educational levels, income levels, and number of children affect energy problem beliefs and numbers of home energy conservation behaviors performed by between jointly-headed households vs female-headed households.
2. Further research could measure belief in energy problem in a more detailed, in-depth manner. In addition, measurement of energy conservation behaviors could be made in greater detail.
3. Other possible resource constraints that influence energy-related beliefs and home energy conservation behaviors need to be tested in order to further understanding of the energy-related beliefs and conservation behaviors.

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APPENDIX

OF ARIZONA, COLORADO STATE UNIV., UNIV. OF IDAHO, UNIV. OF NEVADA-RENO, OREGON STATE UNIV., UTAH STATE UNIV., WASHINGTON STATE UNIV., UNIV. OF WYOMING

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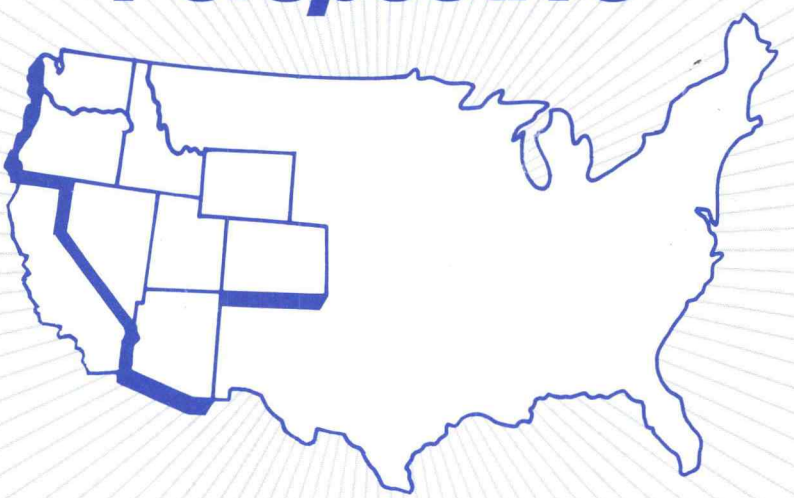
ENERGY DIRECTIONS: A 1983 Western Perspective



A STUDY OF HOME RELATED ENERGY CONCERNS IN EIGHT WESTERN STATES

Your help with this effort is greatly appreciated! Please use the back page to answer any question in more detail. Thank you!

THE BIG PICTURE

1

Q- 1 Some people feel that energy is a serious national problem, but other people feel it is not. We would like to know your opinion. Do you consider meeting the United States' energy needs during the next ten to twenty years to be: (Please circle number of your opinion.)

1 NOT A SERIOUS PROBLEM
2 A SOMEWHAT SERIOUS PROBLEM
3 A SERIOUS PROBLEM
4 A VERY SERIOUS PROBLEM

Q- 2 If you were asked to reduce your energy consumption during the entire next year by one-fourth--that is, 25 percent less than you now consume--do you feel you could do it? (Please circle number of your opinion.)

1 DEFINITELY YES
2 PROBABLY YES
3 I DON'T KNOW
4 PROBABLY NO
5 DEFINITELY NO

If YES, how difficult would this be?

1 VERY DIFFICULT
2 SOMEWHAT DIFFICULT
3 NOT DIFFICULT

Q- 3 To what extent do you favor or oppose each of the items listed below as a way of helping to meet our country's future energy needs?

Please circle your opinion for each item

A More use of solar energy.	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
B Reduce energy use in homes.	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
C More use of nuclear power	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
D More use of western coal.	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
E Reduce energy use in business and industry.	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
F More use of oil from western shale. .	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
G Reduce energy use in individual travel.	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
H More oil imports.	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
I More exploration for oil in the U.S.	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
J Reduce energy use by agriculture. . .	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
K More use of wind energy	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
L More use of biomass energy (agricultural residue, animal waste) . .	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
M More use of small hydro-electric power generation.	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR

ENERGY DIRECTIONS

Q- 4 Here are some actions that might be considered in order to reduce energy use in the United States. Please indicate the extent to which you favor or oppose each of them.

