
Title: Management Strategies and Time Use in Two-Parent, Two-Child Utah Families

Abstract approved: Arlene HoVkoak

The management of the home has been a central component of Home Economics since the early 1900s. It is, however, an enigmatic behavior that has not yielded easily to research. Recognizing that meal provision and food consumption by families incorporate management processes and occur on a regular and frequent basis, it was thought that it would be possible to focus on meal management as a step toward understanding resource management.

Using time diary and questionnaire data collected in Utah as a part of Regional Research Project S-206, the objectives of this study were (1) to identify variables which may predict the management strategies and time expenditures of meal preparation in two-parent, two-child Utah families, and (2) to assess any changes in current meal patterns in two-parent, two-child families with those reported by Peterson (1979) in a comparable 1977 study.

Guided by the Deacon and Firebaugh (1988) family
systems perspective, stepwise multiple regression was used to identify predictor variables. It was found that homemaker’s education was a statistically significant predictor of shopping frequency (+), frequency of use of a microwave oven (+), number of meals eaten together (+), and homemaker’s time in food preparation and dishwashing (-).

Seven additional variables, including urban/rural residence, homemaker’s hours of employment, age of oldest child, age of youngest child, homemaker’s age and a mean score on homemaker’s self-reported management skills, were statistically significant predictors of selected management strategies and time expenditures in meal preparation. Decade comparisons revealed few changes of practical significance in meal patterns. The findings of the study were used to suggest hypotheses for further research in family resource management.
Management Strategies and Time Use in Food Preparation
in
Two-Parent, Two-Child Utah Families

by

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To my husband Leonard, and to our children, I offer my profound thanks for their sacrifices and for their love.

Carmen D. Steggell
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I. INTRODUCTION

The management of the home has been a central component of Home Economics since the early 1900s. Its development has progressed through several stages (Berger, 1984) "... in direct response to social, economic, and environmental conditions and problems that families face" (Vickers, 1984, p. 40). Deacon and Firebaugh (1988) state that management is "... planning for and implementing the use of resources to meet demands" (p. 8). Its continuing purpose is to enable families to cope with change and make adaptations that maximize resource use and goal attainment (Vickers, 1984). Throughout the history of time use studies, "management" is typically the least reported activity. However, studies of time allocation in American families have repeatedly indicated that "food related activities are the most frequent and most time intensive of all home production activities" (Goebel & Hennon, 1983, p. 172). Recognizing that meal provision and food consumption by families incorporate management processes, it may be possible to focus on food management as a specific instance of home management. Valuable insights may be gained concerning families and their management behavior.

Food preparation time, dishwashing time, shopping time, and eating time have been reported in virtually all of the time allocation studies conducted during the past
seven decades (Nichols, 1986; Vanek, 1974). Using 1977 data, Peterson (1979) investigated family meal patterns in two-parent, two-child Utah families. Since that time the employment rate for Utah women has increased from 38.3% (U.S. Bureau of the Census, 1977) to 56.4% (U.S. Bureau of the Census, 1987); food expenditures for food away from home have increased from 39% of the food budget in 1980 to 45% in 1988 (Blaylock, Elitzak, & Manchester, 1989); and fully prepared "take-out" foods are heavily marketed (Papazian, 1990) and increasingly utilized (Jacobs & Shipp, 1990). In addition, the feminist movement may have had some influence on household management efforts, as well as on the amounts and distribution among family members of household work in general and on food preparation in particular.

Statement of the Problem

As families seek to cope with change, it may be necessary to incorporate various management strategies in order to maximize resources and attain goals. Several researchers have considered factors which may influence meal patterns. For example, Ortiz, McDonald, Ackerman and Goebel (1981) found that employed homemakers spent less time in food preparation than non-employed homemakers and that their families ate more meals away from home; Nickols and Fox (1983) found that employed homemakers utilized both
time-buying (such as meals away from home) and time-saving management strategies (such as reduced time in household production); Miller and Ackerman (1990) tested whether power, which was assumed to be acquired through market income, influenced time allocated to food tasks in the family and they were able to explain limited variance; Sullivan and Peters (1988) identified resources used by single parent, one-earner, and two-earner families on meal preparation. Nevertheless, hypotheses derived from axiomatic theory explaining the role of management in choices families make are lacking.

**Purpose and Objectives**

The purpose of this study was to explore management strategies and time use in household production, particularly in regard to the provision of meals. The first objective of this study was to identify variables which may predict the management strategies and time costs of meal preparation in two-parent, two-child Utah families. The second objective of the study was to assess any changes in current meal patterns in two-parent, two-child Utah families with those reported by Peterson (1979) in a comparable 1977 study. It was expected that the findings of the study would provide a first step toward the development of hypotheses that explain and predict family meal management behavior.
II. REVIEW OF LITERATURE

Family Resource Management Research

Family resource management has been a significant component of professional Home Economics since its formal organization in the early 1900s. Its historical development has been outlined by Gross, Crandall, and Knoll (1980) in six stages:

Stage I. Dumping ground.
Stage II. Resource-centered emphasis.
Stage III. Human-centered emphasis.
Stage IV. Process emphasis.
Stage V. Values and decision emphasis.
Stage VI. Holistic approach.

Berger (1984) has reviewed the concepts and methodology developed in the field, Vickers (1984) has outlined themes in home management, and Israelson (1990) has summarized the topics of published research. The evolution of the discipline has been closely linked to "socially relevant issues" (Israelson, 1990, p. 4) but has retained as its central focus the use of resources to meet desired goals (Vickers, 1984).

Early research efforts in home management, as it was then labeled, tended to included whatever subjects that did not fit into food, clothing, or housing research. Home management studies "... were few and unfocused in
content" (Berger, 1984, p. 253) before the Purnell Act of 1925 increased available research funding directed toward the improvement of rural life. This legislation initiated the formal beginning of home management research.

During the 1920s and early 1930s, emphasis was placed on work efficiency. It was during this period that the earliest studies of time allocation were conducted. Much of the research was descriptive, rather than quantitative, and was "driven primarily by social, economic, and environmental conditions" (Key & Firebaugh, 1989, cited in Israelson, 1990, p.9).

From the 1940s through the 1960s attempts were made to define the components of management and to place them within a conceptual framework. Descriptions of the managerial process, definition and classification of goals, and understanding the process of planning were at the core of published research (Berger, 1984).

As work in the home became less physically demanding and general affluence made labor-saving technologies available, problems of choice were studied by home management professionals. Gradually, as emphasis shifted to concern with the development of persons living in the home, the concepts of values and decision-making were incorporated. While home management research had been focused on the homemaker, "leaders in home management agreed that the family or household represented the
managerial unit of study rather than the homemaker alone" (Vickers, 1984, p. 38). Detailed analysis of the components of management included study of time, energy, money, fatigue, work simplification, relationships among values, goals, standards, resources, and the overall process of management.

Efforts to define managerial concepts and to place them within a meaningful framework as a means of delineating the discipline of home management led to an holistic philosophy and the adoption of a systems approach.

Systems theory provided the necessary framework for conceptualizing multidirectional bonds among family relations, home management, technology, and larger social systems including the economic, political, physical, and sociocultural. (Vickers, 1984, p. 39)

Systems theory gives insight into the interrelationship between input, throughput or managerial actions, and output, with feedback among these preventing a static process. . . . [The family is seen] as an ecosystem with family members interacting with each other and with the complex set of environments surrounding them. (Berger, 1984, p. 259)

Since the 1980s, dominant research themes in family resource management have been women's employment, time use, and the division of household labor, comprising almost 40% of a comprehensive review of articles (Israelson, 1990). In addition, "... in recognition of the fact that families are not solely consumers..." (Israelson, 1990, p. 13), considerable interest in household production has been evident.
Because family resource management is "instrumental, practical, and integrative" (Vickers, 1984, p. 36), major themes in research over time reflect the needs of individuals and families in a changing social, political, and economic environment.

An interesting aspect in the evolution of themes, or major thrusts, is that each major development is retained, subsumed, or integrated into the expanded understanding that comprises our knowledge of management. The emphasis may shift or the intended audience change but no major theme has been rejected outright as growth occurs. (Vickers, 1984, p. 36)

Whatever the approach, family resource management continues to be a central concept in home economics.

History of the Study of Time in Household Work

The First Time Studies

Studies of time use were among the earliest endeavors of researchers interested in the management of the home. Time used in household work was of particular concern. It was generally believed that the household work of farm wives in particular was so strenuous that a high priority should be placed on work simplification and mechanization of the heaviest tasks.

In 1900, Ellen H. Richards wrote:

In the strenuous life of a modern community, distractions crowd so closely upon every hand that unless a woman has method in the use of her time, it is frittered away and nothing useful is accomplished. One of the most disheartening things of the day is to see the waste of time and energy in the occupations of nine-tenths of American women. (Hunt, 1931, p. 290)
Throughout her career, Richards promoted the application of science and the principles of engineering to household work as a means of improving family life. Studies of time use were a first step toward understanding household work patterns.

The first studies on the amount of time spent in household work centered on labor reduction through efficiency in the management of farm homes (Bailey, 1915; Rankin, 1928). Later, through the influence of Ella Cushman and Lillian Gilbreth, time and motion studies adapted from work in industrial settings were applied to household work (see for example Cushman, 1930). Recommendations for task sequencing and kitchen design resulted from this work.

During the 1920s, the Bureau of Home Economics of the U.S. Department of Agriculture coordinated time use studies in Idaho, Washington, Oregon, Rhode Island, and South Dakota. Although published separately, these studies used similar instruments and sampled similar households and were later used as benchmarks for historical comparisons (Vanek, 1974).

**Mid-Twentieth Century Time Studies**

In "a major pioneering effort to measure household production" (Walker & Woods, 1976, p.
farm management specialists to the study of the workload of the home, although the concept of work units that included the idea of measured output were not implemented. Warren found that the average time spent by all homemakers in household work was 7 hours 24 minutes per day, with other workers contributing an additional 1 hour 36 minutes per day. Young children in the household were related to an increase of 42 minutes per day in household work by homemakers and 6 minutes by other workers.

The impact of technology and appliances on time spent in household tasks was also investigated. Wilson (1929) found that electricity and running water reduced time use. Later studies (Dickens, 1945; Muse, 1946) found that the ownership and use of appliances did not significantly impact the time spent in household work.

During the 1950s several studies compared time and money costs of household production and market goods, including clothing (Brew, 1956) and food (Asp & Clark, 1957; Broman, 1956). Another major focus of 1950 studies was the comparison of time use by full-time homemakers and homemakers in the labor force (Gross, 1955; O'Brien, 1958; Wiegand, 1953, 1954). Walker and Woods (1976) explain:

In the late 1950s, interest in ways homemakers were using time intensified. This interest may have been spurred by the increased participation of women in the labor force, technological developments that changed household work, and changes in the roles of family members. The developments have made resources of time, energy, and money more and more interchangeable for carrying out the work of homemaking. (p. 4)
One of the largest time-use studies was conducted by John Robinson at the University of Michigan's Survey Research Center (Robinson, 1977a). The same interview format was used for international comparisons of time use in 12 countries in paid work, household work, free time, and sleep for employed men and for employed and non-employed women and was facilitated by an extensive research project carried out under the leadership of the UNESCO-sponsored European Coordination Center for Research and Documentation in Social Sciences. Published in 1972 (Szalai), the same research design, basically the same questions, and the same coding techniques were used in all countries in order that data could be compared. (Walker & Woods, 1976, p. 4)

Chapin (1974) used similar time diary techniques in collecting data in Washington, D.C.

