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THE ALLOCATION OF TIME BY CONSUMERS:  
A PROPOSED MODEL AND EMPIRICAL TEST

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## ABSTRACT

This paper proposes a model designed to explain the temporal dimension of consumer behavior. This model is then tested using diary responses from a national probability sample. The empirical results generally support the proposed model.

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INTRODUCTION

Activities in which consumers engage may be regarded along three dimensions: spatial, social, and temporal. The spatial and social dimensions refer to where and with whom an activity takes place, respectively, while the temporal dimension subsumes four elements:

- (1) frequency--how often;
- (2) timing--at what time;
- (3) sequence--in what order;
- (4) duration--for how long.

Each of these dimensions is an important perspective from which activities may be examined. Though largely ignored by consumer researchers (Jacoby et al, 1976), the temporal dimension presents exceptional potential. Increasingly recognized is the interdependence between consumers' allocations of time and their allocations of other resources (Nicosia and Mayer, 1976, p. 68). Thus, a more complete understanding of the behavior of consumers is possible only if their treatment of time is examined.

The objective of this paper is to propose and test a model of the process by which consumers allocate time. Thus, our focus will be on the duration element of time. A framework is first presented which highlights the importance of time in consumer behavior. The relevant literature is then examined, followed by the development, operationalization, and testing of the model using data from the 1975/1976 Institute for Social Research Time Use Study.

TIME AS AN INPUT

An activity may be regarded as a process associated with which are the inputs of time, energy, and goods and services (Becker, 1965; Linder,

1970; Schary, 1971). These inputs may be combined in varying proportions to effect some desired outcome(s). To illustrate these concepts, the activity of meal cleanup may be utilized. The desired outcome associated with this activity may be the restoration of the dining area, dishes, utensils, etc., to some satisfactory level of cleanliness. This may be achieved in a variety of fashions, each of which represents a different combination of the inputs of time, energy, and goods and services. For instance, one may hold the energy and goods inputs to a minimum at the expense of time by washing the dishes and utensils in the traditional manner at a relatively leisurely pace. Alternatively, one's time and energy inputs may be held to a minimum by incorporating such goods and services as disposable plates and utensils, a dishwasher, or even a maid. Other activities--meal preparation, procurement of goods, maintenance of one's possessions, recreation, etc.--may be thought of similarly. This relationship between goods or services and the time input to activities may be amplified. Depending upon whether the absence of the good or service would increase or decrease the amount of time devoted to a given activity, goods or services may be classified as either substitutes or complements, respectively, for the time input to that activity. Thus, a telephone may be a substitute for the time spent shopping and a complement to the time devoted to corresponding with distant relatives. Though classification rests upon the resulting impact on time, general patterns of usage suggest that substitutes include such items as partially prepared foods, restaurants, dishwashers, aluminum siding, and automatic car washes, while complements include gourmet cooking classes, tennis rackets, theatres, and televisions, to name a few.

This interdependence between time and goods and services vividly emphasizes the importance of understanding the process by which consumers allocate

time. Consumers may use goods and services as either substitutes for or complements to their own time input to various activities. Clearly, the mix of goods and services acquired by a given consumer reflects to some extent that consumer's preferred pattern of time allocation.

Schary (1971) presented in a convincing fashion areas of marketing activity in which patterns of time allocation by consumers are likely to play a key role. Products may be developed, for instance, that are closely attuned to consumers' needs and preceptions of time. Effective segmentation strategies may be similarly devised. The plethora of marketing strategies which at least implicitly reflect varying consumer time allocation preferences (credit cards, expanded hours of service, express lanes, incentives for consumption at non-peak times in communication, travel, etc., "do-it-yourself" items, a host of leisure-time products, to name only a few) suggests that marketers recognize the importance of time in consumer behavior. Given the current level of understanding of the process by which consumers allocate their time, one must question the effectiveness with which these strategies are formulated and implemented. The marketing decision maker who wishes to incorporate consumers' time preferences into his or her strategy finds a relevant theoretical and empirical basis virtually nonexistent. Despite the fact that time may well be the crucial dimension of consumption activities (Nicosia and Mayer, 1976, p. 68), "consumer researchers have given it scant attention." (Jacoby et al, 1976). The dynamics of this process are largely unexplored. If the questions were asked--which consumers prefer to spend a given amount of time in a particular activity, and more importantly, why?--one would be pressed to formulate a response.

In today's marketing environment this dearth of understanding is made even more conspicuous by the externalities arising from consumers' allocations

of time. Again in terms of the activity-as-a-process framework presented earlier, the substitution of goods and services for one's own time input very often has undesirable consequences, either for the individual, the environment (Fisk, 1973), or society. Many prepared foods, for instance, lack the nutritional qualities of lesser processed foods. Disposable packaging may be convenient, but this convenience often comes at the expense of the environment. Product information may not be acquired because an inferior choice may be less "costly" (Stigler, 1961; Mincer, 1963; Downs, 1961; Bender, 1964) than the time expenditure required to make the optimal choice--again, to the individual in the short run, though not necessarily in the long run, nor to society as a whole. One might speculate that the ready acceptance of products which are more easily disposed of than repaired reflects consumers' time preferences. These externalities arise from the trade-offs which a substantial portion of consumers are apparently willing to make.

Both marketing and public policy makers, then, would benefit from an understanding of the process of time allocation by consumers. The goal here is to develop and test a model designed to account for variations in consumers' time expenditures to various activities, particularly those in which goods and services most clearly substitute or complement the individual's time. The ultimate intent of this examination is best stated by Kleemeier (1961, pp. 7-8):

[We]...are not so much concerned with the simple distribution of time in itself as...with the significance of time usage as an indicator that ultimately will allow [us] to understand something of the values placed on activities so that reasonably precise predictions may be made about the behavior of groups of people.

#### CLASSIFICATIONS OF ACTIVITIES

In addition to its fundamental relationship with goods and services, time is an especially tractable metric. Durations of more general categories of activities, such as obligatory or discretionary activities, may be obtained by simply summing the durations of the individual activities from which they are derived. Deciding which activities should be grouped together, however, is not quite so straightforward.

Chapin (1974, pp. 70-71), attempting to classify activities as either obligatory or discretionary, noted the difficulties:

...An exact assignment of an activity to either category would require interpretation of the activity in the context of a number of contingencies--meaning ascribed to that activity by the culture and the social system in which the subject falls, the culturally defined household role being performed by the subject at the time of the activity, the subject's own taste and preference, situational factors surrounding the occurrence of each such activity, [and the time frame.]

Before settling on a somewhat arbitrary method of classification, Chapin experimented with a number of alternative approaches. In one, subjects were asked to classify their own activities. Variability in the definition of the concept "discretionary" employed by subjects made for inconclusive results, however. In another approach, supplemental data were gathered to enable the researcher to classify the activities according to predetermined criteria, such as how long prior to an activity had a decision been made to engage in that activity. Respondent fatigue rendered this approach unacceptable.

Robinson (1977, p. 134) suggests three attributes--enjoyable, discretionary, and spontaneous--which distinguish leisure or free-time activities from obligatory activities. His results given only slight support to this classification. (Robinson 1977, pp. 137-138).