Please circle your opinion for each item

A Require home thermostats to be no higher than 65°F in winter	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
B Require home thermostats to be no lower than 78°F in summer.	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
C Require everyone's home to pass an energy "audit" (must have adequate insulation, double-pane or storm windows, etc.)	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
D Provide larger tax credits for improving home energy efficiency . .	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
E Provide larger tax credit for adding home solar heating or cooling. .	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
F Require utility companies to charge lowest rates to low energy users and highest rates to high users. . .	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
G Discourage building homes away from towns and cities to lessen travel by car	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
H Change building codes and mortgage requirements to encourage new types of energy-saving housing . . .	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
I Require utilities to provide regular reports to users on whether energy use is higher or lower than in previous years	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
J Rely on state instead of federal programs to encourage energy conservation	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR
K Require land developers to have energy plans as part of their developments (e.g., solar orientation on building sites; solar access; landscaping, etc.)	STRONGLY OPPOSE	OPPOSE	NEUTRAL	FAVOR	STRONGLY FAVOR

Q- 5 All things considered, do you feel that changes in the cost of energy in the last five years have made your life: (Please circle number of your opinion.)

1 A LOT WORSE THAN IT WAS
2 A LITTLE WORSE THAN IT WAS
3 NO EFFECT
4 A LITTLE BETTER THAN IT WAS
5 A LOT BETTER THAN IT WAS

ENERGY EFFICIENCY AT HOME

Q- 6 Listed below are certain energy-saving features that might be added to your home (by you or if you rent, your landlord). (For each item, please circle the one best answer.)

Energy-saving measures:	Existed When I Moved In	Installed or Added Before March 1981	Installed or Added Since March 1981	Plan To Add Within Two Years	Doesn't Exist And No Plans To Add Within Two Years	I Don't Know/ Doesn't Apply To My Home
A Double panes or storms on most windows.	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
B Good weatherstripping and caulking on most doors and windows. . . .	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
C More than 4 inches of ceiling insulation . . .	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
D Insulation in outside walls.	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
E Thick floor insulation . .	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
F Storm doors on all entrances.	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
G Clock set-back thermostats.	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
H Glass doors on fireplaces	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
I Wood-burning stove	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
J Solar hot-water heater . .	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
K Solar heating.	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
L Evaporative cooler	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
M Outdoor window shades. . .	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
N Insulated interior window coverings.	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA
O Other: (Please write in) _____	EXISTED	ADDED	ADDED	PLAN	NO	DK/NA

Q- 7 A variety of activities use energy in the home. Considering most homes, please rank each of the following activities 1, 2, 3, or 4, with 1 being the activity that uses the most energy and 4 being the activity that uses the least energy.

_____ WATER HEATING
_____ COOKING
_____ LIGHTING
_____ HOME HEATING/COOLING

Q- 8 To the best of your knowledge, where do you think most of the heat loss occurs in the average home. (Please circle the number of your answer.)

1 THROUGH POORLY FITTED DOORS AND WINDOWS
2 THROUGH POORLY INSULATED FLOORS
3 THROUGH POORLY INSULATED CEILINGS
4 THROUGH POORLY INSULATED EXTERIOR WALLS

Q- 9 Listed below are features that you may have added to change energy use in your home. If you made the changes in 1981 or 1982, please indicate the number of dollars that were spent (before tax credits) for each feature. If added prior to 1981 or does not apply, check the appropriate column.

	Type of Investment:	1981	1982	Added Before 1981	Does Not Apply To My Home
A	Weatherstripping or caulking. . . .	$____	$____	____	____
B	Insulation.	$____	$____	____	____
C	Storm doors or storm windows. . . .	$____	$____	____	____
D	Wood burning stove.	$____	$____	____	____
E	Solar water heating	$____	$____	____	____
F	Solar heating	$____	$____	____	____
G	Insulated interior window treatment	$____	$____	____	____
H	All other (Please write in) _____ . .	$____	$____	____	____

Q- 10 In recent years it has been possible to claim a credit on your federal income taxes for money spent to improve the energy efficiency of your home (e.g., adding insulation or buying a solar water heater). Which statement best describes your awareness and use of the federal tax credit? (Please circle the best answer.)