Time use data were by this time a firmly established vehicle of household management study. Walker and Woods (1976) provide "an extensive but not necessarily complete listing of studies on time use for household work" (p. 4) from 1915 through 1975 that includes 149 citations. Nickols (1986) provides a chronological record of 25 household time allocation studies supported by agricultural experiment stations, noting that "hardly a decade in the twentieth century has been without a study of household time allocation" (p. 174).
A major study of time use was reported by Walker and Woods in 1976. The purpose of the research was "the development of a measure with which to quantify the nonmarket production of the household" (Walker & Woods, 1976, p. 1). Data were collected from a sample of 1,296 households selected randomly from Syracuse, New York and its suburbs. The sample was

...stratified by urban-suburban location, and... [by] patterns of family composition, defined by number of children and their ages in husband-wife families with children, and by age of wife in households without children. (Walker & Woods, 1976, p. 10)

Employed homemakers spent an average of 5.3 hours per day in household work and full-time homemakers spent 8 hours in household work. The research report includes over 300 pages of analysis and has been cited extensively. Later, its methodology served as a pattern for the 1977-78 Regional Research Project NE-113 "An Interstate Comparison of Urban/Rural Families' Time Use".

Regional Research Project NE-113

By the 1970s, the practical value of family time-use data was clearly established. Requests for time-use data and related information were increasing from a variety of sources. In spite of the importance of such research, few studies had been carried out and these were limited in their scope. Data from studies such as that conducted in Syracuse, New York were, from lack of other data, being extrapolated beyond the limits of the experimental design. With the recognition of the interest in this subject and the limitations of the existing knowledge base, the idea of a national research study emerged. (Lewis, 1981)
Regional Research Project NE-113 was organized in 1976 under the direction of Dr. Kathryn Walker of Cornell University with members of the technical committee from California, Connecticut, Louisiana, New York, North Carolina, Ohio, Oklahoma, Oregon, Texas, Utah, Virginia, and Wisconsin. A common survey instrument and sample design was used in each of the eleven states. Each state coded its own data, after which the data from the eleven states were merged into a single data set, incorporating weights for representative rural/urban samples in each state.

In her comparison between 1967 and 1977 of New York families, Sanik (1981) reported that wives spent 6 hours 48 minutes per day in household work as compared to 7 hours 24 minutes ten years earlier. Husbands contributed 1 hour 42 minutes per day to household work in each study.

The data collected are a particularly rich source of information about families. Urban/rural comparisons, children's contribution to household work, impact of appliance ownership on household work, perceived quality of life, the pricing of home work time, the division of labor and shared household time, the impact of women's employment on household work, and many other subjects have been addressed. Between 1978 and 1984 it was reported that two book chapters, 29 journal articles, 35 proceedings papers, three experiment station reports, 36 presentations, 46
theses, one unpublished paper, and 13 popular press publications had been based on the NE-113 study. At that time five additional manuscripts were being reviewed by journals for publication, and seven additional papers were being prepared (Publications and Papers, 1984). The data have been

... of great value to the insurance industry and to consumers as crucial information in civil cases involving accidental injury and death. ... Corporations such as Procter & Gamble have used the work on laundry time. Transportation and highway planning bodies find the information on families' travel and commuting behavior important inputs in their deliberations. County home economics agents and state extension specialists have used the NE-113 time-use information extensively in family economics and home management programs around the country. That [sic] data also have been used in comparative analyses of time use and assessment of quality of life among families in the United States and other countries. (Determinants and Outcomes of Household Time Use Proposal, 1985, p. 2)

In addition, estimates of the productivity of time spent in household work "have brought the day closer when national economic accounts can measure and track all production" (Determinants and Outcomes of Household Time Use Proposal, 1985, p. 2).

Regional Research Project S-206

The NE-113 project ended in September, 1984. However, it was felt that further work was necessary. Limitations of the NE-113 study were recognized as the research team attempted to examine in depth the input-output relationships of household production. Further, data were
needed on additional family types, organization of the household day, and the multiple uses of time. In order to extend and expand the previous findings, Cooperative Regional Project S-206 was designed

(1) to analyze variations of time use by individual family members, shared time, and time sequencing according to sociodemographic and technological variables, (2) to study management activities in household time use, including goals, responsibilities, standards, and satisfaction with progress toward goal achievement, and (3) to measure and value input/output relationships in household production, specifically development of human capital and total economic value of household production. (Determinants and Outcomes of Household Time Use Proposal, 1985, p. 4)

The outcome of the project was envisioned as a fairly complete description of how families in the United States divide their time among work and leisure activities, their satisfaction with these decisions, and factors which seem to determine the outcome of time-use decisions.

Participants from cooperating states (including Connecticut, Georgia, Louisiana, New York, Ohio, Utah, Virginia, and Wisconsin) agreed to meet the objectives in a variety of different ways: analyzing existing data, re-interviewing NE-113 families, and/or collecting data from a new sample. By 1988, 25 papers, journal articles, theses, and reports had been completed under the S-206 project.

The Utah contribution to S-206 included collecting new data through a replication of the 1977 research. Data from that project are utilized in the present study.
Summary

The allocation of time has been of continuing interest since the beginning of the home management discipline. "Hardly a decade in the twentieth century has been without a study of household time allocation" (Nickols, 1986, p. 174) directed toward goals of enriching family life and improving home management practices.

Household decisions about time allocation influence the use and development of human resources within the household and the broader economy and society. Moreover, these decisions determine to a large extent the composition and quality of life for individuals and families.

Time serves as both a quantitative and a qualitative measure. The amount of time used in various activities at a particular time is of interest itself as an indicator of the allocation of human resources. Furthermore, measures of quantity of time reflect trends in patterns of household activity and relationships. As a qualitative measure, time allocation is perceived to reflect values held by individuals and families and, in the aggregate, by societies as a whole. (Nickols, 1986, p. 173)

Time studies are of interest to professionals in home economics, human development, sociology, and economics, and have been used to document changing family work patterns, to estimate the monetary value of household work, and to trace the management responses of families to societal forces. Specifically, they have compared urban-rural, interstate, and cross-cultural differences; they have been used to value homemaker's time; they have compared employed and nonemployed homemakers; they have related home conveniences and appliances to time in household work; they
have traced historical trends in household work and family resource management; they have been used to investigate the gender division of household labor; they have been used to calculate household production; and they have aided in the development of family theories. Future work may encompass longitudinal studies including non-traditional family structures and improved measures of related variables advancing the development of explicit theories.

Meal Management Research

Management Strategies

Management efficiency. Strober and Weinberg (1980) identified five possible management strategies that wives can use to economize on time: (1) substitute capital equipment for their own nonmarket labor; (2) substitute the labor of others; (3) reduce the quality or quantity of household production; (4) decrease time allocated to volunteer and community work; and (5) decrease time allocated to leisure and/or sleep. Holding income and life-cycle stage constant, it was found that neither wives' employment nor recent entry into the labor force were significant determinants of the purchase or ownership of microwave ovens and dishwashers. It was found that working wives prepared fewer meals, but that working and nonworking wives were generally similar with respect to method of meal preparation and shopping behavior. They suggested that
there is some evidence, based on previous research, that households with employed wives buy more meals away from home. However, no differences have been found between employed and nonemployed wives in the use of convenience foods nor in selected meal preparation and shopping behaviors, holding income and life cycle state constant.

Nickols and Fox (1983) replicated and extended analyses reported by Strober and Weinberg (1980). Using a sample restricted to two-parent, two-child families but otherwise similar to the Strober and Weinberg (1980) sample, Nickols and Fox (1983) confirmed the earlier findings that employed wives do not substitute capital equipment for the nonmarket labor. They also found that employed wives substituted significantly more purchased products and services for their own household labor than did non-employed wives, but that they did not substitute other family members' labor for their own. Time-saving strategies used more often by employed wives included preparing fewer meals at home and trade-offs in quality and efficiency.

Homemakers' employment. Ortiz et al. (1981) hypothesized that time spent in meal preparation is likely to be reduced as women's employment reduces the time available for household work and leisure. Noting that family meal times can promote valuable family interaction as well as nutrition, they sought to explore the possible
reduction in number of meals eaten together at home in
dual-earner families. Two-parent, two-child families from
the Wisconsin portion of the NE-113 sample were studied.
The amount of time spent in food preparation was smaller
when women were employed and was larger when they had young
children. Nevertheless, time spent in gainful employment
had no effect on the number of meals eaten together at
home, although the family was much more likely to eat
together if the homemaker had a college degree. Families
in the highest income category and whose homemaker was
employed full time ate a greater proportion of their meals
away from home than did other families. Surprisingly,
rural families were found to eat more meals away from home
than urban families. However, this may have been related
to the high number of school lunches that were eaten.

Goebel and Hennon (1981) studied how mother's
employment and age of younger child affects time in meal
preparation and cleanup, expenditures for meals away from
home, and meals shared by the family both at home and away.
It was found that

. . .families do not substitute money for an employed
mother's time in the tasks of meal preparation and
after dinner cleanup by spending more money purchasing
meals away from home. In general, they also do not
eat together less often. The one exception is rural
families with a part-time employed mother. However,
they may differ in where these meals are eaten
together--at home or away from home. . . .Most meals
eaten together as a family are eaten at home: 75
percent for urban families and 76 percent for rural
families. (p. 183)
Redman (1980) discussed the impact of women's time allocation on expenditure for meals away from home and prepared foods. She found that family income had a positive effect on meals consumed away from home, although family size had a negative effect. Families with preschool children spent less time on meals away from home than other families, and families with older children spent more. Households with older women spent less on meals out than those with younger women, "probably due to differences in life styles and values" (p. 236). Employed wives bought more prepared foods but not more away-from-home meals.

Value of time. McCracken and Brandt (1990) attempted to measure the influence of the value of the time of the family food manager on away-from-home food consumption. Their results indicate that value of time, income, household size and composition and other environmental variables affected food away-from-home expenditures. They suggest that if present trends continue, expenditures at fast-food facilities are likely to increase more than at restaurants.

In that the nutrient density of food away from-home is typically lower than food at home, increased eating away from home, particularly by some types of households, may have important impacts on their nutritional status. (McCracken & Brandt, 1990, p. 283)

Family structure. Sullivan and Peters (1988) investigated the resources used by families to save time spent on meal preparation. Using a sample of California
families stratified by age of youngest child, they concluded that when the homemaker is employed the amount of time spent on food preparation is reduced. Common strategies to accomplish the reduction include (1) eating meals away from home, (2) preparing food ahead of time for future use, (3) preparing fewer meals, (4) cooking quickly prepared dishes, and (5) using disposable kitchen products. Among single-parent, dual-earner, and one-earner families they found that homemakers in single parent families spent 50 minutes on food preparation per day, as compared to 69 minutes in dual-earner families and 84 minutes in one-earner families. No differences were found in contribution to food preparation by spouses in one-earner or dual-earner families, and no differences were found among the three family types in contributions by children. Single parents prepared and consumed fewer meals per day than the other family types. Further, when meals were prepared, single parents tended to provide fewer items per meal. No differences were found among homemakers in the three family types in freezing food, preparing food ahead for future use, purchasing convenience foods, or using disposables. The number of meals consumed away from home was not significantly different among the family types when age of youngest child and family income were controlled. However, it was suggested that as children grow older and income rises, families eat away from home more often. Single
parents used fast food restaurants more than the other family types and dual-earner families ate at social gatherings and at friends' and relatives' houses more often, but there were no significant differences among the three family types in the amount of money spent on meals away from home.

Evidence from the market. Supporting the findings of research cited above, Jacobs and Shipp (1990) have noted an important trend in the increasing share of the food budget allocated for food away from home. In 1909 three percent of the food budget went for food away from home. By 1986-87, the share had steadily grown to 29 percent (see Figure 1).

Other figures suggest an even greater change. Based on the Consumer Expenditure Survey, Blaylock, Elitzak, and Manchester (1989) calculate that the share of food spending for away-from-home meals and snacks rose from 30% in 1965 to 39% in 1980, and to 45% in 1988.

Market research by the fast-food industry suggests that the three most important factors in a consumer's decision on where to eat are (1) time of day, (2) how long the customer wants to spend eating, and (3) price.