Regardless of the means by which activities are classified, a dichotomy is entirely too restrictive. Dichotomies of activities, such as labor-leisure

or obligatory-discretionary, ignore the set of activities which contain elements of both obligation and discretion. As DeGrazia (1962, p. 93) has noted, "things with a sense of obligation may also be felt as enjoyable," citing the care of children as an example. Bell (1975, p. 559) lends support by noting certain activities--sleeping, eating, etc.--which cannot be neatly assigned to either category of the "artificial leisure-labor dichotomy." Finally Chapin (1974, p. 37) himself has observed:

In between obligatory and discretionary, the assignment of an activity to one or the other category can vary with the person and the circumstances.

There is no reason to cling to such a clearly inappropriate taxonomy. Activities arrayed along a continuum according to the degree of latitude one has in determining in the short run the amount of time so employed fall into three somewhat discrete categories. At one end of the continuum are inelastic activities in which the individual has no latitude in determining the time input. Employment, for some, may fall within this category (though not for others, e.g., professionals or self-employed, who may exercise some degree of latitude.) At the other end of the continuum are discretionary activities in which one may exercise virtually complete latitude in so employing one's time. In between these extremes are intermediate activities, with which is associated some latitude. Intermediate activities are distinguished from discretionary activities by the fact that anterior conditions (e.g., factors which govern the boundaries of individuals' time allocation) very often stipulate some commensurable time expenditure. Neither are intermediate activities of the same cast as inelastic activities, as evidenced by the multitude of both complementary and substitute goods and services designed to capitalize on that very degree of latitude which individuals may exercise.



This taxonomy of activities corresponding to the dimension of latitude alleviates to some extent the indeterminacy of traditional classificatory schemes. Moreover, it is quite efficient as an analytical framework from which to examine the allocation of the scarce resource time. Furthermore, as the time required by inelastic activities increases (decreases), the time allocated to the set of elastic activities--comprised of intermediate and discretionary activities--must decrease (increase) by a commensurate amount. Corresponding to any level of inelastic activities, a time budget constraint connects the combinations of time expenditures to discretionary and intermediate activities which exhaust the balance of time remaining after the time input to inelastic activities is subtracted from total time. For instance, one with no inelastic activities has 24 hours which must be allocated to some combination of discretionary and intermediate activities. One whose inelastic activities require 8 hours per day has 16 hours which must be allocated to discretionary and intermediate activities.

It may be argued that the allocation of time to elastic activities within the time budget constraint is of most significance, since these are the activities characterized by at least some degree of latitude (in the short run). This is the position taken here. Thus, the time budget constraint will be treated as a given which can only be altered in the short-run by some unusual event, e.g., a change in jobs, retirement, etc., and the focus will be on the allocation of time to discretionary and intermediate activities.

#### PREVIOUS RESEARCH

Time allocation has attracted the attention of numerous reseachers. There studies have generally examined variables grouped under three general headings: personal, environmental, and resources. Personal factors

have included both physiological and psychological variables. Robinson (1977, p. 68) found a weak relationship positive relationship between age and the amount of time devoted to housework. Beyond this one study, physiological variables are noticeably absent from the literature of time allocation.

Psychological variables have attracted somewhat more attention in the literature. One psychological variables that has been designated for examination is the enjoyment derived from engaging in a given activity. Arndt and Gronmo (1977, p. 233), Chapin (1974, p. 211), and Schary (1971) all note the importance of enjoyment but fail to directly measure it. Winter (1975) does provide support for this intuitive relationship between enjoyment and time expenditures. He found that consumers faced with unattractive alternative uses of their time spent more time absorbing price information than those with attractive alternatives. Robinson (1977, pp. 119-121) also found a positive relationship between enjoyment and time use. Another psychological variable of interest is the individual's subjective perception of his or her role within the household. The work of many researchers support this position. (Clark and Harvey, 1976; Gutenschwagner, 1973; Meissner et al, 1975; Robinson, 1977; Stone, forthcoming; Szalai, 1975; Walker and Woods, 1976). Education level has also proven to be a useful variable. Walker and Woods (1976) and Robinson (1977) observed significant relationships between education and time use. For example, Robinson (1977) found education to be related to: amount of free time, uses of leisure, media habits, and the time women devoted to housework.

The environment in which one lives has also been found to have an impact on time use. The most useful variable has been family composition.

(Hall and Schroeder, 1970; Marple and Wissman, 1968; Morgan et al, 1966; Robinson, 1977; Walker and Woods, 1976). For example, Morgan et al (1966, pp. 107-110) found that the pooled time devoted to housework by husband and wife was dominated by the number of people in the family. Walker and Woods (1976, p. 31) support these results and also found the age of the youngest child to be inversely related to the amount of time spent on housework. The work of Hall and Schroeder (1970) and Robinson (1977) also give strong support to these findings and to the importance of this variable. Another group of miscellaneous environmental variables have also been examined. These are usually activity-specific variables. Walker and Woods (1976, p. 139) found a slight positive effect of complexity of housing on the pooled time of all family members expended on all house care activities. In another type of activity-specific situation, a number of studies have examined the relationship between time expenditures and various displays of consumer information. (Gatewood and Perloff, 1973; Jacoby, Speller, and Burning, 1974). Thus task specific variables govern time expenditures to some extent. The extent to which one's environment, beyond the factors cited above, influence one's time allocations is well developed theoretically. (Hagerstrand, 1970; Cullen and Godson, 1972; Chapin, 1974; Parkes and Thrift, 1975). Unfortunately, empirical evidence is scarce.

A number of resource factors have also been examined. The most important of these are income and stock of technology. Extending the concept of elasticity of activities, Linder (1970, pp. 82-83) defines an "inferior pursuit" as an activity whose income elasticity is negative. That is one whose duration will decrease as income rises. Researchers have not been successful in isolating these inferior pursuits, however, Chapin (1973),

Robinson (1977), and Walker and Woods (1976) find little evidence of the impact of socioeconomic level on the time expenditure in household related activities. Researchers have also failed to substantiate the widely held view that technology has freed use from spending our time on "maintenance activities" (personal, household, etc.). (Robinson, 1977; Robinson and Converse, 1971; Robinson, Converse, and Sxalai, 1972). Robinson et al (1972, pp. 126-127) do suggest reasons for the results. They propose that the effects of time-saving devices may be attenuated by the commensurate time requirements for their purchase, maintenance, and replacement, and that it may be that more things are being done. Thus it is necessary to obtain some measure of output before dismissing the impact of technology on time expenditures.

#### CRITIQUE OF RESEARCH ON TIME ALLOCATION

The research cited above have moved the study of time uses forward. However, we believe that most suffer major weaknesses. Foremost among the weaknesses is the nature of the samples used. With the notable exception of Robinson (1977) none of the studies have used a national probability sample. Most have been local in scope, and would best be described as convenience samples. The present research employs a national probability sample. Another problems relates to the failure to employ well specified models of time allocation. This seems to be due in part to the restricted objective that researchers from diverse perspectives bring to their studies. For example, the purpose of Walker and Woods (1976), two economists, was not to explore the dynamics of the process of time allocation but rather to develop a method of measuring household production. The effect of model misspecification on parameter estimation is well documented. (Goldberger,

1973, p. 4; Wonnacott and Wonnacott, p. 70, p. 312). Clearly, a fully specified model is needed. This paper proposes such a model.