1 NOT AWARE OF THE FEDERAL TAX CREDIT
2 AWARE, BUT MADE NO CLAIM ON 1981 OR 1982 TAX RETURN (or will not)
3 AWARE AND A CLAIM MADE ON 1981 TAX RETURN ONLY
4 AWARE AND A CLAIM HAS BEEN OR WILL BE MADE ON 1982 TAX RETURN ONLY
5 AWARE AND A CLAIM HAS BEEN OR WILL BE MADE ON BOTH 1981 AND 1982 TAX RETURN

Q- 11 (For those making [or will be making] a claim on their 1981 or 1982 tax return.) Think about the expenditures you listed in question #9. How did the availability of the federal tax credit affect your decision to spend money for those purposes? (Please circle the best answer.)

1 THE SAME AMOUNT OF MONEY WOULD HAVE BEEN SPENT EVEN WITHOUT THE FEDERAL TAX CREDIT
2 A LITTLE LESS MONEY WOULD HAVE BEEN SPENT IF THE FEDERAL TAX CREDIT HAD NOT BEEN AVAILABLE
3 MUCH LESS MONEY WOULD HAVE BEEN SPENT IF THE FEDERAL TAX CREDIT HAD NOT BEEN AVAILABLE
4 NONE OF THE MONEY WOULD HAVE BEEN SPENT WITHOUT THE FEDERAL TAX CREDIT
5 DON'T KNOW OR CAN'T REMEMBER

HOUSING SATISFACTION

Q- 12A For each statement below, circle the number that best indicates how you feel on a scale of 1 to 7, with 1 being extremely dissatisfied and 7 being extremely satisfied.

	Please circle your answer						
A In general, how satisfied or dissatisfied are you with your housing?	1	2	3	4	5	6	7
B How satisfied or dissatisfied are you with the comfort of your house?	1	2	3	4	5	6	7
C How satisfied or dissatisfied are you with the energy efficiency of your current dwelling?	1	2	3	4	5	6	7

Q- 12B For each statement below, circle the number that best indicates how you feel on a scale of 1 to 7, with 1 being extremely unimportant and 7 being extremely important.

	Please circle your answer						
A How important is it to you to have energy-saving features in your house?	1	2	3	4	5	6	7
B How important is it to you to have a home that costs you less money for energy?	1	2	3	4	5	6	7
C How important is it for you to have convenience with energy-saving features in your home? (time and effort)	1	2	3	4	5	6	7

Q- 12C Compared to the dollar ($) amount the average Oregon family spends for energy, do you feel you spend: (Please circle number of your opinion.)

1 A LOT LESS MONEY
2 SOMEWHAT LESS MONEY
3 ABOUT AVERAGE
4 SOMEWHAT MORE MONEY
5 A LOT MORE MONEY

Q- 12D Compared to the time and effort the average Oregon family puts into energy conservation, do you feel you spend: (Please circle number of your opinion.)

1 A LOT LESS TIME AND EFFORT
2 SOMEWHAT LESS TIME AND EFFORT
3 ABOUT AVERAGE
4 SOMEWHAT MORE TIME AND EFFORT
5 A LOT MORE TIME AND EFFORT

Q- 12E Conservation can be practiced in many ways. Listed below are some conservation efforts you may or may not be doing. For each item, tell whether this is always, sometimes, or never done now.

	Please circle your answer		
A Recycle newspapers, glass, and tin cans	ALWAYS	SOMETIMES	NEVER
B Ride a bicycle on errands	ALWAYS	SOMETIMES	NEVER
C Participate in a car pool/van pool, or ride the bus	ALWAYS	SOMETIMES	NEVER
D Dry laundry on a clothesline	ALWAYS	SOMETIMES	NEVER
E Keep records of home energy usage	ALWAYS	SOMETIMES	NEVER

Q- 13 The following statements are related to adult attitudes and feelings. They are more about "life in general" than any one specific topic. The best way to answer these statements is as rapidly as you can. Please circle YES or NO to your first reaction to each statement.