It turns out that it's not the food itself that's important anymore. . . . We used to eat when the food was ready. Now we eat when we're ready. (Leo J. Shapiro, quoted by Harris, 1990, p. 186)
Figure 1

Percent Distribution of the Family Food Budget Between Food at Home and Away


Changes in the distribution system for food are also noted, as the "revolution in retailing" began in the early 1900s. The advent of the supermarket resulted in the consolidation of the butcher shop, the produce vendor, the bakery, and other specialty stores, as well as expanding the variety of food products available (Jacobs & Shipp, 1990). Today, some supermarkets offer ready-to-serve sandwiches and hot dishes as well as frozen and canned convenience foods, suggesting that even when meals are
eaten at home, they may not have been prepared at home. These trends suggest that market replacements for home food production are increasingly convenient and attractive meal management strategies.

**Time Expenditures in Food Preparation**

The earliest studies of time allocation in household work included separate categories for food preparation and dishwashing (or "clearing up"), recognizing that The average farm housewife, excepting possibly the mother of a babe-in-arms, thinks of cooking as the major job in her household. (Wilson, 1929, p. 1)

Indeed, time studies have consistently revealed that food preparation consumes the largest proportion of the homemaker's household work time (Vanek, 1974).

Maud Wilson's (1929) definition of "meal preparation time" included "preparation of breakfast, dinner, and lunch or supper, and for baking and other preparation of foods eaten at meal time but not at any one meal" (p. 1). In her sample of Oregon homemakers, meal preparation represented about 28% of household work time, requiring 17.3 hours of the 61.2 total hours per week in all homemaking tasks. Time for meal preparation in individual households varied from 6.4 to 36.5 hours per week, with 66% of the households reporting between 11 and 19 hours. The principal factors which accounted for the large variation were (1) number of meals served, and (2) the degree to which ready-to-serve
foods (principally bread) were used. She found no appreciable month-to-month variation in time spent per person per meal. The study noted time differentials in households that baked bread and had running water.

Wilson (1929) also reported on the time homemakers spent "clearing away meals" which included clearing the dining table, putting away food from the meal, scraping, stacking, washing, drying and putting away dishes, and clearing up the sink; it also included washing utensils used in baking and other preparation of foods used at meals but not prepared at the time of the regular meal, but did not include polishing silver, scouring utensils, cleaning cupboards, or sweeping the floor. The average time spent on meal clearing represented 16% of all household work time, requiring 9.8 hours per week, compared to 61.2 total hours in all homemaking tasks. Combined, meal preparation time and meal clearing required 27.1 hours a week, or about 44% of all household work.

In Jean Warren's 1940 study, 66% of homemakers spent between 13 and 20 hours a week in food preparation, with an average of 16.5 hours per week, representing 32% of all household work. Dishwashing accounted for 14% of all household work, or an average of 7 hours a week. Combined, these tasks required 23.5 hours a week, or about 46% of the 52 total hours spent in household work each week.
The household work time of employed and non-employed homemakers in Wiegand's (1953) Auburn, New York sample reported total food preparation and dishwashing times of 13.3 hours per week and 18.2 hours per week, respectively. This represented 46% of employed women's reported 28.7 hours in household work and 37% of non-employed women's reported 49.7 hours in household work.

Walker and Woods (1976) reported separate means for employed and non-employed urban homemakers in 1967. Their sample of employed homemakers spent 11.2 hours per week in food preparation and dishwashing, 30% of the 37.1 total hours per week spent in household work. Non-employed homemakers spent 16.1 hours per week in food preparation and dishwashing which accounted for 29% of the 56 hours of total household work.

Reporting on the New York portion of the NE-113 data, Sanik (1979) found that homemakers spent 9.8 hours per week in food preparation and 4.9 hours per week in dishwashing. These two activities represented 27% of the 52.5 hours per week spent in all household work by New York homemakers.

Figure 2 presents a comparison of the studies cited above. It should be noted that the samples in the various studies do not represent the same populations; however, the figures are indicative. In their discussion of food preparation and after-meal clean-up times, Walker and Woods (1976) remark,
The average amount of time used by nonemployed wives for household work was remarkably similar in 1967-68 in New York State to time used in the urban sample in Oregon in 1926-27. There has been a decrease of 30 minutes in the homemakers' average time per day since 1927 in food preparation and after-meal cleanup, but since that time there has been an increase of more than half an hour in marketing, record keeping, and management. Possibly the time "saved" in food preparation and after-meal cleanup went into selecting and buying the convenience foods. (p. 33)

Figure 2

Historical Comparison of Homemakers' Time in Food Preparation and Dishwashing

![Graph showing historical comparison of homemakers' time in food preparation and dishwashing from 1926 to 1967. The graph displays the hours per week spent on various activities.](image-url)
Summary

Food is a physiological necessity and its provision remains a central function of the family. Studies since the 1920s have consistently found that food preparation and dishwashing consume the largest proportion of the homemakers' household time, ranging from 27% (Sanik, 1979) to 46% (Warren, 1940) of all household work. It has been suggested that time becomes an increasingly scarce resource with the pace of contemporary society and increased labor force participation by women. Strategies related to homemaker's meal management that have been investigated include

1. Using market substitutes such as eating out, purchasing prepared foods, using convenience foods, using time-saving technologies like micro-wave ovens and dishwashers.
2. Increasing efficiency by preparing food in bulk.
3. Reducing the quality or quantity of meals.
4. Involving family members other than the homemaker in food preparation and dishwashing.
5. Reducing the time spent in volunteer work, leisure, and/or sleep.

Although not all researchers agree on the strategies that homemakers employ in meal management, there is general agreement that
a. Appliance ownership does not reduce the amount of time spent in food preparation and dishwashing.
b. Time contributions to food preparation and dishwashing by spouses does not increase significantly when homemakers are employed.
c. Children's time contributions to food tasks represent a low proportion of the total.
d. Employed homemakers spend less time in food preparation than do full time homemakers.

Findings concerning the number of meals eaten away from home, the use of convenience foods, food prepared ahead of time, and the number of meals prepared at home are not consistent in the literature. Difficulties encountered in study comparisons are differences in sample selection and in variable measures. Further study in these areas may address these issues. In addition, the measurement of values, goals, and attitudes may be meaningful.

**Theoretical Framework**

The following discussion will be presented in three parts. First, the development of home management theory will be traced. Second, the use of theory in studies of meal management will be discussed. Finally, the theoretical perspective and research model employed in this study will be presented.
Development of Home Management Theory

Although "the family" is universally recognized as a fundamental unit of society, social scientists have difficulty agreeing on a strong theory of the family. In part, this is due to differences in definitions. Troll (1969) describes the family as a "slippery concept":

It is slippery not only in definition, but also in focus. It is rare to complete an article or book whose title indicates it is about the family without finding the discussion sliding away from the family either to the individual or to the society, or even both. (p. 22)

Nevertheless, the following statements are generally accepted: (1) family groups are an observable part of social reality in every known society; (2) family relations have a highly charged emotional meaning for individuals; and (3) the family, regardless of its form, is a key institution in the society as a whole (Skolnick, 1987).

A comprehensive theory of the family has been proposed by Talcott Parsons. Working within a structural-functionalist perspective, Parsons (1964) applied general systems theory to the family and explained its structure as a subsystem within the larger system of society. Society is viewed as

... an independent system with characteristics in common with other living systems. Its structure represents basic underlying functions, consists of distinct subsystems, is homeostatic, and evolves in an adaptive fashion. (Kinloch, 1977, p. 194)
Applied to the family, members of the family system are interdependent and share a set of common goals. The need for stability and equilibrium dictates a particular structure, which results in defined, reciprocal roles.

**The Family System**

Systems theory has been adapted and applied to family resource management. Notably, a model proposed by Deacon and Firebaugh (1981, 1988) presents the family system within a larger ecosystem.

The family is viewed as a system with two major subsystems: the personal subsystem, with developmental and values components, and the managerial subsystem, with planning and implementing as major components. In the Deacon and Firebaugh (1988) model the personal subsystem is presented as a composite of social, psychological, physiological and spiritual realms in constant interaction with the managerial subsystem, principally a cognitive realm. The result is a system of fully integrated entities (Figure 3).

Focusing on management, Deacon and Firebaugh (1988) explain,

Through the managerial [sub]system, individuals and families strive to accomplish their goals by the acquisition and use of resources. . . . Management is not a general rigid set of rules and actions but a set of flexible responses to a particular situation. (pp. 7-8)

From the systems perspective, the relationship among the basic elements of input, throughput, and output in the system is of prime importance. Input consists of demands, formed by goals and events that give direction for managerial activity, and resources, including both human and material resources, that provide the means to satisfy the system's purposes or demands. Output is produced as demands are translated into met demands and accompanying changed resources. The output may be conveyed to the system's internal environment (for example, a family meal) or to the system's external environment (for example, a gift of food to a friend). Throughput processes, by which
inputs are transformed, include planning and implementing. Feedback is information about the system output that re-enters the system as input and is important in influencing subsequent throughputs and outputs.

Systems theory in family management. . . examines interrelations of input, throughput or managerial action, and output. . . .[T]he concept of feedback highlights the dynamic nature of the management process. (Douthitt & Heck, 1981, p. 4)

The systems perspective provides an holistic view of the family within an ecosystem and at the same time allows a specific aspect to be studied. It is . . . a consistent framework for management, which is most simply defined as the judicious use of means to accomplish ends. Systems ideas . . . support our interest in focusing sometimes on the overview of families, at other times on subunits of the family or of management. (Deacon & Firebaugh, 1988, p. 7)

Theories Applied to Meal Management Research

Studies in family resource management have drawn on several theoretical perspectives. The Deacon and Firebaugh Family System Model (1988) has been most fully developed and utilized. In addition, theories borrowed or adapted from other disciplines, including sociology, psychology, and economics have been applied to home management. The following paragraphs review the use of theory in research that specifically addresses meal management.

**Strober and Weinberg.** Strober and Weinberg (1980) investigated the strategies used by working and nonworking wives to reduce time pressures. A review of pertinent
literature concerning the use of capital equipment to relieve time pressures uncovered conflicting conclusions.

On the one hand, they note, Galbraith argued that

. . . families with employed wives may be expected to own and purchase fewer durable goods than families with nonemployed wives, because these goods require considerable consumption administration and employed wives have less time for, and possibly less interest in, such administrative activities. (1973, cited in Strober & Weinberg, 1980, p. 339)

On the other hand, Mincer (1960, cited in Strober & Weinberg, 1980) and Drucker (1976, cited in Strober & Weinberg, 1980) have

. . . reasoned (from quite different perspectives) that families with employed wives are likely to spend more on consumer durables than families with nonemployed wives. (Strober & Weinberg, 1980, p. 339)

Based on their own earlier work, Strober and Weinberg (Strober, 1977; Strober and Weinberg, 1977, cited in Strober & Weinberg, 1980) rejected Galbraith's consumption administration theory, Mincer's application of permanent income theory, and Drucker's hypotheses. Instead, they hypothesized that families do not treat wives' and husbands' earning differently. Support for the hypothesis was found in the Strober and Weinberg (1980) study which

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As Strober and Weinberg (1980) explain, Mincer treats the purchase of durable goods as saving, concluding via the permanent income theory that the marginal propensity to save out of transitory income is higher than the marginal propensity to save out of permanent income. Drucker, on the other hand, simply reasons that additional family income earned by wives will be spent on "extras", such as durable goods.
concluded that, holding income level and life cycle state constant, there were limited differences between employed wives' and nonemployed wives' management strategies, including those strategies aimed at meal preparation and shopping, to relieve time pressure.

Goebel and Hennon. Goebel and Hennon (1983) studied the effects of mothers' employment and the age of younger child on mothers' time in meal preparation, expenditures for meals away from home and shared meals. Family role theory was used as the framework to guide the study. Family role theory posits that each family position (father, mother, daughter, son) is composed of a set of interrelated roles (eg., wage earner, housekeeper, child socializer, child rearer) and is organized around a set of behaviors which carry both expectations and resource allocations.