Closely related to this problem is the use by some researchers of statistical techniques which do not yield a measure of the marginal impact of variables, e.g., bivariate correlation, and to a lesser degree, partial correlation. Arndt and Gronmo (1977) assess the impact of some sixteen variables using t-tests or F-tests for differences between time expenditures. Walker and Woods (1976) relied extensively on rank correlation analysis and occasionally on partial correlation analysis in the analysis of their data. Since relationships observed in a bivariate context may not materialize when multivariate controls are introduced, such findings are of questionable significance.

Finally, no study has reported examining for interactions between explanators even though additive models are commonly employed. Since certain interactions might be anticipated a priori, e.g., between income and the enjoyment derived from engaging in various activities, this is clearly unacceptable. The present research avoids all of these statistical difficulties.

#### A MODEL OF TIME ALLOCATION

Empirical research has demonstrated the impact of quite a number of variables on individuals' allocation of time. It was argued, however, that research in this area has been hindered by theoretical and methodological limitations. In this section, a model of time allocation designed to remedy these inadequacies will be proposed.

The concept of latitude is a central element in this model of time allocation. It may be argued that two conceptually distinct sets of variables determine the latitude which an individual exercises in his or

her allocation of time. The first set of variables, which may be called anterior conditions, delimits the ostensible sphere of various time expenditures. The second set of variables, mediating factors, governs the extent to which an individual's time expenditures will vary within the sphere defined by anterior conditions. An analogy between time and money expenditures may serve to clarify this distinction. The proportions of income spent for various categories of goods and services have been found to vary with such demographics as the family life cycle (Lansing and Morgan, 1955; Wells and Gubar, 1966; McFall, 1969; Wells, 1973). Of course, the correspondence between the two is not absolute. Roscoe et al (1977) propose a new dimension to demographics, advocating psychological factors as a complement to demographics in the explanation and prediction of product usage behavior.

In a similar fashion, time expenditures covary with anterior conditions. The time spent in meal preparation, for instance, is a function of the number of people for whom the meals are prepared. Again, however, the fit is far from perfect. One can observe some individuals with larger families devoting less time to meal preparation than other individuals with smaller families, even when other anterior conditions which may account for these differences, e.g., aspects of the kitchen which facilitate or hinder meal preparation, are held constant. Mediating factors (to be elaborated) may account for these deviations, just as psychological factors may account for variations in money expenditures left unexplained by demographics.

Before expected relationships are specified, variables which are labelled mediating factors require elaboration. These include the position of one's time budget constraint, the enjoyment derived from engaging in a particular activity, temporal orientation, resources, time expenditures of others, perceived role, and energy expended.

The position of the time budget constraint, as developed earlier, impinges on time expenditures quite obviously due to the interdependence of time. Less apparent, however, is the differential impact of the time budget constraint on various activities. Restrictive time budget constraint are likely to reduce the time allocated to discretionary activities more so than intermediate activities, since by definition, an individual can exercise more latitude in the allocation of time to discretionary than intermediate activities.

The time devoted to an activity is expected to correspond closely to the enjoyment derived from so employing one's time, relative to the enjoyment derived from alternative uses of one's time. Enjoyment is especially likely to distinguish among individuals' time expenditures for discretionary activities and to a lesser degree, intermediate activities.

The mediating factor of temporal orientation reflects the extent to which individuals are willing to or capable of delaying gratification, allocating time to activities in which the benefits may not appear until into the future. Persons who are present-oriented may display a tendency to minimize their time in such activities as personal care, household maintenance, etc. One suspects that temporal orientation may also interact with the factor of enjoyment, with the latter's explanatory ability being reduced when individuals "invest" in their future.

The mediating factor of resources provides an individual with the means to exercise a considerable degree of latitude in his or her time allocation. Resources enable one to more readily substitute goods and services (e.g., dishwasher, microwave oven, etc.) for one's time input to certain activities as well as open up to a whole range of activities (e.g., photography, boating, gardening, etc.) which call for certain

complementary products. "Inferior pursuits" (Linder, 1972, p. 82)--activities for which the time expenditure declines as income rises--are commonly thought to include such activities as housework, though researchers have failed to uncover any such relationship. This does not necessarily mean that the more affluent do not shift their time from less pleasant household activities (say, meal clean-up) to more pleasant ones (say, gourmet cooking). To be more precise, the resource factor most likely interacts with the factor of enjoyment to enable the individual to re-allocate his or her time to relatively preferred activities.

The allocations of time by others with whom one interacts may mediate one's own time allocations. A spouse who assumes responsibility for the cooking, cleaning, and shopping substantially reduces the need for such time expenditures by the individual. Similarly, allocations of time to such activities as conversing presuppose similar time expenditures by another individual.

Another mediating factor is the individual's perception of his or her role in an activity, or more suggestive, in a process intended to effect some outcome. That is, to what extent does the individual see his or her time input as a necessary prerequisite to some outcome? An oft-cited example in marketing textbooks is that of the early cake mixes which were ill-received supposedly because they required no input on the part of the housewife. Such a role perception may govern the substitutability of goods and services for the time input to such activities as meal preparation and child care, especially.

The energy expended in various activities may also account for variations in time expenditures left unexplained by anterior conditions, especially in those activities in which one's energy may be substituted



for one's time. These are in general intermediate activities (though recently a similar phenomenon has emerged in discretionary activities as well--e.g., raquetball versus tennis.)

#### HYPOTHESES

With definitions of these mediating factors established, we can now proceed with the specifications of the expected relationships are presented between 1) the time expended in various activities and 2) anterior conditions and mediating factors. The hypotheses are drawn from the empirical work examined above as well as intuitive speculations about the behavior expected in various circumstances. The time spent on four different consumer activities are examined as dependent variables in the study. They are: 1) time spent in meal preparation, 2) time spent in meal cleanup, 3) time spent in indoor cleaning, and 4) time spent in procuring goods and services. The independent variables are the anterior and mediating factors discussed earlier. The specific hypotheses to be tested for each of the activities are presented in Tables 1 through 4.

There are many issues that could be discussed about the operational definitions of the independent variables used in this study. The space available here will only allow a brief presentation of the most important aspects of this area. A detailed presentation is available in Hendrix (1978). Consistent with the research cited previously the measure of household composition used here incorporates both the number of adults as well as the number and ages of the children in the household. An index was constructed by forming a linear combination of the as follows: one point for each person 18 years or older; two for each person from age 15 to 17; and three for each person age four or younger<sup>1</sup>. This resulted

in a range of scores from 1 to 18. The lower scores represent "simpler" households, while the higher scores represent more "complex" households.<sup>2</sup>

The time budget variable is operationalized by summing the time devoted to measured activities that are relatively inelastic in terms of time. These activities are: normal work, second job, lunch at work, coffee breaks at work, and travel to work. The variable "enjoyment" was measured on a ten point rating scale. To improve the comparability of these ratings across respondents, the scores were standardized by respondent.

Temporal orientation refers to an individual's preference for activities characterized by immediate enjoyment versus activities in which the benefits may not appear immediately. This measure was operationalized by combining the responses to seven questions believed to be related. (Hendrix, pp. 70-71). The composite of the variables was formed using factor loadings as weights.

Perceived role refers to the extent to which an individual sees his or her own time related to an activity as an essential prerequisite to some outcome. This variable was measured by having respondents rate their perceived role in various activities on a five point scale. (Hendrix, p. 75-77).