YES NO 1. Do you believe that most problems will solve themselves if you just don't fool with them?
YES NO 2. Do you believe that you can stop yourself from catching a cold?
YES NO 3. Are some people just born lucky?
YES NO 4. Are you often blamed for things that just aren't your fault?
YES NO 5. Do you believe that if somebody studies hard enough he/she can pass any subject?
YES NO 6. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?
YES NO 7. Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do?
YES NO 8. Do you feel that most of the time parents listen to what their children have to say?
YES NO 9. Do you believe that wishing can make good things happen?
YES NO 10. Most of the time do you find it hard to change a friend's opinion (mind)?
YES NO 11. Do you think that cheering more than luck helps a team to win?
YES NO 12. Do you believe that parents should allow children to make most of their own decisions?
YES NO 13. Do you feel that when you do something wrong there's very little you can do to make it right?
YES NO 14. Do you believe that most people are just born good at sports?
YES NO 15. Are most of the people your age stronger than you are?
YES NO 16. Do you feel that one of the best ways to handle most problems is just not to think about them?
YES NO 17. Do you feel that you have a lot of choice in deciding who your friends are?
YES NO 18. If you find a four leaf clover do you believe that it might bring you good luck?
YES NO 19. Do you feel that when a person decides to hit you, there's little you can do to stop him or her?
YES NO 20. Have you ever had a good luck charm?
YES NO 21. Do you believe that whether or not people like you depends on how you act?
YES NO 22. Have you felt that when people were mean to you it was usually for no reason at all?
YES NO 23. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?
YES NO 24. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them?
YES NO 25. Do you think that people can get their own way if they just keep trying?
YES NO 26. Do you feel that when good things happen they happen because of hard work?
YES NO 27. Do you feel that when somebody wants to be your enemy there's little you can do to change matters?
YES NO 28. Do you feel that it's easy to get friends to do what you want them to?
YES NO 29. Do you usually feel that you have little to say about what you get to eat at home?
YES NO 30. Do you feel that when someone doesn't like you there's little you can do about it?
YES NO 31. Are you the kind of person who believes that planning ahead makes things turn out better?
YES NO 32. Most of the time, do you feel that you have little to say about what your family decides to do?
YES NO 33. Do you think it's better to be smart than to be lucky?

WAYS TO CUT BACK

Q- 14 Here are some other efforts you may or may not be doing to save heating and cooling costs in your home. For each item, tell whether you now do it, or plan to do it in the future.

(Please circle the best answer.)

Energy-saving efforts:	This Is Done Now	Don't Do Now, But Plan To Do Within Two Years	Don't Do Now, And No Plans For Future	I Don't Know or Doesn't Apply To My Home
A Close off some rooms.	NOW	PLAN	NO PLAN	NA
B Have water heater set to 120°F (or less). . .	NOW	PLAN	NO PLAN	NA
C In winter, set thermostat at 65°F or lower. .	NOW	PLAN	NO PLAN	NA
D In summer, set thermostat at 78°F or higher .	NOW	PLAN	NO PLAN	NA
E Change use of rooms to take advantage of sun-warmed or shaded areas	NOW	PLAN	NO PLAN	NA
F Open and close window coverings to take advantage of sun and temperature differences.	NOW	PLAN	NO PLAN	NA
G Home inspected ("audited") for energy efficiency.	NOW	PLAN	NO PLAN	NA

Q- 15 Costs for heating fuel, gasoline, and electricity have gone up a great deal in the last few years. To what extent, if at all, have higher energy costs made you cut back on any of the items listed below.

To what extent have higher energy costs made you cut back? (Please circle your answer.)