Eleven hypotheses, stated in the null form, were formulated and tested. Controlling for income, it was found that the time spent by mothers in meal preparation and dishwashing varied by their employment and the age of the youngest child, but that expenditures for meals purchased away from home did not differ by the mothers' employment or the age of younger child.

A concept of role theory is that each role played by the person in the "mother" position carries with it a certain allocation of resources, such as time, energy, and
money. Resources allocated to one role are not available for allocation to other roles. Goebel and Hennon (1983) studied this trade-off in their analysis of the interrelationship between the wage earner and housekeeper roles of mothers.

Although family role theory was discussed in the Goebel and Hennon (1983) paper, its application was somewhat weak. Role theory conceptualizes the way in which families deal with resource scarcity and is closely linked with the related concepts of role performance expectations, role strain, and role overload. These concepts were not included in the study. Simply assigning role labels to certain activities and measuring associated trade-offs in allocations of time, energy, and money resources among roles neither supports nor tests role theory. Nevertheless, as the authors recognize, the theory does provide a useful perspective from which to consider the allocation of scarce resources within the family.

Redman. Redman (1980) investigated the impact of women's time allocation on expenditures for meals away from home and for prepared foods. Her stated purpose was "to test the hypotheses advanced by Gronau" (Redman, 1980, p. 234). In an effort to account for the factors influencing the price of a wife's time, Gronau (1977) has theorized that the supply of a wife's time to all uses is perfectly inelastic and the demand for her time is derived from its
uses. The price of time is located at the intersection of the supply and demand curve. Redman's (1980) hypotheses distinguished among women's household labor time, leisure time, and market labor time and predicted differential effects of household characteristics on these uses. Results of the study suggested support for the hypotheses. That is, expenditures for meals away from home and for prepared foods were affected by family income, family size, children's ages, woman's age, location of residence (urban, rural), and woman's education level. However, the paper did not tie research results to the Gronau theory, nor to the theory's place in further research.

Miller and Ackerman. Miller and Ackerman (1990) sought to identify predictors of time allocation to food tasks in dual-earner families. The study was guided by an application of power theory.

Power theory assumes that a wife utilizes role bargaining to lessen some homework demands when she takes on paid employment. The extent to which she can use her bargaining power for leverage will depend on the value of her employment to the family. Miller and Ackerman (1990) constructed independent variables as proxies for the relative power of husbands and wives. The husband's absolute earnings per week and the ratio of the husband's weekly earnings divided by the wife's weekly earnings were used to calculate power categories.
It was hypothesized that the relative power between the spouses would affect the husband's contribution to food tasks. The study found no support for the power theory. However, it could have been that the tested variables were inadequate proxies for power. Power in the marriage dyad may not be acquired exclusively, or even primarily, through market wages. Nevertheless, the Miller and Ackerman (1990) paper is a fine example of theory-driven research.

Sullivan and Peters. In their examination of the resources used by three differently structured family types to save time in meal preparation, Sullivan and Peters (1988) reviewed the predominant ideas of systems theory (Bertalanffy, 1960, cited in Sullivan & Peters, 1988) and of the ecosystems approach (Andrews, Bubolz, & Paolucci, 1980). They explained that systems theory offers an holistic framework for understanding changes within the family system and that the ecosystem approach illuminates the effects of the physical and social environment on the family. Changes in the family system result in a disequilibrium which creates stress. Through the process of positive feedback, a household can utilize change for positive growth and adaptation. Specifically applied to time spent in meal preparation, Sullivan and Peters (1988) suggest that adaptive responses within the family system
could include the use of market substitutes, time saving appliances, and disposables.

While the ecosystems approach, as conceptualized by Andrews, Bubolz, & Paolucci (1980), offers a useful perspective from which to study the family, its specific application in the Sullivan and Peters (1988) paper is somewhat vague. It is unclear where in the ecosystems model that Sullivan and Peters (1988) place the adaptive behaviors measured. In addition, since the study utilized a single cross-sectional sample, "change" and "adaptation" are not actually measured. Research results are not discussed in relationship to the theory.

Additional studies of meal management. Several additional studies found in the review of meal management literature are not tied to formal theory. These include Ortiz, et al. (1981) who studied the effect of homemakers' employment on meal management; Wyn and Bowering (1990), who studied homemaking practices and evening meals in married and separated families; and Sharpe and Winter (1991) who studied changes in meal preparation/cleanup time from 1975 to 1981.

Becker. An extremely influential and often quoted theory is Becker's (1965) theory of the allocation of time. Although not applied specifically to meal management in the literature, its importance in the general household management literature warrants review here.
In the Becker framework, the household is viewed as a group of people who allocate scarce resources to a set of productive activities in order to maximize satisfaction. Households make two distinct types of decisions. Production decisions determine the mix of purchased goods and services (such as food), services from household capital goods (such as stoves), and uses of household members' time (such as time spent cooking) that are used in preferred household activities. Consumption decisions determine the assortment and extent of goods and activities (such as restaurant meals) which the household prefers.

Becker postulates that the price of purchased goods and services and the opportunity costs of households' time, in conjunction with the underlying technology of production, determine the mix of purchased goods and households' times in each activity.

The implicit price of any household activity is the marginal cost to the household of pursuing that activity. The marginal cost of any activity is made up of the added costs of householders' times plus the added out-of-pocket costs of the purchased goods and services required to produce an added unit of the activity. (Bryant, 1991, p. 4)

Becker's theory has been criticized for its inability to deal with the psychological and sociological dynamics of interpersonal relationships. However, it has been widely cited, particularly in association with the division of household labor and with levels of household production.
Theoretical Applications for the Present Study

The preceding discussion has exhibited a lack of consistent theoretical application in meal management research. This may be partly due to the fact that home management is basically an applied field aimed at helping individuals and families enhance their quality of life through effective decision making and resource use. Consequently, some research...[is] aimed at finding solutions to particular problems in particular situations. (Berger, 1984, p. 261)

However, a problem may also be the absence of theory appropriate to the questions home management researchers are asking.

The present study proposes to explore management strategies and time use in household production particularly in regard to the provision of meals. At present there are no theories which offer a good fit for the stated objectives. Of the relevant literature reviewed herein, Strober and Weinberg (1980) and Sullivan and Peters (1988) are the two which most closely match the objectives of the present study.

Strober and Weinberg (1980) focused on the effects of wives' employment on household management strategies. In their review of literature, they found conflicting theories and, based on their own earlier work, elected to test their own hypotheses. New theory resulting from this work has not been introduced.
Critics of the systems theory argue that it is more a perspective than a testable theory. Accordingly, Sullivan and Peters (1988) adopted systems theory as the prevailing guide for their investigation but did not specifically test it.

The application of Becker's (1965) model also has serious limitations for the present study. The model assumes that an individual's household production is valued at the foregone wage rate. Critics argue that one's labor in household production may not have the same value. A measure of output is a necessary component to incorporation of the theory; however measures of output are not available in the present data. The model is further constrained in that it focuses on one individual's decision while the present data hold the complete family as the unit of analysis.

Consistent with prevailing thought in Family Resource Management, the Deacon and Firebaugh model will be used in this study to guide thinking concerning the input:throughput relationship (Figure 4).

The holistic approach to home management . . . [is] useful as researchers, in their quest to understand, explain, and predict phenomena, build and test theories. (Berger, 1984, p. 261)

Although family resource management research is currently dominated by the use of the family systems perspective
The Management Model Applied to Meal Management

**INPUT**
- family income
- urban/rural residence
- homemaker's education level
- homemaker's skills
- homemaker's age
- day of week
- age of youngest child
- age of oldest child
- homemaker's employment

**THROUGHPUT**
- preparing meals in advance
- shopping frequency
- use of take-out foods
- use of microwave
- meals eaten away from home
- meals eaten together
- proportion of food preparation by family members

**OUTPUT**

- demand responses: family members eat
- resource changes: meals

<table>
<thead>
<tr>
<th>MANAGEMENT STRATEGIES</th>
<th>TIME EXPENDITURES</th>
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<tbody>
<tr>
<td>homemaker's time in food preparation/dishwashing</td>
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<tr>
<td>husband's time in food preparation/dishwashing</td>
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<tr>
<td>children's time in food preparation/dishwashing</td>
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<tr>
<td>total family time in food preparation/dishwashing</td>
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(Buehler & Hogan, 1984), the model has received little empirical scrutiny. This paucity mandated an exploratory approach to the present study.

The use of family systems theory for developing research models introduces a methodological problem.

Over time, resources may be input, throughput, and/or output. . . . The classification of a variable into a family systems model depends on the point in time which one is considering. (Hogan & Buehler, 1983, p. 6)

For this study, the choice of variables to be tested and their placement within the Family System Model is based on the results of previous research as reviewed herein, intuitive reasoning, and constraints of the available data. Strategies and time expenditures in meal management will be considered to be throughputs which may be associated with particular inputs. Depending on the resources available, managers may employ strategies such as preparing meals in advance, shopping for food more or less frequently, using take-out foods, using a microwave oven, eating away from home, eating together more or less often, and having family members contribute to food preparation activities. These management strategies fall within the planning and implementing segments of Deacon and Firebaugh's managerial subsystem model. Total family time and individual family members' time in food preparation and dishwashing are considered "actuating" the plan (compare Figure 3 and
Figure 4). Food consumed and meals provided will be considered the output of meal management.

Input variables will include family income, urban/rural residence, homemaker's education, homemaker's skills, homemaker's age, day of week, age of youngest child, age of oldest child, and homemaker's employment. Classification of these factors as "demands" or "resources" can depend upon context. For instance, urban/rural residence can be considered a resource if desired facilities and services are available. On the other hand, a lack of either facilities or services or a misfit in terms of desired environment may result in perceiving urban/rural residence a demand. Because the data provide no insight into the perceptions of the participants, no attempt will be made to classify input variables as either demands or resources.
III. METHODOLOGY

Background

In 1976, Regional Research Project NE-113 "An Interstate Comparison of Urban/Rural Families' Time Use" was organized by Dr. Kathryn Walker of Cornell University. Its purposes were to "establish a data bank of time use of rural and urban families, to update Walker's 1967-68 time use study (Walker & Woods, 1976), and to broaden the data base [of Walker's study] by including additional States" (McCullough, 1980, p. 40). The first household time-use data in Utah were collected as a part of that project.

In 1987-88 Regional Research Project S-206, "Determinants and Outcomes of Household Time Use", was organized and the Utah portion funded by the Utah Agricultural Experiment Station. Designed as a ten-year update to the NE-113 study, the methodology was replicated as closely as possible to facilitate the direct comparison of results.

This study utilized the 1987-88 data to identify variables by which management strategies as a function of meal preparation and time expenditures in meal preparation can be predicted in two-parent, two-child Utah families. In addition, the 1977-78 Utah data from NE-113 was used to compare meal management patterns between the two decades.
Sample

The 1987-88 sample consisted of 214 two-parent, two-child families, half of which was drawn from an urban/suburban area and half from a rural area of the state. The sample was drawn from the same populations utilized in the 1977-78 study. The urban/suburban sample consisted of 107 families from Salt Lake County, with an estimated population of 700,000, (U.S.Bureau of the Census, 1987) the area of the state where population and industry are concentrated. Salt Lake City, the state's largest city (population 158,440) and its capital, is located within the boundary of Salt Lake County.

The NE-113 project defined "rural" as an area in which there was no community with a population greater than 2,500.

Identifying a rural sample for Utah presented a number of problems. . . It soon became apparent that it would not be possible to comply with the regional project's definition of rural. Counties in which there were no communities with a population greater than 2,500 did not contain enough two-parent, two-child families to supply the 105 families needed. This is probably related to the fact the Utah's birth rate is more than double the national average. (McCullough, 1980, p. 42)

Therefore, the rural half of the 1977-78 sample and the 1987-88 sample was drawn from rural Iron and Washington Counties which are in the southwest corner of the state some 200 miles distant from Salt Lake County.