In order to measure the energy expended in activities, subjective measures of this were obtained from respondents for various activities using a scale. To increase the comparability across respondents of these subjective measures of energy expenditures, the respondent's reported measure of energy expended in watching television was subtracted from his or her reported measure of energy for other activities.<sup>3</sup> The importance of this variable is that one might expect individuals who perform activities more energetically to accomplish the same result in less time than their less energetic counterparts.

#### THE STUDY

The data used in this research are from the Institute for Social Research's 1975/1976 Time Use Study. Respondents to the study consisted of 975 households, selected by means of a multi-stage area sample. Data were collected by means of a very detailed diary. Each respondent took part in three separate waves of data collection each consisting of a weeks activities. By having three waves at different times of the year, the likelihood of atypical weeks affecting the results is minimized.

#### MODE OF ANALYSIS

Each of the analyses of time expenditures in various activities whose results follow involved 3 stages:

- 1) examining the distribution of the dependent variable, correcting for skewness if necessary
- 2) inspecting for interactions among explanators, taking remedial measures as required; and
- 3) estimating the parameters of the model using the Multiple Classification Analysis model (MCA).

None of the dependent variables required transformations. (Summary measures of their distributions may be found in Hendrix, 1978.)

The method of detecting interaction used involves examining bi-variate relationships between explanators X and the dependent variable Y within levels of other explanators Z suspected of interacting with X. The bivariate measure of association employed was tau b (Kendall, 1970). If the measures of association between X and Y differ substantially across levels of Z, the presence of interaction between X and Z is suggested.<sup>3</sup> Deciding what magnitude of difference constitutes a substantial interaction

is somewhat arbitrary. Adopted for initial purposes were the criteria commonly employed at the Survey Research Center:  $0 \leq \text{difference} < .10$ , absent;  $.10 \leq \text{difference} < .25$ , mild; and  $\text{difference} \geq .25$ , substantial.

The consequences of interaction suggested by the above procedure were then determined using 1 of 2 approaches:

1) by comparing the explanatory power of the additive model containing X, Z with that of the model containing the pattern variable  $X*Z$ .

The latter contains the main effects of X and Z as well as the XZ interaction; hence, any change in  $R^2$  is due to the interaction between the two explanators. The significance of this interaction can be tested by computing an F statistic for the change in  $R^2$  (unadjusted.)

2) by disaggregating the sample into subsets on the basis of variable Z as suggested by the initial search and comparing the effects of X on Y across subsets. Markedly different patterns of effects confirm the suspected interaction.

Depending on the number and severity of the suggested interactions, the pattern variable and disaggregation approaches were employed. If the sample required disaggregation--for instance, into subsets of males and females, as proved necessary in a number of instances--the process of inspecting for interactions was repeated for each of the subsets. More stringent criteria for classifying interaction were adopted, however, since the resulting smaller samples contribute to wider fluctuations in the measures of association. The criteria used were:  $0 \leq \text{difference} < .20$ , absent;  $.20 \leq \text{difference} < .30$ , mild; and  $\text{difference} \geq .30$ , substantial. Generally, in the intact and disaggregated samples only the consequences of interactions considered substantial were tested.

## RESULTS

This sections presents the empirical results of the test of the model for each of the four dependent variables.

### Time Spent In Meal Preparation

Four interactions of varying magnitudes appeared when measures of association between various explanators and time input to meal preparation were computed within subsets defined by sex. The impact of household composition differed substantially between sexes--a negative relationship was observed for the male subset, while the expected positive relationship appeared in the female subset. The time budget constraint, though inversely related to time expenditures in both subsets, showed a much stronger negative impact in the female subset. Smaller differences occurred with the variables temporal orientation and perceived role. In addition to these differences, males spent substantially less time per week in meal preparation than females (84 versus 471 minutes per week, on average), as might have been expected in light of the evidence reported earlier. These dissimilarities required disaggregating the sample into subsets of males and females for subsequent analysis. A search for interactions within the subsets of males and females identified only mild instances. Thus, additive models of time expenditures in meal preparation with male and female subsets were examined.

In the analysis of time expenditures by males about one half of the hypothesized relationships between time expended in meal preparation and various explanators were supported, as the results of the MCA shown in Table 5 show. Time expenditures were found to vary positively with the corresponding enjoyment and inversely with others' input, assets, and to

a lesser degree, total family income. No systematic patterns appeared in the explainers energy expended in housework, efficiency of the dwelling, time budget constraint, health, or perceived role. The inverse relationships with household composition and temporal orientation are directly opposite the hypothesized positive relationships. The explainers age and education were positively and inversely related, respectively, to males' time expended in meal preparation. Finally, the overall explanatory power of this set of variables was relatively low, especially when compared to the female subset.

As noted above, females devoted on average 471 minutes per week to meal preparation. Table 6 shows the results of the MCA. More the the hypothesized relationships were supported in the female subset of the sample. Females' time input to meal preparation varied positively with the complexity of the household, with the enjoyment corresponding to the activity, and less clearly, with perceived role and temporal orientation. Time input varied inversely with the restrictiveness of the time budget constraint others' input and assets. The patterns of effects corresponding to the energy expended in housework, total family income, and health were opposite those hypothesized. Time input varied positively with each of these factors. No consistent patterns emerged for the efficiency of the dwelling or respondent's level of education. Time did vary positively with age, however, as it did in the male subset.

#### Meal Cleanup

The impact of several explainers of time devoted to meal cleanup differed between sexes. Household composition was again inversely related to males' time expenditures and positively related to females'. Temporal

orientation showed the same pattern--the positive association was much more pronounced in the male subset. In addition to these differences, males spent on average 20 minutes per week in meal cleanup as compared to the 150 of females. These differences again suggest the need to disaggregate the sample into male and female subsets for subsequent analysis.

Within the male subset, two substantial interactions appeared. The positive effect of enjoyment was strongest at the least restrictive level of the time budget constraint. The time budget constraint was negatively related in the intermediate and essential levels of perceived role, while the relationship was reversed in the non-essential category. No interactions appeared in the female subset.

The significance of the interactions in the male subset--enjoyment by time budget constraint and perceived role by time budget constraint--was tested via a series of MCAs: one in which the variables suspected of interacting were considered separately, and subsequent analyses in which they were combined to form a pattern variable. Employing this approach, the enjoyment by time budget constraint interaction was significant at  $p < .10$  [ $F(5,367)=1.91$ ]. The perceived role by time budget constraint interaction was significant at  $p < .025$  [ $F(5,367)=2.65$ ] with the expected positive relationship between time expended in meal cleanup and perceived role occurring only within the least restrictive level of the time budget constraint--the direction was reversed in the more restrictive levels of the time budget constraint. On the basis of these findings, the estimated parameters are taken from the model incorporating the perceived role by time budget constraint interaction for the male subset, while an additive model was examined for the female subset.

As Table 7 shows, the explanatory power of the model tested for males yielded an  $R^2$  of .195. The variables whose hypothesized relationships received support were enjoyment, perceived role (in the least restrictive level of the time budget constraint), the time budget constraint (within the essential level of perceived role), and to a lesser degree, assets. The factors of education, energy expended in housework, efficiency of dwelling, temporal orientation, health, and others' time input were not related in any systematic fashion to males' time expenditures in meal cleanup. Factors which showed patterns opposite those hypothesized included perceived role (within the most restrictive levels of the time budget constraint), the time budget constraint (within the non-essential and intermediate levels of the perceived role), household composition, and total family income. Age was again related positively to time spent in meal cleanup, as was the case in meal preparation.