A Groceries	NONE	A LITTLE	SOME	A LOT
B Meals out	NONE	A LITTLE	SOME	A LOT
C Driving the car (or other vehicle).	NONE	A LITTLE	SOME	A LOT
D Health care	NONE	A LITTLE	SOME	A LOT
E Vacations	NONE	A LITTLE	SOME	A LOT
F Recreation.	NONE	A LITTLE	SOME	A LOT
G Education	NONE	A LITTLE	SOME	A LOT
H Housing (rent, mortgage or upkeep).	NONE	A LITTLE	SOME	A LOT
I Purchase of appliances or furnishings	NONE	A LITTLE	SOME	A LOT
J Money put in savings.	NONE	A LITTLE	SOME	A LOT
K Clothes	NONE	A LITTLE	SOME	A LOT

Q- 16 What is the main fuel used in your home for: (Please write in the fuel source, i.e., electricity, natural gas, LP gas, fuel oil, etc.)

_____ WATER HEATING

_____ HEATING YOUR HOME

ABOUT YOUR HOME

Q- 17 Which of the following best describes your primary residence? (Please circle number of your opinion.)

1 A MOBILE HOME OR TRAILER
2 A ONE-FAMILY HOUSE DETACHED FROM ANY OTHER HOUSE
3 A BUILDING FOR TWO TO FOUR HOUSEHOLDS (FAMILIES)
4 A BUILDING FOR FIVE OR MORE HOUSEHOLDS (FAMILIES)
5 OTHER: (Please describe.)_____

Q- 18 Is the home in which you live:

1 RENTED BY YOU
2 OWNED BY YOU
3 OWNED IN CONDOMINIUM BY YOU
4 OTHER: (Please describe.)_____

Q- 19 Which of these broad categories best describes the number of square feet in your home? Do not include a garage, unfinished basement, or space rented to members of another household. Just your best estimate is fine.

1 LESS THAN 500 SQUARE FEET
2 501 TO 1,000 SQUARE FEET
3 1,001 TO 1,500 SQUARE FEET
4 1,501 TO 2,000 SQUARE FEET
5 2,001 TO 2,500 SQUARE FEET
6 MORE THAN 2,500 SQUARE FEET

Q- 20 When did you move into your present home?

_____ YEAR MOVED IN (If less than one year, what month?_____)

Q- 21 To the best of your knowledge, about when was your home built? We mean first constructed and not when remodeled, added to, or converted.

_____ YEAR BUILT

Q- 22 How do you feel about the energy efficiency of your present home: (Please circle number of your opinion.)

1 ABOUT AS ENERGY EFFICIENT AS IT CAN BE
2 A LITTLE IMPROVEMENT CAN BE MADE
3 SOME IMPROVEMENT CAN BE MADE
4 A LOT OF IMPROVEMENT CAN BE MADE

(Note: If your home is part of a farm or other business, please check here ☐, and answer questions 23 and 24 as best you can for the residential part of your property.)

Q- 23 As best as you can remember, how much were your total energy bills in 1982? If your bills or checkbook are handy, they could be helpful.

	1982
1 ELECTRICITY	$_____
2 FUEL OIL	$_____
3 WOOD (NO. OF CORDS _____)	$_____
4 NATURAL GAS	$_____
5 OTHER: (e.g., coal, propane, or?)_____	$_____

Everyone

Q- 24 About how much a month do you pay for rent or house payments? (Include space rent if in mobile home park.)

1 NO PAYMENT OR RENT
2 LESS THAN $100
3 $100 to $199
4 $200 TO $299
5 $300 TO $399
6 $400 TO $499
7 $500 TO $749
8 $750 TO $999
9 $1,000 OR MORE

Homeowners Only

What is the value of your home? That is, about how much do you think it would sell for if it were for sale?

1 LESS THAN $25,000
2 $25,000 TO $49,999
3 $50,000 TO $74,999
4 $75,000 to $99,999
5 $100,000 TO $124,999
6 $125,000 TO $174,999
7 $175,000 to $249,999
8 MORE THAN $250,000

FINALLY, WE WOULD LIKE TO ASK A FEW QUESTIONS ABOUT YOURSELF TO HELP WITH ANALYSIS OF THE RESULTS.