The Walker and Woods study (1976) suggested that major impacts on the amount of time spent on household work were
number of children, ages of children, and employment status of the homemaker. Therefore, the research design for the 1977-88 study and the 1987-88 study controlled for the number of children and then stratified the sample by the age of the youngest child. Names of householders for the sample were supplied by the Survey Research Center at the University of Utah. Some names were obtained through random digit dialing, which biased the sample somewhat by eliminating those families without telephones. In order to fill the requirements for stratification, other names were obtained from school district lists, referrals and newspaper advertisements placed by the researchers, which further biased the sample. The five levels of stratification were:

Level I: Younger child under one year of age.
Level II: Younger child one year of age.
Level III: Younger child between age two and five.
Level IV: Younger child between age six and eleven.
Level V: Younger child between age twelve and seventeen.

In the 1977-78 study, there were 21 urban and 21 rural families in each of the five levels, for a total of 42 families in each cell. In the more recent study, there were 42 families in levels two and five, 43 families in levels one and four, and 44 families in level three. The
maximum age of the older child was eighteen. No other limits were placed on the age of the older child.

**Instruments**

Two instruments were used to gather data for the study, a time diary (see Appendix A) and an information questionnaire (see Appendix B). The time diary and dictionary of activities (see Appendix C) were the same as used in 1977. The questionnaire was similar to the one used in 1977 with revisions which eliminated questions shown to be unproductive and to allow for some new questions.

The instruments were included in a packet provided for each participant. The packets contained all of the material needed to complete the data collection in one household and included one questionnaire, two time diaries, one set of instructions for completing the time diary, a time-use dictionary, and a red/blue pencil.

**Time Diary**

There are three commonly used methods of gathering time use data. In the observation method, a non-participant records the time use of the group being observed. The advantage of this approach is that it frees the people under observation from remembering to record what is being done. Major disadvantages of this method are
cost and the possible bias introduced by having an observer present.

The estimation method involves having the person estimate how much time was devoted to a specific activity in a given period of time. This is an inexpensive method, but most researchers agree that it generally over-estimates the time actually spent on activities (Robinson, 1977a).

The time diary method is a widely accepted and utilized method of gathering time data. Respondents are asked to record what they did during a specific period. The instrument may be designed so that respondents label their activities or so that respondents enter their time use in pre-labeled categories. The major disadvantage of the time diary method is that "the researcher has no absolute standard against which the accuracy of the data can be compared" (Szalai, 1972 cited in McCullough, 1980, p. 44).

One advantage to the time diary method, noted by Robinson (1977a), is that people are asked to report activities for a single day and to do it when that period is still fresh in their minds. Another advantage is that the respondents usually have minimal expectations of what particular activities will interest or please the researcher, and so may produce a more accurate report than will some other methods (Robinson, 1977a). The time diary allows the researcher to track the activities of the
respondent without being present (Berk, 1976). Finally, the time diary is an example of what Robinson (1988) terms "the 'micro-behavioral' approach to survey research" (p. 134). "This approach recognizes that individuals are limited in their ability to report very complex behavior in a survey. . . . [and] provides a flexible yet complex data base from which to draw conclusions" (Peterson, 1989).

The time diary used in this study was modeled after those developed at Cornell by Walker (Walker & Woods, 1976). Divided horizontally into 10-minute segments and vertically into 18 categories, the time diary allowed respondents to record their activities and those of their families for a 24-hour period (see Appendix A). The dictionary supplied to respondents to define their activities is provided in Appendix C.

The purpose of the time diary method is to measure the number of minutes family members allocate to specific activities. However, in this study,

[No attempt was made to assess the "quality" of the time . . . . Obviously different individuals accomplish different things during, for example, an hour spent housecleaning. (McCullough, 1980, p. 45)]

Pre-categorizing the activities may also pose some limitations, since motivations and feelings are difficult to take into consideration. For example, cooking can be done for more than one reason simultaneously: it can simply provide a meal, it can be a hobby activity, and/or
it can be done to teach a skill to a child (McCullough, 1980).

Validity and Reliability

Evidence of the validity and reliability of the time diary method has been provided by several researchers. Approaching data collection from three different methodological directions is known as "triangulation" and may be used to demonstrate validity (Guy, Edgley, Arafat & Allen, 1987). Time data has been "triangulated" by (1) observation of participants (Chapin, 1974); (2) having people record activities in as much detail as possible during a "random hour" on a day when the time diary was being kept (Robinson, 1977b); (3) using television cameras to observe activities (Bechtel, Achepohl, & Akers, 1972, cited in Robinson, 1986); (4) employing reports of other household members (Juster, 1985b); and (5) having subjects wear beepers which alerted them at random moments during the day when they were to record exactly what they were doing (Robinson, 1986). In comparing the results of these approaches, Robinson (1977b, 1988) concluded that while there were some discrepancies in reported behavior at the individual level, the aggregate activity patterns were similar. High correlations (.80 or higher) of time expenditures between time diary estimates and observational measures are reported (Robinson, 1988).
Evidence for the reliability of time diary data is offered by Robinson (1977a, 1977b). He notes that (1) similar results come from different studies; (2) a systematic relationship is found between diary entries of participation in an activity and estimates of yearly participation in that activity, and (3) there is a high congruence between the two diary approaches, "yesterday" and "tomorrow".

The wisdom of interviewing only one member of the household concerning all members of the household may be questioned. Berk and Berk point out that "household members overestimate their own contributions relative to estimates provided by their spouses" (1979, p. 88).

However, Sudman and Bradburn (1974, cited in McCullough, 1980) defend the method, noting that reports about other household members are only slightly less accurate than are reports about self.

Further, Sanik (1979) relates

...this procedure had been used in the 1967-68 study and was judged successful for obtaining information about time spent in household production by all family members. This approach saves considerable time and expense in interviewing while also providing greater control over the consistency of the record, as only one person need be instructed. (p. 41)

Questionnaire

The 1987-88 questionnaire asked questions about housing, household equipment, household production,
employment, education, household conditions, management skills and life satisfaction (see Appendix B). It included detailed questions concerning meals prepared at home, meals eaten away from home, and "carry-out" foods used for meals or as part of meals at home. In addition, questions concerning canning and freezing food, preparing food for another day, and shopping for food were asked.

Assumptions

1. A time diary approach is an accurate method of gathering data regarding how people use their time.
2. The time diary kept by the homemaker is an accurate reflection of the time use of all family members.
3. The questionnaire extracted an accurate representation of the family situation.
4. The interviewers carried out the data collection as they had been instructed to do.
5. The coding of the data was done accurately.
6. The urban and rural counties chosen for the research project are representative of the urban and rural counties in the state.
7. Time is a necessary input in the process of achieving family goals, including completion of household tasks.

Adapted from McCullough, 1980, p. 55.
8. The score of self-reported management skills represents an accurate assessment of homemakers' behavior.

Limitations³

1. Only primary, not secondary, time was considered in this study and which may limit its full representation of time allocation to various activities.

2. The families studied were two-parent, two-child families which are not representative of Utah families.

3. Results are reported in mean minutes per day which could give an impression of precision beyond what should be imputed to the data.

4. Since work patterns vary greatly, particularly between week days and weekend days, data may not be representative for those families who reported only week day time allocations.

Data Collection

Data for this study were collected by interviewers who were hired and trained for this project. Interviewers contacted the households drawn in the sample to determine if they met the criteria (two-parent two-child family) and were willing to participate. When eligibility was confirmed, an appointment was arranged between the interviewer and the homemaker at the homemaker's residence.

³ibid.
The collection of data for this study was based on the recognition that

... the most accurate method of obtaining data on time allocation appears to be through estimates of activities that are reported in diaries shortly after the event. The limited recall ability of respondents suggests that diary estimates are most accurate when they are obtained for the very recent past. (Juster, 1985a, p. 28)

Seasonal and day of week variations were expected.

It is probably true that within any society seasonal activity patterns vary a good deal; and for individual households, daily time uses vary enormously depending on whether the day is a weekday [or] a weekend day. . . . To get good data on activities at this micro level, one would have to sample days in such a way as to include an appropriate proportion of all different types of days. . . . Samples of weekdays drawn from particular seasons of the year. . . . [and] samples of both Saturdays and Sundays, also drawn from different seasons of the year [are necessary]. (Juster, 1985a, p. 29)

Therefore, an elaborate schedule was set up according to day of week and season of the year for each of the five sample stratum. The year was divided into four three-month segments and interviewers were expected to collect from one family in each stratum during every two-week period.

The interviewer and the homemaker had some flexibility in scheduling interviews, but this flexibility decreased as weeks in the segment passed. For example, in the two-week period of January 9 and January 16, a family could have been interviewed on any of the seven days of the week. In the second two-week period, however, a family in that stratum could only have been interviewed on one of the six remaining days of the week. (Sanik, 1979, p. 38)

The procedure for the household interviews involved two visits with the homemaker by the interviewer. The "homemaker" was defined as the person with the primary
responsibility for the household. In this study, the wife defined herself as the homemaker in every household. During the first visit, the interviewer explained the study instruments to the homemaker and helped her to fill out the time diary for her family's activities the day before. This day will hereafter be labeled "recall day". The completed diary was left with the homemaker so that she could check its accuracy with her family and so that she could refer to it as she filled out a second time diary. The second time diary was left for the homemaker to record activities as they occurred the next day, hereafter labeled "record day". In addition, a copy of the questionnaire was left to be filled out. A second appointment was arranged with the homemaker for the day after the record day. At this time, the interviewer checked the two time diaries and questionnaire for completeness and accuracy and helped the homemaker fill in any information missing. All survey instruments were then mailed to Utah State University for data processing.

When the interview packet was received the data were coded. It was necessary for the time use recorded for each person to total 1440 minutes per day (24 hours). When time could not be accounted for it was entered as "unaccounted for time". Unaccounted for time represented only 0.4% of the total minutes per day.
Variables

Both time diary entries and questionnaire responses will be used in this study. Dependent variables are considered to be throughput in the family management system, while independent variables are considered to be input (see The Meal Management Model, p. 44). Because past research has consistently shown that the homemaker takes primary responsibility for, and contributes the majority of time to, household work (especially food preparation) many of the variables utilized in this study focus on the homemaker. The selection of variables to be tested and their placement within the Family System Model was based on the results of previous research as reviewed herein, intuitive reasoning, and constraints of the available data. An explanation of the source for each of the variables considered in this study follows.

Dependent Variables

Preparing meals in advance: In an open-ended question, respondents were asked to record how many times they had prepared food for another day in the past 7 days (Appendix B).

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4See discussion, pp. 39-44.
Shopping frequency: In an open-ended question, respondents were asked to record how many times they had shopped for food in the past 7 days (Appendix B).

Use of take-out foods: In an open-ended question, respondents were asked to list the take-out foods purchased and brought home to be eaten as a meal or as part of a meal on the record day. The items listed were counted and used in the analysis (Appendix B).

Use of microwave: In an open-ended question, respondents were asked to record how many times they had used a microwave oven on the record day (Appendix B).

Meals eaten away from home: In an open-ended question, respondents were asked to list the meals eaten away from home on the record day (Appendix B).

Meals eaten together: In an open-ended question, respondents were asked to list the meals prepared or assembled at home and the number who ate the meal on the record day. Each meal where four individuals were present was counted as a meal eaten together (Appendix B).

Proportion of food preparation by family members: From the time diary, a sum of the minutes spent in food preparation by the husband and children on the record day was divided by the sum of the minutes spent in food preparation by all family members.

Homemaker's time in food preparation/dishwashing: From the time diary, a sum of the minutes spent in food
preparation and the minutes spent in dishwashing by the homemaker on the record day was calculated.

**Husband's time in food preparation/dishwashing:** From the time diary, a sum of the minutes spent in food preparation and the minutes spent in dishwashing by the husband on the record day was calculated.