As shown in Table 8, five explanators showed effects on females' meal cleanup time in the hypothesized direction. Time expenditures were positively related to the complexity of the household, age of the respondent, and perceived role. Negative relations were observed between females' time expenditures to meal cleanup and the restrictiveness of the time budget constraint, others' time input, and the level of education. No systematic relations were observed between time expenditures and the explanators efficiency of dwelling and temporal orientation. The variables total family income, enjoyment, energy expended in housework, assets and health all showed effects opposite those hypothesized. The overall explanatory power of the model was greater in the female subset than in the male subset, as was the case with meal preparation.



### Indoor Cleaning

There were three instances in which the effects of explanators of time devoted to indoor cleaning differed between males and females. The most outstanding is the inverse relation with household composition in the male subset and the positive relation in the female subset (this difference also appeared in the activities of meal preparation and meal cleanup). To a lesser degree, the impacts of the age of the dwelling and the restrictiveness of the time budget constraint differed as well. Females again devoted substantially more time on average to indoor cleaning (311 minutes per week) than their male counterparts (49 minutes per week). On the basis of these differences, subsequent analyses are within male and female subsets. No substantial interactions were found in either subset. Thus additive models are examined for both males and females.

Males spent on average 49 minutes per week in indoor cleaning. The groups of explanators presented in Table 9 show model relationships supported included the negative relations between time expended in indoor cleaning and the explanators the degree of planning evident in the dwelling, assets, and income, and the positive relations with temporal orientation, age of dwelling, and size of dwelling. Age of respondent was also positively related to time spent in indoor cleaning, while education was inversely related. The explanators importance of the house being neat, perceived role, others' time input, time budget constraint, health, energy expended in housework, and enjoyment were not systematically related to males' time expenditures in indoor cleaning. The explanators condition of the dwelling and household composition showed negative relationships which were opposite those hypothesized.

As Table 10 shows, more of the variation in time allocated to indoor cleaning was accounted for in the female subset than in the male subset. The expected inverse relationships between time spent in indoor cleaning and the explanators restrictiveness of the time budget constraint and degree of planning evident in the dwelling were supported by the data, as was the hypothesized positive relationship with the importance attached to keeping one's house neat. No systematic relationships were observed between time expended in indoor cleaning by females and the explanators condition of the dwelling, energy expended in housework others' time input, household composition, enjoyment, size of dwelling, temporal orientation, total family income, education, assets, age of respondent, age of dwelling, and perceived role. The impact was opposite that hypothesized.

#### Procuring Goods and Services

No substantial interactions appeared between sex and other explanators of time expended in procuring goods and services. Neither were substantial interactions observed between other pairs of explanators. Thus, an additive model for the sample as a whole was tested.

Respondents spent on average 325 minutes per week in procuring goods and services. As shown in Table 11, the expected negative relationship between the time budget constraint and time expended was supported, as was the positive impact of total family income and enjoyment. The effects of health, others' time input, household composition, age of respondent, temporal orientation, and perceived role were not systematic. The inverse relationship with assets was opposite that hypothesized. Finally, time expended varied almost directly with the level of education.

## DISCUSSION

### Anterior Conditions

Household composition was a relatively important explanator in many of the activities examined. Females time expenditures in meal preparation, meal cleanup, and to a lesser extent, indoor cleaning, varied directly with the complexity of the household. Males time expenditures in each of these activities first decreased, then increased, though even in the most complex households their time expenditures did not regain the initial level. The impact of the composition of the household on procuring goods and services was not clearly positive, as was hypothesized. These effects, which generally confirm evidence cited earlier, suggest that women in more complex households constitute a prime market segment for goods and services which might substitute for their time input to the three household related activities examined--meal preparation, meal cleanup, and indoor cleaning. The efficiency of the dwelling did not have the hypothesized effect in either of the analyses in which it was included. There was a parallel pattern--time expenditures increased and then decreased with increasingly inefficient dwellings. Perhaps respondents in the least efficient dwellings, faced with the resulting difficulty in preparing meals or cleaning up afterwards, simply eat elsewhere, a choice which would account for the observed patterns. The health of the individual was a relatively poor explanator in each of the activities examined except indoor cleaning by females and procuring goods and services. The effect in procuring goods and services was not made clear. A number of task specific variables affected the time spent in indoor cleaning. The condition of the dwelling was a strong explanator, but effects were reversed between sexes. The extent of planning evident in the household, also a strong

explanator, showed effects in both sexes in the hypothesized direction. Size and age of the dwelling were positively (though weakly) related only to males' time expenditures in indoor cleaning.

#### Mediating Factors

The time budget constraint had the most unambiguous effect across activities. It was the strongest explanator in two analyses, with the hypothesized negative impact supported in most analyses. As noted earlier, however, one expects negative relations due to the interdependence of time. Thus, the absence of the expected negative impact in males' meal preparation and indoor cleaning is of special significance. Also of interest is the fact that the time budget constraint was not as powerful as other explanators in the analyses of the time devoted to meal preparation and meal cleanup by females. The enjoyment corresponding to engaging in activities showed clear effects in the hypothesized direction in four of the seven analyses. Moreover, enjoyment was a relatively powerful explanator. Also of interest is the stronger impact of enjoyment in meal preparation and meal cleanup among males than females. This suggests that males who do not enjoy these activities are more apt to reduce their time input than females, and vice versa. The effects of temporal orientation were not clear across activities. Few of the effects were monotonic. Moreover, the explanatory power was moderate to poor. Perceived role received even less support. The lack of support for these variables suggests the need for further exploration of the psychological factors which govern individual's allocations of time. The resource factors--total family income and assets--were among the weakest explanators examined. The activity in which the impact of total family income was most clearly supported was procuring goods and services. Though monotonic relationships were observed, these were

largely insignificant. These findings are in agreement with the evidence reported earlier. Also of interest was the absence of interactions between resource factors and other explanators, e.g., among respondents who did not enjoy an activity, those with higher resources were no more likely to reduce their time expenditures than those with lower resources. The impact of others' time input reduced respondents' time expenditures only in meal preparation. The effects in other activities were not monotonic. The failure of others' time input to reduce respondents' time expenditures in certain activities may be due to a number of factors. Others' time input may be a supplement to, rather than a substitute for, the respondent's time expenditure, in which case the outcome would be enhanced, e.g., a cleaner house. Or family members may use the activity for additional purposes e.g., husband and wife conversing while cleaning up after dinner, or the child accompanying the parent in procuring goods as a diversion, which again may reduce the expected substitutive effect of others' time input. The age of the respondent proved to be one of the strongest explanators examined in a number of analyses. Older respondents spent more time in meal preparation and meal cleanup. The impact of age in other analyses was not as clear. These differences emerged in a context in which age related phenomena, e.g., health, education, household composition, etc., were held constant. The underlying factors which account for these differences are obviously worth further exploration. Education was one of the weakest explanators examined. Finally, respondents evidently equate energy expended in housework with the time expended. Time expenditures varied positively with reported expenditures of energy for a number of activities. The hypothesized negative impact receive no support. While energy may substitute for time in certain activities, it is apparently quite

difficult for respondents to separate the energy expended from the time expended in an activity.