Q- 25 Where is your residence located?

_____ COUNTY

_____ ZIP CODE

_____ TOWN OR CITY IN WHICH (OR NEAREST TO) YOUR RESIDENCE IS LOCATED

Is your home: (Please circle.)

1 INSIDE THE CITY LIMITS
2 OUTSIDE THE CITY LIMITS

Q- 26 Are you: (Please circle number of your opinion.)

1 MARRIED
2 DIVORCED
3 WIDOWED
4 SEPARATED
5 NEVER MARRIED

Q- 27 Please list everyone who lives in your household by their relationship to you, starting with the adult(s). (Please list as husband, wife, parent, friend, son, daughter, etc.--names are not necessary.)

		Age (In Years)	Sex (M = Male; F = Female)
1	Yourself		
2			
3			
4			

If more space is needed, please put ages here:

FEMALES ____; ____; ____; ____; ____; ____; ____

MALES ____; ____; ____; ____; ____; ____; ____

Please answer these questions for yourself and your spouse or other adult partner (if you have one).

	YOURSELF	SPOUSE OR PARTNER
Q- 28	Are you primarily:	Is he/she primarily:
	1 EMPLOYED FULL TIME	1 EMPLOYED FULL TIME
	2 EMPLOYED PART TIME	2 EMPLOYED PART TIME
	3 NOT EMPLOYED OUTSIDE THE HOME	3 NOT EMPLOYED OUTSIDE THE HOME
	4 UNEMPLOYED	4 UNEMPLOYED
	5 RETIRED	5 RETIRED
Q- 29	Your usual occupation when employed (or before retirement):	His/her usual occupation when employed (or before retirement):
	_____ TITLE	_____ TITLE
	_____ TYPE OF COMPANY OR BUSINESS	_____ TYPE OF COMPANY OR BUSINESS
Q- 30	(If employed) About how far is it from home to where you work:	(If employed) About how far is it from home to where he/she works:
	_____ MILES	_____ MILES
Q- 31	Your highest level of education:	His/her highest level of education:
	1 0-8 GRADES	1 0-8 GRADES
	2 SOME HIGH SCHOOL	2 SOME HIGH SCHOOL
	3 HIGH SCHOOL GRADUATE	3 HIGH SCHOOL GRADUATE
	4 TRADE SCHOOL	4 TRADE SCHOOL
	5 SOME COLLEGE	5 SOME COLLEGE
	6 COLLEGE (4 year) GRADUATE	6 COLLEGE (4 year) GRADUATE
	7 SOME GRADUATE WORK	7 SOME GRADUATE WORK
	8 A GRADUATE DEGREE	8 A GRADUATE DEGREE

Q- 32 Some people have many types of investment experiences, and others do not. Which of the following types of investments, if any, have you owned in the last ten years: (Please circle all that apply.)

1 A BUSINESS
2 A HOME
3 OTHER REAL ESTATE THAN YOUR HOME
4 UNITED STATES SAVINGS BONDS
5 PASSBOOK SAVINGS ACCOUNT
6 TIME SAVINGS DEPOSITS
7 MUTUAL FUNDS
8 MUNICIPAL BONDS
9 TREASURY NOTES OR BILLS
10 GOLD OR SILVER
11 STOCKS OR BONDS OF CORPORATIONS
12 MONEY MARKETS
13 NONE

Q- 33 Which of these broad categories describes your total family income before taxes in 1982? (Please circle the number of appropriate category.)

1 LESS THAN $5,000
2 $5,000 TO $9,999
3 $10,000 TO $14,999
4 $15,000 TO $19,999
5 $20,000 TO $24,999
6 $25,000 TO $29,999
7 $30,000 TO $39,999
8 $40,000 TO $49,999
9 $50,000 OR MORE

Is there anything we may have overlooked? Please use this space for any additional comments you would like to make about the use of energy in your home or the United States.

Your contribution to this effort is very greatly appreciated. If you would a summary of results, please print your name and address on the back of the envelope (NOT on this questionnaire). We will see that you receive it.