**Children's time in food preparation/dishwashing:** From the time diary, a sum of the minutes spent in food preparation and the minutes spent in dishwashing by all children over age six on the record day was calculated.

**Total family time in food preparation/dishwashing:** From the time diary, a sum of the minutes spent in food preparation and the minutes spent in dishwashing by all family members on the record day was calculated.

**Time spent food preparation/dishwashing, 1977:** Means from the NE-113 Utah data, reported by Peterson (1979), were used.

**Number of meals eaten away from home, 1977:** Means from the NE-113 Utah data, reported by Peterson (1979), were used.

**Number of meals eaten together as a family, 1977:** Means from the NE-113 Utah data, reported by Peterson (1979), were used.
Independent Variables

**Family income:** Respondents were asked to report the category representing the total annual income before taxes for the household. The income categories reported were combined into categories of equal intervals. The median value in each category was then used in the analysis (Appendix B).

**Urban/rural residence:** Each family was categorized as either urban or rural according to the location of their residence. Rural families resided either in Iron County or in Washington County.5

**Homemaker's education:** In an open-ended question, respondents were asked to report the highest grade in school completed (Appendix B). Collapsed categorical data was used for this analysis.

**Homemaker's management skills:** Respondents were asked to report how often they performed each of thirteen management behaviors. A mean score (range 0-4, with one equal to "never" and four equal to "constantly") was calculated and used in this analysis (Appendix B).

**Homemaker's age:** In an open-ended question, respondents were asked to report their date of birth. The actual age of the homemaker was then calculated.

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5See discussion of sampling design and procedure, p. 46.
Day of week: A record was made of the day of the week that each time diary was kept. Monday through Friday was coded as "weekday" and Saturday and Sunday were coded as "weekend".

Age of youngest child: In an open-ended question, respondents were asked to report the date of birth of the youngest child. The actual age of the child was then calculated.

Age of oldest child: In an open-ended question, respondents were asked to report the date of birth of the oldest child. The actual age of the child was then calculated.

Homemaker's employment: In an open-ended question, respondents were asked to report the usual number of hours worked for pay a week in the primary job, and (if any) their second job. The sum was used in this analysis (Appendix B).

Employed homemakers: In an open-ended question respondents were asked to report the usual number of hours worked for pay a week in the primary job, and (if any) their second job. Those reporting 15 or more hours per week were classified as "employed homemakers" (Appendix B). This definition is consistent with that used in the Peterson (1979) study.

Dual-earner families: In an open-ended question respondents were asked to report the usual number of hours
worked for pay a week in a primary job, and (if any) their second job. Families in which both husband and wife reported 15 or more hours per week were classified as "dual-earner families" (Appendix B).

Operational Definitions

Allocation of household tasks: "The amount of time actually recorded in the household task categories of the time diary" (Thalman, 1982, cited in Peterson, 1989, p. 58).

Convenience food: Food ready for quick or easy at-home preparation (e.g., "microwave meals", "heat 'n eat" canned foods, "instant" foods).

Employment, full-time: Work outside of the home for 35 or more hours per week.

Employment, part-time: Work outside of the home from one to 34 hours a week.


Fast food restaurant: An establishment in which patrons purchase foods at a counter, to be self-served and eaten in an adjoining dining area or "carried out".

Household work: The total mean time recorded on the time diary in the categories of food preparation; dishwashing; shopping; housecleaning; maintenance of home, yard, car, and pets; care of clothing and household linens;
construction of clothing and household linens; physical
care of family members; non-physical care of family
members; and management (see Appendix A).

Restaurant: A dining establishment in which patrons
are served at table (compare to "fast-food restaurant").

Recall day: Using a time diary, the homemaker
provided from memory an account of family members'
activities on the day previous to the first interview.

Record day: Using a time diary, the homemaker
recorded family members' activities during the day
following the first interview.

Take-out food: Foods (such as pizza, hamburgers, or
fried chicken) purchased and brought home to be eaten as a
meal or as a part of a meal.

Statistical Analysis

Statistical measures that were used to analyze the
data for this study included stepwise multiple regression,
the correlation ration, t-test, and Chi-square.
Statistical analyses were facilitated by the Statistical
Package for the Social Sciences (Nie, Hull, Jenkins,
Steinbrenner & Bent, 1991). For all analyses, the .05
level of confidence was set for statistical significance.

For the purpose of statistical tests, the following
hypotheses are stated in the null form.
H₁: There is no linear relationship between the dependent variables representing management strategies:

a. number of times meals are prepared in advance
b. number of times shopping for food
c. number of take-out foods purchased to be eaten as a meal or as part of a meal
d. number of times a microwave oven was used
e. number of meals eaten away from home
f. number of meals eaten together
g. proportion of total time in food preparation contributed by family members other than homemaker

and a combination of the independent variables:

1. family income
2. urban/rural residence
3. education level of homemaker
4. homemaker's management skills
5. homemaker's age
6. day of week
7. age of youngest child
8. age of oldest child
9. homemaker's employment

H₂: There is no linear relationship between the dependent variables representing time expenditures:

a. homemakers' time in food preparation/dishwashing
b. husbands' time in food preparation/dishwashing
c. children's time in food preparation/dishwashing
d. total family time in food preparation/dishwashing
and a combination of the independent variables:

1. family income
2. urban/rural residence
3. education level of homemaker
4. homemaker's management skills
5. homemaker's age
6. day of week
7. age of youngest child
8. age of oldest child
9. homemaker's employment

H₃: There is no significant difference in the time spent in food preparation and dishwashing in 1977 and 1987 by:

a. non-employed homemakers
b. employed homemakers
c. husbands
d. children
e. total family

H₄: There is no significant difference in the number of meals eaten away from home in 1977 and 1987 by:

a. dual-earner families
b. single-earner families
c. rural families
d. urban families

H₅: There is no significant difference in the number of meals eaten together as a family in 1977 and 1987 by:

a. dual-earner families
b. single-earner families
c. rural families  
d. urban families

Stepwise multiple regression is an appropriate technique to identify predictor variables. In this procedure independent variables that have the highest predictive power are entered into the equation first, and each variable is added in order of its ability to predict variation in the dependent variable. This procedure takes into account the explanation of variation that has already been accomplished by the preceding variable entered into the equation.

In this study, regression equations were constructed for each of seven dependent variables of hypothesis #1:

a. number of times meals are prepared in advance  
b. number of times shopping for food  
c. number of take-out foods purchased  
d. number of times a microwave oven was used  
e. number of meals eaten away from home  
f. number of meals eaten together  
g. proportion of total time in food preparation contributed by family members other than homemaker

with these independent variables:

1. family income  
2. urban/rural residence  
3. education level of homemaker  
4. homemaker's management skills
5. homemaker's age
6. day of week
7. age of youngest child
8. age of oldest child
9. homemaker's employment

Regression equations were also constructed for each of the four dependent variables of hypothesis #2:

a. homemakers' time in food preparation/dishwashing
b. husbands' time in food preparation/dishwashing
c. children's time in food preparation/dishwashing
d. total family time in food preparation/dishwashing

with these independent variables:

1. family income
2. urban/rural residence
3. education level of homemaker
4. homemaker's management skills
5. homemaker's age
6. day of week
7. age of youngest child
8. age of oldest child
9. homemaker's employment

Because some information was collected as categorical data, dummy variables were constructed (where 1 indicates membership in a category, -1 otherwise) for independent variables two, three, and six.
Stepwise multiple regression carries with it the assumption of linear relationships. A statistical procedure that can evaluate non-linear correlation between an interval variable and a nominal variable is the correlation ration (Eta). When squared (Eta$^2$), the correlation ratio may be interpreted in the same way as an R$^2$. This procedure was used on all appropriate variable pairs.

The t-test is a statistical test to evaluate the difference between two sample means measured by the pooled estimates of population variance calculated from the two sample variances. The t-test was used to test hypotheses #3, #4, and #5.

In the examination of hypothesis #4, a comparison between the number of meals eaten away from home in 1977 and in 1987, the research methods utilized by Peterson (1979) were matched. An alternate method of comparison, based on the proportion of meals eaten away from home, was tested with the Chi-square test for difference between two independent proportions.
IV. FINDINGS

Description of the Dependent Variables

Preparing Meals in Advance

Respondents were asked to record how many times they had prepared food for another day in the past seven days. The majority (59.3%) had not done so; however, 13.1% had prepared food for another day once, 11.7% had done so twice, and 6.5% had done so three times. A total of 8.8% had prepared meals in advance from four to eight times, and one family (.5%) had done so 20 times. For all families, the mean number of food preparations done in advance during the week was 1.1 (see Table D-1).

Shopping Frequency

Respondents were asked to report how many times in the past seven days they had shopped for food. Responses ranged from zero to 15 times. The majority of the respondents (63%) shopped from one to three times during the week, 17.8% shopped between four and seven times, 16.4% did not shop for food at all during the week, and 2.8% shopped between eight and 15 times. The mean food shopping frequency was 2.4 times for the week (see Table D-2).
Use of Take-out Foods

Participants were asked to list the take-out foods such as pizza, hamburgers, or fried chicken that were purchased and brought home to be eaten as a meal or as part of a meal. Most of the families (91.1%) used no take-out foods on the record day. Of the 5.6% who did use take-out foods, 12 families purchased one item, 6 purchased two items, and one purchased three items (see Table D-3).

Use of a Microwave Oven

The majority of the respondents (87.2%) owned a microwave oven. Of the 187 who owned microwave ovens, 41 (21.9%) did not use them on the record day, 78 (41.7%) used them between one and three times, 41 (21.9%) used them between four and six times, 9 (4.8%) used them between seven and nine times, and 18 (9.6%) used them ten or more times during the day, resulting in a mean of 3.7 times (see Table D-4).

Meals Eaten Away from Home

Respondents were asked to record the meals that family members ate away from home on the record day. Seven families (3.3%) reported that one or more family members ate breakfast away from home, while nearly half (48.6%) reported that one or more family member ate lunch away from home. Of those 110 families, 12 (10.9%) reported that all
four family members ate lunch away from home, which represents 5.6% of the total sample.

Respondents in 27 (16.8%) of the families reported that one or more family members ate dinner away from home. Nine families (4.2%) reported that all four family members ate dinner away from home. Overall, 42.5% of the families did not have anyone eating any meals away from home on the record day, and there were no families whose members ate all meals away from home. Altogether, the mean number of meals eaten away from home was 1.17 per day (see Table D-5).

Meals Eaten Together

Respondents were asked to record the meals prepared at home and the number of family members who ate the meal. For this study, a meal was considered eaten together if the number recorded was four, even though it was not possible to determine whether all ate at the same time and in the same place. This procedure is consistent with previous studies. Respondents in 73 families (34.1%) reported eating breakfast together, while 141 (65.9%) did not. At lunch, 46 (21.5%) ate together. At dinner, nearly half of the families (44.9%) ate together.

Overall, 40.2% of the families in this sample ate no meals together during the day, while 10.3% ate all meals together. Families who ate one meal together represented
29.4% of the sample and families who ate two meals together represented 20.1%. Altogether, the mean number of meals eaten together was one (1.0) meal per day (see Table D-6).

**Proportion of Food Preparation Time by Family Members**

From the time diary, the proportion of total food preparation time contributed by husbands and children was calculated. In over half of the families (55.9%) husbands and children spent no time in food preparation. In nearly one quarter (22.0%) of the households, husbands and children contributed up to half of the families' food preparation time. Slightly less than one-sixth (14.1%) of the husbands and children contributed over one half of the total families’ time in food preparation (see Table D-7).

**Homemakers' Time in Food Preparation and Dishwashing**

From the time diary, a sum of the minutes spent in food preparation and the minutes spent in dishwashing was calculated. About one quarter (24.3%) of the homemakers in this study spent 30 minutes or less daily in food preparation and dishwashing and another 22.4% spent from 31 minutes to an hour. Almost one third (30.3%) of the homemakers spent between 61 minutes and 120 minutes in food preparation and dishwashing and 12.7% spent from 121 minutes to 180 minutes. Only 10.3% of the homemakers spent
over three hours daily in food preparation and dishwashing (see Table D-8).