Earlier a framework was developed in which activities were viewed as processes designed to effect some outcome, with the inputs of time, energy, and goods and services. The relationship--whether substitutive or complementary--between time and goods and services emphasizes the importance of understanding the process of which consumers allocate time. A model of time allocation was proposed which specified two sets of variables--anterior conditions and mediating factors--as determinants of consumers' time expenditures. The empirical results provide strong support for the inclusion of both anterior conditions and mediating factors in a model of the allocation of time. Variables from each set were relatively strong explanators of the time expended in each activity examined.

The primary contribution of this research is the identification of factors which account for variations in patterns of time expenditures. These factors may be used to define market segments whose delineation enhances the effectiveness of marketing programs, e.g., segments which are prime candidates for certain classes of goods and services due to intensive demands on the consumer's time; or due to some particular characteristic, e.g., enjoyment, age, etc., segments which are likely to be more receptive than others to certain goods and services.

There remains a number of avenues which require further exploration, however. Certainly the formulation, operationalization, and testing of psychological factors which may contribute to variations in time expenditures should be assigned highest priorities. As shown earlier, the psychological factors (with the exception of the relative enjoyment measure) developed in this research were largely disappointing. Another issue which requires

examination is the failure of certain variables to operate in the hypothesized directions. For instance, among consumers who do not enjoy a particular activity, why do those with higher resources spend no less time than those with lower resources. Explication of psychological factors may address this issue--e.g., if all consumers feel a strong sense of obligation to spend their own time in the activity, then higher resources would not be used to purchase substitute goods and services. External factors may operate as well, however. Appropriate goods and services may not exist or may not be available to substitute for consumers' time inputs to certain activities. Such a finding would be especially useful in the development of new products or the repositioning of existing products.

The activities examined in this research represented varying levels of aggregation and were selected because of their clear relationship with various goods and services. There undoubtedly are additional bases of significance. As argued above, traditional aggregations have not proven particularly useful. The gap between analyses of time expenditures and money expenditures must be closed. There are currently two lines of research whose paths have not crossed. Quite a number of studies have examined the acquisition of goods and services clearly related to time expenditures, e.g., convenience products, leisure products, etc. Other studies, including the present one, have focused solely on time expenditures. In light of the relationship between goods and services and the consumer's time, this extension should prove insightful.

This research has dealt strictly with durations of activities. Other elements of the temporal dimension of activities should be examined as well: the frequency and sequence, for example--which consumers shop

for groceries on their way home from work twice a week versus once every two weeks on the weekend? Other dimensions of activities may also be explored: the spatial dimension, for instance--which consumers spend substantial proportions of time in out-of-the-home activities?

These are but a few of the possible avenues for future research in the area of time and consumer behavior. Such explorations should greatly increase our understanding of an important yet neglected fact of consumer behavior.



TABLE 1  
 TIME SPENT IN  
 MEAL PREPARATION

	EXPLANATOR	HYPOTHESIZED RELATIONSHIP
	Efficiency of dwelling	negative
Anterior Factors	Household composition	increases with complexity
	Health	decreases as deteriorates
	Time budget constraint	decreases with restrictiveness
	Enjoyment	positive
	Temporal orientation	decreases with present-orientation
Mediating Factors	Resources	negative
	Others' time expenditures	negative
	Perceived Role	Increases with essentiality
	Energy Expended	negative

TABLE 2  
 TIME SPENT IN  
 MEAL CLEANUP

	EXPLANATOR	HYPOTHESIZED RELATIONSHIP
	Efficiency of dwelling	negative
Anterior Factors	Household composition	increases with complexity
	Health	decreases as deteriorates
	Time budget constraint	decreases with restrictiveness
	Enjoyment	positive
Mediating Factors	Temporal orientation	decreases with present-orientation
	Resources	negative
	Others' time expenditures	negative
	Percieved Role	Increases with essentiality
	Energy Expended	negative

TABLE 3  
TIME SPENT IN  
INDOOR CLEANING

	EXPLANATOR	HYPOTHEZIZED RELATIONSHIP
Anterior Factors	Household composition	increases with complexity
	Size of dwelling	positive
	Condition of interior	increases if poor
	Efficiency of dwelling	negative
	Age of dwelling	positive
	Health	decreases as deteriorates
Mediating Factors	Time budget constraint	decreases with restrictiveness
	Enjoyment	positive
	Temporal orientation	decreases with present-orientation
	Resources	negative
	Others' time expenditures	negative
	Perceived Role	Increases with essentiality
	Energy Expended	negative

TABLE 4  
 TIME SPENT IN  
 PROCURING GOODS AND SERVICES

	EXPLANATOR	HYPOTHESIZED RELATIONSHIP
	Household composition	increases with complexity
Anterior Factors	Accessibility to shopping	negative
	Health	decreases as deteriorates
	Time budget constraint	decreases with restrictiveness
	Enjoyment	positive
Mediating Factors	Temporal orientation	decreases with present-orientation
	Resources	positive
	Others' time expenditures	negative
	Perceived Role	Increases with essentiality

TABLE 5  
MCA OF MALES' MEAL PREPARATION TIME

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Age	18-32	-41	F(3,374) = 21.225, p < .001
	33-50	-34	
	51 & Older	71	
Household Composition	One person	78	F(4,374) = 5.591, p < .001
	Two person	-34	
	More complex	- 1	
	Most complex	23	
Enjoyment	Unenjoyable	-13	F(3,374) = 2.76, p < .05
	Neutral	5	
	Enjoyable	34	
Temporal Orientation	Present	23	F(3,374) = 2.567, p < .10
	Intermediate	2	
	Future	-19	
Others' Time Input	Low	42	F(2,374) = 3.646, p < .05
	High	-14	
Energy Expended in Housework	Low	- 9	F(3,374) = 2.177, p < .10
	Medium	-10	
	High	5	
Efficiency of Dwelling	Efficient	1	F(3,374) = 2.060, p < .05
	Intermediate	7	
	Inefficient	-22	
Total Family Income	<\$9,000	5	F(3,374) = 1.248, p < .50
	\$9,000-\$17,499	7	
	\$17,500 & Up	0	
Time Budget Constraint	0	- 4	F(2,374) = 1.829, p < .50
	1-2160	24	
	2161-6600	- 7	
Health	Excellent	-14	F(3,374) = .999, p < .50
	Fair	11	
	Poor	- 1	
Assets	<\$10,000	4	F(3,374) = .461, n.s.
	\$10,000-\$39,999	- 6	
	\$40,000 & Up	- 7	
Education	≤8 grades	8	F(2,374) = .647 n.s.
	9th-H.S.	2	
	Higher	- 9	
Perceived Role	Non-essential	4	F(3,374) = .372, n.s.
	Intermediate	- 6	
	Essential	6	

a The coefficients represent deviation from the mean associated with membership in a level of a variable