Husbands' Time in Food Preparation and Dishwashing

From the time diary, a sum of the minutes spent in food preparation and the minutes spent in dishwashing by the husband was calculated. In this sample, 61.2% of husbands spent no time in food preparation or dishwashing on the record day. Twenty seven percent reported spending from one to 30 minutes, 6.1% spent from 31 minutes to an hour, and the remaining 5.6% spent over an hour in food preparation and dishwashing (see Table D-9).

Children's Time in Food Preparation and Dishwashing

From the time diary, a sum of the minutes spent in food preparation and dishwashing by children age six or over was calculated. Of the 428 children in the sample, 223 (52%) were age six or older. Only 52 (23.3%) of these reported time in food preparation and dishwashing, with times ranging from 5 to 95 minutes. The mean was nine minutes (s.d.=20.4).

Total Family Time in Food Preparation and Dishwashing

From the time diary, a sum of the minutes spent in food preparation and the minutes spent in dishwashing by homemaker, husband, and children was calculated. In ten of
the families (4.7%) there was no time reported in food preparation and dishwashing. The greatest number (20.1%) spent between 61 and 90 minutes, 17.3% spent between 31 and 60 minutes, 16.8% spent 91 to 120 minutes, and 12.1% spent from five to 30 minutes (see Table D-10).

Summary

Means for each of the dependent variables are summarized in Table 1.

Table 1

Summary of Means of Dependent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>( \bar{X} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparing meals in advance</td>
<td>1.1 x/week</td>
</tr>
<tr>
<td>Shopping frequency</td>
<td>2.4 x/week</td>
</tr>
<tr>
<td>Use of take-out foods</td>
<td>.13 x/day</td>
</tr>
<tr>
<td>Use of microwave oven</td>
<td>3.7 x/day</td>
</tr>
<tr>
<td>Meals eaten away from home</td>
<td>1.17 meals</td>
</tr>
<tr>
<td>Meals eaten together</td>
<td>1.04 meals</td>
</tr>
<tr>
<td>Proportion of food preparation time by family members</td>
<td>18.3 percent</td>
</tr>
<tr>
<td>Homemakers' time in food preparation and dishwashing</td>
<td>87.4 minutes</td>
</tr>
<tr>
<td>Husbands' time in food preparation and dishwashing</td>
<td>16.3 minutes</td>
</tr>
<tr>
<td>Children's time in food preparation and dishwashing</td>
<td>9.0 minutes</td>
</tr>
<tr>
<td>Total family time in food preparation and dishwashing</td>
<td>104.4 minutes</td>
</tr>
</tbody>
</table>
Description of the Independent Variables

Family Income

Respondents were asked to choose one of seventeen income categories that matched their total household income before taxes for the previous 12 months. The income categories reported were then combined into categories of equal intervals. For this sample, the median income category was $24,000 to $34,999 (see Table D-11). By comparison, the mean income for four-person Utah households in 1987 was $35,580 (U.S. Department of Commerce, 1987b).

Residence

The sample for this study consisted of 214 two-parent, two-child families residing in Utah. Half of the sample represented an urban/suburban population and consisted of 107 families from Salt Lake County. The other half of the sample represented a rural population and consisted of 107 families from Iron and Washington Counties.

Homemaker's Education

The educational levels of the respondents ranged from grade school through doctoral and professional degrees. The category indicated by the largest number of wives (32.7%) as the highest level of education completed was "high school diploma." Participants in this study had
completed more years of education than the general Utah population. Twenty eight percent of the women (and 40% of the men) in the sample had completed four or more years of college (see Table D-12). In contrast, 20% of the Utah population over the age of 25 had completed four or more years of college (U.S. Bureau of the Census, 1987).

Homemakers' Management Skills

Homemakers were asked to report how often they performed each of thirteen management behaviors. A mean score, based on a range of one to four (where 1=never and 4=constantly), was then calculated for each homemaker. For this sample, the overall mean management skills score was 3.0, with mean scores on each behavior ranging from 2.7 to 3.3 (Table D-13 summarizes the management questions and responses).

Homemakers’ Age

The ages of wives ranged from 19 to 68, with a mean of 34 years. The median age of wives was 32, higher than the Utah population median of 25.5 years (U.S. Department of Commerce, 1987a). However, this difference was expected since the sample was restricted to families in two-child households (see Table D-14).
Day of Week

The day of the week was coded for each time diary. The study design resulted in equal data collection for each day of the week. For this study, Monday through Friday were categorized as weekdays and Saturday and Sunday were categorized as weekend days, resulting in 153 weekdays and 61 weekend record days.

Age of Youngest Child

Participants were asked to report the birth date of their youngest child. By the research design, the sample was stratified into five categories according to the age of the youngest child, with approximately 20% of the families in each category. In level I (age under one year) there were 43 families; in level II (age one year) there were 42 families; in level III (age between two and five) there were 43 families; in level IV (age between six and eleven) there were 43 families; and in level V (age 12 to 17) there were 42 families.

Age of Oldest Child

The ages of oldest children in the sample ranged from one to 19. There were no oldest children under one year of age (level I). In level II (age one year) there were 7 oldest children (3.3%); in level III (age between two and five) there were 74 oldest children (34.6%); in level IV
(age between six and eleven) there were 60 oldest children (28.0%); and in level V (age 12 and over) there were 73 oldest children (34.1%).

Homemakers' Employment

Of the homemakers who participated in this study, 61.2% reported that they were employed, compared to a 56.4% employment level in the general Utah female population (U.S. Bureau of the Census, 1987).

Participants reported how many hours they had worked for pay during the previous week. About one-third of the employed homemakers reported hours indicating part-time, rather than full-time, employment (see Table D-15). These figures are comparable to those of the general population, where 30% of employed women work part-time (Utah Department of Employment Security, 1985).

Summary

Means for each of the independent variables are summarized in Table 2.
Table 2

Summary of Means of Independent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>( \bar{X} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income category</td>
<td>$24,000 - 34,999 \text{ (mdn.)}</td>
</tr>
<tr>
<td>Residence</td>
<td>NA*</td>
</tr>
<tr>
<td>Homemaker's education</td>
<td>high school graduate</td>
</tr>
<tr>
<td>Homemaker's skills scale</td>
<td>3.0 on a four-point scale</td>
</tr>
<tr>
<td>Homemaker's age</td>
<td>34 years</td>
</tr>
<tr>
<td>Day of week</td>
<td>NA*</td>
</tr>
<tr>
<td>Age of youngest child</td>
<td>NA**</td>
</tr>
<tr>
<td>Age of oldest child</td>
<td>9 years</td>
</tr>
<tr>
<td>Homemaker's employment</td>
<td>17.7 hours/week</td>
</tr>
</tbody>
</table>

*Not applicable, dichotomous variable.
**Not applicable, sample equally stratified among age levels.

Results

Regression Equations on the Management Model

Procedure. Guided by the Management Model (see Figure 4, page 42), stepwise multiple regression was used to construct an equation for each of the dependent variables representing management strategies and time expenditures.
(throughput components) with the independent variables (input components). In all regressions, independent variables were: family income, urban/rural residence, education level of homemaker, homemaker's management skills, homemaker's age, day of week, age of youngest child, age of oldest child, and homemaker's hours of employment. Statistical significance was set at p = <.05.

There are a number of potential problems associated with multiple stepwise regression models which were recognized and handled as follows. (1) The stability of the coefficients was inspected by comparing the results of backward and forced entry regressions with the forward regressions herein reported. No critical differences were found. (2) Correlations among independent variables in multiple regression models can substantially affect the results. An analytical procedure in the Statistical Package for the Social Sciences (Nie, et al., 1991) was used to detect potentially troublesome situations of collinearity. The collinearity of independent variables in this study was not found to be a problem. (3) The possibility of non-linear relationships was investigated by examining computer-generated scatterplots of each dependent variable/independent variable relationship. Possible non-linear relationships were further tested with the correlation ratio (Eta), a statistical procedure which can
detect non-linear relationships. Results of these tests are reported in a following section (see page 86).

**Summary and discussion.** Stepwise multiple regression was used to identify variables with predictive capacity for management strategies and time expenditures in food preparation. Guided by the Management Model, an equation for each of the dependent variables representing management strategies and time expenditures was constructed.

Social science research, particularly time study, typically reveals limited explanation of variance among variables and relatively large standard deviations due to the infinite number of influences on human behavior. This was the case in the present study.

Statistically significant explanation of variance was limited in all equations, with $R^2$ ranging from 15% to 2% (see Table 3). Preparing meals in advance was best predicted by management skills, homemaker's employment, and by residence. Increased advance food preparation was related to higher mean scores on the homemaker's management skills, to increased hours in employment, and to rural residence. The range of food preparation done in advance was from zero to 20, with a mean of 1.1 times in the previous 7 days.

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6Detailed results of each multiple stepwise regression procedure are presented in Appendix D.
Table 3

Summary of Multiple Stepwise Regression Equations

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Family Income</th>
<th>Residence</th>
<th>Homemaker Education</th>
<th>Management Skills</th>
<th>Homemaker Age</th>
<th>Day of Week</th>
<th>Age of Younger Child</th>
<th>Age of Older Child</th>
<th>Homemaker Employment</th>
<th>Explained Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparing Meals in Advance</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td>*</td>
<td>.089</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shopping Frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.058</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of Take-Out Foods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of Microwave Oven</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td>.047</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meals Eaten Away from Home</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>.042</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meals Eaten Together</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td>.037</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion of Food Preparation by Family Members</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homemaker Time in Food Preparation</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.022</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse Time in Food Preparation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children Time in Food Preparation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>.152</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Family Time in Food Preparation</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.067</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Shopping frequency was best predicted by the homemaker's education, and was related in a positive direction. Responses ranged from zero to 15 times, with a mean of 2.4 times in the previous 7 days. Although contrary to intuitive reasoning, where increased levels of education would seem to correspond to increased efficiency and, hence, to fewer shopping trips, this finding is consistent with the literature. Reduced time in household work is associated with increased levels of homemaker's education (Nickols & Metzen, 1978), while reductions in food preparation time are balanced by increases in time spent in shopping (Robinson, 1977b; Sanik, 1979).

Not surprisingly, then, in the present study, increased levels of homemaker's education were associated with less time in food preparation and dishwashing. In fact, the best predictor of food preparation and dishwashing time was the education level of the homemaker.

A microwave oven was used more often by homemakers with higher education and on week days. It was postulated that week days may be associated with greater stress and/or time constraints than week end days, leading to the use of convenience appliances. Microwave ovens were owned by 87% of the sample families and were used from one to 20 times, with a mean of 3.7 times on the record day.

The number of meals eaten away from home was best predicted by the age of the older child. More meals were
eaten away from home by families in which the first child was older and family members most often ate lunch away from home. This finding suggests the presence of very young children may be a barrier to eating away from home. On the other hand, the results may simply reflect the frequency of lunches eaten at school. Additional investigations should address these possibilities.

The number of meals eaten together was best predicted by the education level of the homemaker, and was related in a positive direction. This finding might be a reflection of relative efficiency or of differential values and should be investigated further. Families ate a mean of 1.0 meals together on the record day.

Children’s time in food preparation and dishwashing was best predicted by the age of the youngest child, where older children contributed more time. Children over age six contributed a mean of nine minutes to food preparation and dishwashing on the record day.

The family’s total time in food preparation was best predicted by the age of the homemaker, where more time was associated with families having older homemakers. The mean total family time in food preparation and dishwashing on the record day was 104 minutes.

Predictors were not identified for the use of take-out food, the proportion of total time in food preparation
contributed by family members other than the homemaker, and husband's time in food preparation and dishwashing.