Mean = 84 minutes per week

n = 412

R<sup>2</sup> = .231

F(37,374) = 3.036 p < .001

TABLE 6  
MCA OF FEMALES' MEAL PREPARATION TIME

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Household Composition	One person	- 244	F (3,525) = 35.226, p < .001
	Two person	- 71	
	More complex	50	
	Most complex	116	
Time	0	93	F (2,525) = 37.525, p < .001
Budget	1-2160	- 28	
Constraint	2161 & Up	-143	
Age	18-32	- 93	F (3,325) = 17.515, p < .001
	33-50	- 4	
	51 & older	95	
Others' Time Input	Low	30	F (2,525) = 10.574, p < .001
	High	-157	
Enjoyment	Unenjoyable	- 60	F (3,525) = 3.717, p < .025
	Neutral	- 7	
	Enjoyable	36	
Perceived Role	Non-essential	- 19	F (3,525) = 2.753, p < .05
	Intermediate	31	
	Essential	24	
Temporal Orientation	Present	- 19	F (3,525) = 1.628, p < .50
	Intermediate	- 36	
	Future	25	
Energy Expended in Housework	Low	- 31	F (3,525) = 1.579, p < .50
	Medium	- 13	
	High	17	
Total Family Income	<\$9,000	- 26	F (3,525) = 1.574, p < .50
	\$9,000-\$17,499	- 12	
	\$17,500 & Up	31	
Health	Excellent	- 25	F (3,525) = .986, p < .50
	Fair	3	
	Poor	24	
Assets	<\$10,000	22	F (3,525) = .570, n.s.
	\$10,000-\$39,999	6	
	\$40,000 & Up	- 5	
Efficiency of Dwelling	Efficient	- 12	F (3,525) = .157, n.s.
	Intermediate	6	
	Inefficient	1	
Education	≤ 8 grades	0	F (2,525) = .034, n.s.
	9th-H.S.	- 3	
	Higher	4	

a: The coefficients represent deviations from the mean associated with membership in a level of a variable  
Mean = 84 minutes per week  
n = 412  
R<sup>2</sup> = .231  
F (37,374) = 3.036 p < .001

TABLE 7  
MCA OF MALES' MEAL CLEANUP TIME

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Age	18-32	-12	F(3,367) = 77.169, p < .001
	33-50	-14	
	51 & Older	24	
Perceived Role by Time Budget Constraint	Nonessential,0	-15	F(11,367) = 7.339, p < .001
	Intermediate,0	- 4	
	Essential,0	12	
	Nonessential, 1-2160	6	
	Intermediate, 1-2160	6	
	Essential, 1-2160	- 6	
	Nonessential,2161 & Up	8	
	Intermediate,2161 & Up	- 5	
Enjoyment	Unenjoyable	- 7	F(3,367) = 11.374, p < .001
	Neutral	5	
	Enjoyable	8	
Energy Expended in Housework	Low	- 3	F(3,367) = 7.274, p < .001
	Medium	0	
	High	- 2	
Efficiency of Dwelling	Efficient	2	F(3,367) = 7.175 p < .001
	Intermediate	4	
	Inefficient	- 8	
Temporal Orientation	Present	2	F(3,367) = 6.167, p < .005
	Intermediate	- 8	
	Future	4	
Household Composition	One person	13	F(4,367) = 4.019, p < .005
	Two person	- 5	
	More complex	1	
	Most complex	3	
Health	Excellent	0	F(3,367) 4.339, p < .005
	Fair	0	
	Poor	2	
Others' Time Input	Low	5	F(3,367) = 3.048, p < .025
	Medium	- 1	
	High	4	
Total Family Income	<\$9,000	- 5	F(3,367) = 2.839 p < .025
	\$9,000-\$17,499	1	
	\$17,500 & Up	3	
Assets	<\$10,000	2	F(3,367) = 1.61 p < .050
	\$10,000-\$39,999	2	
	\$40,000 & Up	- 4	
Education	≤8 grades	- 3	F(2,367) = 1.383, p < .50
	9th-H.S.	2	
	Higher	0	

a The coefficients represent deviations from the mean associated with membership in a level of a variable

Mean = 20 minutes per week

n = 412

R<sup>2</sup> = .195 F(44,367) = 2.025 p < .001

TABLE 8  
MCA OF FEMALES' MEAL CLEANUP TIME

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Household Composition	One person	-84	F(3,525) = 54.412, p < .001
	Two person	-24	
	More complex	21	
	Most complex	35	
Age	18-32	-36	F(3,525) = 34.475, p < .001
	33-50	- 1	
	51 & Older	36	
Time	0	24	F(2,525) = 21.078, p < .001
Budget	1-2160	-11	
Constraint	2161 & Up	-33	
Efficiency of Dwelling	Efficient	-21	F(3,525) = 12.753, p < .001
	Intermediate	14	
	Inefficient	6	
Total Family Income	<\$9,000	-10	F(3,525) = 9.994, p < .001
	\$9,000-\$17,499	- 6	
	\$17,500 & Up	- 1	
Enjoyment	Unenjoyable	- 5	F(3,525) = 9.500, p < .001
	Neutral	10	
	Enjoyable	-10	
Energy Expended in Housework	Low	-22	F(3,525) = 9.251, p < .001
	Medium	9	
	High	13	
Perceived Role	Nonessential	-17	F(3,525) = 8.011, p < .001
	Intermediate	10	
	Essential	18	
Assets	<\$10,000	- 7	F(3,525) = 3.851, p < .01
	\$10,000-\$39,999	2	
	\$40,000 & Up	18	
Education	≤8 grades	8	F(2,525) = 2.624, p < .05
	9th-H.S.	3	
	Higher	-13	
Temporal Orientation	Present	- 5	F(3,525) = 1.843, p < .50
	Intermediate	14	
	Future	- 3	
Others' Time Input	Low	- 5	F(3,525) = 1.509, p < .50
	Medium	16	
	High	5	
Health	Excellent	- 3	F(3,525) = .255 n.s.
	Fair	1	
	Poor	3	

a The coefficients represent deviations from the mean associated with membership in a level of a variable

Mean = 150 minutes

n = 563

R<sup>2</sup> = .21270

F(37,525) = 3.833 p < .001



TABLE 9  
MCA OF MALES' INDOOR CLEANING TIME

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Condition of Dwelling	Excellent	10	F(5, 356) = 4.188, p < .001
	Good	-12	
	Fair	-46	
	Poor	-66	
Degree of Planning	Well Planned	-16	F(4, 356) = 4.531, p < .001
	Some Planning	3	
	No Planning	29	
Neat House Important	Very	1	F(5, 356) = 1.620, p < .50
	Somewhat	-10	
	Not	1	
Perceived Role	Nonessential	14	F(3, 356) = 2.374 p < .10
	Intermediate	-25	
	Essential	10	
Household Composition	One person	43	F(4, 356) = 1.416, p < .50
	Two person	-13	
	More complex	0	
	Most complex	6	
Temporal Orientation	Present	-11	F(3, 356) = 1.795, p < .50
	Intermediate	2	
	Future	13	
Age of Dwelling	<18	-7	F(3, 356) = 1.592 p < .50
	18-38	0	
	Older than 38	29	
Age of Respondent	18-32	-15	F(3, 356) = 1.561, p < .50
	33-50	-2	
	51 & Older	16	
Others' Time Input	0	-14	F(3, 356) = 1.520, p < .50
	1-600	13	
	601 & Up	-2	
Time Budget Constraint	0	-20	F(2, 356) = 2.232, p < .10
	1-2160	18	
	2161 & Up	2	
Health	Excellent	-13	F(3, 356) = 1.299 p < .50
	Fair	6	
	Poor	3	
Assets	<\$10,000	20	F(3, 356) = 1.055, p < .50
	\$10,000-\$39,999	-2	
	\$40,000 & Up	-13	
Size of Dwelling	1-999	-19	F(3, 356) = 1.006, p < .50
	1000-1749	-4	
	1750 & Up	18	
Energy Extended in Housework	Low	2	F(3, 356) = .713 n.s.
	Medium	0	
	High	7	
Enjoyment	Unenjoyable	-9	F(3, 356) = .708, n.s.
	Neutral	10	
	Enjoyable	4	

TABLE 9 (cont.)  
MCA OF MALES' INDOOR CLEANING TIME

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Total	<\$9,000	14	F(3,356) = .663,
Family	\$9,000-\$17,499	- 1	n.s.
Income	\$17,500 & Up	- 4	
Education	≤ 8 grades	6	F(2,356) = .514
	9th-H.S.	2	n.s.
	Higher	- 7	

a The coefficients represent deviations from the mean associated with membership in a level of a variable

Mean = 49 minutes per week

n = 412

$R^2 = .12284$

F(55,356) = .906 n.s.

TABLE 10  
MCA OF FEMALES' INDOOR CLEANING

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Time Budget Constraint	0	58	F(2,507) = 18.841, p < .001
	1-2160	10	
	2161 & Up	-124	
Health	Excellent	12	F(3,507) = 9.291, p < .001
	Fair	8	
	Poor	- 54	
Condition of Dwelling	Excellent	25	F(5,507) = 3.937, p < .005
	Good	- 68	
	Fair	- 27	
	Poor	195	
Energy Expended in Housework	Low	- 79	F(3,507) = 6.314, p < .001
	Medium	52	
	High	14	
Degree of Planning	Well Planned	- 40	F(4,507) = 4.198, p < .005
	Some Planning	21	
	Little Planning	24	
Others' Time Input	0	- 13	F(3,507) = 4.118, p < .01
	1-600	-110	
	601 & Up	- 8	
Household Composition	One person	- 75	F(3,507) = 3.522, p < .025
	Two person	9	
	More complex	- 20	
	Most complex	49	
Enjoyment	Unenjoyable	- 10	F(3,507) = 3.496, p < .025
	Neutral	32	
	Enjoyable	- 2	
Size of Dwelling	1-999	- 11	F(3,507) = 3.307, p < .025
	1000-1749	85	
	1750 & Up	46	
Neat House Important	Very	19	F(4,507) = 1.486, p < .50
	Somewhat	- 8	
	Not	- 13	
Temporal Orientation	Present	16	F(3,507) = 1.394, p < .50
	Intermediate	- 52	
	Future	10	
Total Family Income	<\$9,000	27	F(3,507) = 1.335, p < .50
	\$9,000-\$17,999	- 28	
	\$18,000 & Up	- 6	
Education	≤ 8 grades	30	F(2,507) = 1.464, p < .50
	9th-H.S.	- 18	
	Higher	- 1	
Assets	<\$10,000	- 7	F(3,507) = .687, n.s.
	\$10,000-\$39,999	10	
	\$40,000 & Up	- 28	

TALBE 10 (con.)  
MCA OF FEMALES' INDOOR CLEANING

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Age of Respondent	18-32	- 12	F(3,507) = .684, n.s.
	33-50	24	
	51 & Older	- 6	
Age of Dwelling	< 18	- 13	F(3,507) = .663, n.s.
	18-38	26	
	Older than 38	- 21	
Perceived Role	Nonessential	8	F(3,507) = .422, n.s.
	Intermediate	12	
	Essential	- 17	

a The coefficients represent deviations from the mean associated with membership in a level of a variable

Mean = 311 minutes per week

n = 563

$R^2 = .21968$

$F(55,507) = 2.595$   $p < .001$

TABLE 11  
MCA OF PROCURING GOODS AND SERVICES

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Time Budget Constraint	0	113	F(7,920) = 22.114, p < .001
	1-720	191	
	721-1440	28	
	1441-2160	- 12	
	2161-2640	- 88	
	2641-3000	-109	
	3001-3360	-180	
	3361 & Up	-193	
Total Family Income	0-\$4,999	- 79	F(6,920) = 3.638, p < .005
	\$5,000-\$8,999	- 22	
	\$9,000-\$12,499	- 20	
	\$12,500-\$17,499	0	
	\$17,500-\$22,499	1	
	\$22,500 & Up	86	
Health	Excellent	9	F(4,920) = 4.489 p < .005
	Good	- 4	
	Fair	-132	
	Poor	15	
Enjoyment	Unenjoyable	- 20	F(3,920) = 5.725, p < .001
	Neutral	13	
	Enjoyable	29	
Others' Time Input	Low	- 32	F(3,920) = 5.144, p < .005
	Medium	18	
	High	- 28	
Household Composition	Least Complex	- 71	F(6,920) = 2.375, p < .05
	.	6	
	.	54	
	.	- 25	
	.	- 26	
	Most Complex	47	
Age	18-25	- 21	F(7,920) = 2.005, p < .10
	26-32	16	
	33-40	33	
	41-50	- 11	
	51-60	- 18	
	61-68	31	
	69 & Older	- 91	
Temporal Orientation	Present	19	F(5,920) = 2.018 p < .10
	.	- 23	
	.	- 18	
	.	8	
	Future	37	
Assets	< \$10,000	41	F(3,920) = 3.292, p < .025
	\$10,000-\$39,999	25	
	\$40,000 & Up	- 15	

TABLE 11 (cont.)  
MCA OF PROCURING GOODS AND SERVICES

EXPLANATOR	LEVEL	COEFFICIENT	STATISTICS
Perceived Role	Nonessential	60	F(6,920) = 1.279, p < .50
	·	- 29	
	·	2	
	·	21	
	·	- 12	
	Essential	- 20	
Education	≤ 8 grades	- 24	F(4,920) = 1.249, p < .50
	9th-11th	- 28	
	H.S.	- 2	
	Some College	37	
	College	17	

a The coefficients represent deviations from the mean associated with membership in a level of a variable  
Mean = 325 minutes per week  
n = 975  
 $R^2 = .20757$   
F(54,920) = 4.463 p < .001

## FOOTNOTES

1. This scoring scheme is consistent with the empirical evidence cited above, which suggested that adults in households with children, especially younger children, have greater time expenditures for household-related tasks. Moreover, the parents of a younger child are likely to have a more restricted set of discretionary activities in which to engage because of the care which young children require, e.g., parents of a four year old must arrange for a baby-sitter if they wish to attend a movie, a constraint which is removed as the child grows older. These chores seem appropriate, then, given the objectives at hand.

2. One problem with this approach is that one cannot distinguish on the basis of the resulting score households whose compositions would yield equal scores--a household, for instance, with 2 adults, 3 children ages 5-17, and 2 ages 1-4 and a household with 3 adults, 4 children ages 5-17, and 1 age 1-4 would each be assigned a score of 14. This distinction does not seem crucial, however, since both households are more complex than households with lower scores and complexity is the dimension of interest.

3. This is a slight variation of the approach employed successfully by Duncan and Stafford (1977).

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