**Comparisons of Meal Management, 1977-1987**

**Procedure.** Comparisons between 1977 and 1987 were facilitated by the t-test, in which differences between sample means were examined for statistical significance at the .05 level of probability. Assumptions associated with the t-test are homogeneity of variance and equal sample size. In some comparisons in this study the F ratio revealed a statistically significant difference of variance. However, because the t-test is particularly robust, "the assumption concerning the equality of the two population variances can be practically ignored . . . if the two sample sizes are equal (Welkowitz, Ewen, & Cohen, 1982, p. 163).

When the sample sizes are also unequal, the t-test is biased. "When the larger sample has the larger variance the ordinary t-test is too conservative" (Ferguson, 1981, p. 183). When this case occurred and statistical significance was found the problem posed no difficulty. In instances where assumptions concerning homogeneity of variance and equal sample sizes are violated and statistical significance is not found, acceptance of the null hypothesis should be cautious. A method for estimating an adjusted critical t-value (Cochran & Cox,
1957, cited in Ferguson, 1981) was used to appraise possible bias. In all cases of this problem in the present study, the adjusted value also suggested statistical non-significance, leading to the acceptance of the null hypothesis.

Summary and discussion. Using the t-test for independent samples, comparisons of meal management practices were compared between 1977, as reported by Peterson (1979), and 1987. Table 4 summarizes the comparisons.  

Additional Findings

Non-linear correlations within the Management Model

A statistical procedure that can evaluate non-linear correlation between an interval variable and a nominal variable is the correlation ratio (Eta). When squared ($Eta^2$), the correlation ratio may be interpreted in the same way as an $R^2$. Statistical significance is tested with the F ratio.

In this study, three independent variables in the Management Model were nominal: urban/rural residence, homemaker's education, and day of week. In order to facilitate the multiple stepwise regression procedure, these variables were transformed into "dummy" variables and

---

7Detailed results of comparisons are presented in Appendix D.
### Table 4

**Summary of Comparisons, 1977-1987**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time in food preparation</strong></td>
<td></td>
</tr>
<tr>
<td>Non-employed homemakers</td>
<td>↓</td>
</tr>
<tr>
<td>Employed homemakers</td>
<td>↑</td>
</tr>
<tr>
<td>Husbands</td>
<td>↑</td>
</tr>
<tr>
<td>Children</td>
<td>↓</td>
</tr>
<tr>
<td>Total family</td>
<td>↓</td>
</tr>
<tr>
<td><strong>Number of meals eaten away from home</strong></td>
<td></td>
</tr>
<tr>
<td>Dual-earner families</td>
<td>↑</td>
</tr>
<tr>
<td>Single-earner families</td>
<td>↑</td>
</tr>
<tr>
<td>Rural families</td>
<td>↑</td>
</tr>
<tr>
<td>Urban families</td>
<td>↑</td>
</tr>
<tr>
<td><strong>Number of meals eaten together</strong></td>
<td></td>
</tr>
<tr>
<td>Dual-earner families</td>
<td>↓</td>
</tr>
<tr>
<td>Single-earner families</td>
<td>→</td>
</tr>
<tr>
<td>Rural families</td>
<td>→</td>
</tr>
<tr>
<td>Urban families</td>
<td>→</td>
</tr>
</tbody>
</table>

**Legend.**
- ↑ Statistically significant upwards trend.
- ↓ Statistically significant downwards trend.
- → No statistically significant change.

**Note.**  
$p = <.05$
entered into the equations; however, limited variance was explained. The possibility of non-linear relationships lead to the generation of Eta² statistics. Statistically significant non-linear correlations were revealed between three variable pairs. Increased shopping frequency was related to urban residence (Eta²=.19) and to higher levels of homemaker's education (Eta²=.16). Meals were most often eaten away from home on weekdays (Eta²=.08) (Table 5). None of these relationships were revealed by the regression procedure.

All other variable relationships within the model were subjected to the Eta² procedure. No further non-linear correlations were revealed.

Meals Eaten Away from Home

In an earlier section of this discussion, the number of meals eaten away from home between 1977 and 1987 was compared by counting the number of meals in which one or more family members ate away from home. This procedure was followed in order to provide continuity with the previous study. An alternate method which may provide a more understandable comparison was also made. A proportion of meals eaten away from home per day was calculated and a Chi-square test for difference between two independent proportions was computed.
The proportion of meals eaten away from home was calculated by assuming a possible of 12 meals per day (3 meals for each of the 4 family members). From this perspective, meals eaten away from home increased from 9.3% in 1977 to 13.2% in 1987, a difference that was statistically significant (Table 6).

**Table 5**

**Non-linear Correlations within the Management Model**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variable</th>
<th>Pearson’s R</th>
<th>Eta</th>
<th>Eta²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping frequency</td>
<td>Urban/Rural residence</td>
<td>.13</td>
<td>.43</td>
<td>.19**</td>
</tr>
<tr>
<td>Shopping frequency</td>
<td>Homemaker’s education</td>
<td>.24</td>
<td>.40</td>
<td>.16*</td>
</tr>
<tr>
<td>Meals eaten away from home</td>
<td>Day of week</td>
<td>.04</td>
<td>.29</td>
<td>.08*</td>
</tr>
</tbody>
</table>

*significant at p = <.05  
**significant at p = <.01

**Table 6**

**Comparison of the Proportion of Meals Eaten Away from Home, 1977 - 1987**

<table>
<thead>
<tr>
<th></th>
<th>Number of Meals Eaten Away</th>
<th>p</th>
<th>Chi Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>238</td>
<td>.093</td>
<td>19.64*</td>
</tr>
<tr>
<td>1987</td>
<td>340</td>
<td>.132</td>
<td></td>
</tr>
</tbody>
</table>

*significant at p = <.001
V. SUMMARY, CONCLUSIONS AND HYPOTHESES, RECOMMENDATIONS, AND IMPLICATIONS

Summary

The purpose of this study was to explore management strategies and time use in household production, focusing particularly on the provision of meals. The primary objective was to identify variables by which management strategies and time expenditures in meal preparation can be predicted in two-parent, two-child Utah families, leading toward the development of hypotheses that explain and predict family meal management behavior. The second objective was to compare current meal patterns in two-parent, two-child Utah families with those reported by Peterson (1979) in a comparable 1977 study.

Data were taken from the Utah portion of the 1987-88 Regional Research Project S-206, "Determinants and Outcomes of Household Time Use," which was funded by the Utah Agricultural Experiment Station. Two hundred fourteen two-parent, two-child families who lived in urban and rural areas of Utah participated in the study. Families were stratified into five levels according to the age of the youngest child.

Two instruments were used for the study. A questionnaire, home-administered by an interviewer, concerned household equipment, household production, management skills, employment, education, income, and other
demographic data. Pre-categorized time diaries that represented "yesterday" (recall day) and "today" (record day) were used to record the activities of each family member.

Half of the families in this study lived in an urban/suburban area and half lived in a rural area of Utah. Median income fell into the $24,000 to $34,999 category. Homemakers had a mean age of 34 years and most had achieved high school graduation and some college. Over half of the homemakers (61%) were employed.

**Regression Equations on the Management Model**

Stepwise multiple regression was used to identify variables with predictive capacity for the management strategies and time expenditures in food preparation. Guided by the Management Model, an equation for each of the dependent variables representing management strategies and time expenditures was constructed.

Statistically significant explanation of variance was limited in all equations, with \( R^2 \) ranging from .15 to .02. Preparing meals in advance was best predicted by management skills, homemaker's employment, and by residence. Increased advance food preparation was related to higher mean scores on the homemaker's management skills, to increased hours in employment, and to rural residence. The range of food
preparations done in advance was from 0 to 20, with a mean of 1.1 times in the previous 7 days.

Shopping frequency was best predicted by the homemaker's education, and was positively correlated. Responses ranged from zero to 15 times, with a mean of 2.4 times in the previous 7 days.

A microwave oven was used more often by homemakers with higher education and on week days. Microwave ovens were owned by 87% of the sample families and were used from one to 20 times, with a mean of 3.7 times, on the record day.

The number of meals eaten away from home was best predicted by the age of the older child. Correlations suggested that more meals were eaten away from home by families in which the first child was older. Family members most often ate lunch away from home.

The number of meals eaten together was best predicted by the education level of the homemaker, and was positively correlated. Families ate a mean of 1.0 meals together on the record day.

The homemaker's time in food preparation and dishwashing was best predicted by her education, where higher levels of education were associated with less time. Homemakers spent a mean of 87 minutes in food preparation and dishwashing on the record day.
Children's time in food preparation and dishwashing was best predicted by the age of the youngest child, where older children contributed more time. Children over age six contributed a mean of nine minutes to food preparation and dishwashing on the record day.

The family's total time in food preparation was best predicted by the age of the homemaker, where more time was associated with families having older homemakers. The mean total family time in food preparation and dishwashing on the record day was 104 minutes.

Predictors were not identified for the use of take-out food, the proportion of total time in food preparation contributed by family members other than the homemaker, and husband's time in food preparation and dishwashing. Overall, the homemaker's education level was a statistically significant predictor in four of the equations, while each of seven other predictors (urban/rural residence, management skills, homemaker's age, day of week, age of youngest child, age of oldest child, homemaker's employment) were each significant once. In all equations, explained variance was limited to from 2% to 15%. However, the \( \text{Eta}^2 \) statistic suggested that non-linear correlations were present. Residence location explained 19% of the variance in shopping frequency and homemaker's education explained 15% of the variance in shopping.
frequency. The day of the week explained 8% of the variance in the number of meals eaten away from home.

**Decade Comparisons of Meal Patterns**

Comparisons of time spent in food preparation between 1977 and 1987 were facilitated by the t-test. Statistically significant reductions in time were found by non-employed homemakers, while husbands recorded a statistically significant increase. However, the changes were so slight as to be of no practical significance. Neither employed homemakers nor children had statistically significant differences in time in food preparation.

Comparisons of meals eaten away from home between 1977 and 1987 found a statistically significant increase by single-earner families. Dual-earner families, urban families, and rural families had no statistically significant differences between the two decades. Averages ranged from slightly under to slightly over one meal per day away from home.

Comparisons of meals eaten together between 1977 and 1987 found no statistically significant differences among dual-earner families, single-earner families, urban families, or rural families. All groups reported an average of about one meal per day together.
Conclusions and Hypotheses

The primary objective of this study was to identify variables which may predict the management strategies and time expenditures of meal preparation. In terms of the Deacon and Firebaugh (1988) systems model of family resource management, the research object may be stated as the identification of specific demands and resources (inputs) that are determinants of particular planning and implementing behaviors (throughput) associated with the provision of family meals (output) (see Figure 3, page 31). Eleven management strategies and time expenditure patterns were examined in relation to nine possible predictors (see Figure 4, page 42).

The second objective of this study was to compare current meal patterns with those reported a decade earlier. It was found that very little change had occurred.

Stepwise multiple regression procedures revealed weak correlations and limited explained variance. Each of seven variables was useful in predicting one of the eleven regression equations. However, the homemaker's education level was a statistically significant predictor in four regression equations. Figure 5 presents a summary of the regression equations. In addition, decade comparisons of meal patterns revealed few changes of practical significance. These results may offer some clues leading
Figure 5

The Management Model Applied to Study Findings

INPUT

- skills
- urban/rural residence
- homemaker's employment
- day of week
- age of older child
- homemaker's education
- age of youngest child
- homemaker's age

THROUGHPUT

- preparing meals in advance
- shopping frequency
- use of microwave
- meals eaten away from home
- meals eaten together
- homemaker's time in food preparation/dishwashing
- children's time in food preparation/dishwashing
- total family time in food preparation/dishwashing
- use of take-out foods
- proportion of food preparation by family members
- husband's time in food preparation/dishwashing

OUTPUT

- demand responses: family members eat
- resource changes: meals

Note. Numbers refer to $R^2$ values.
to tentative hypotheses concerning meal management choices by families.

In their family system model (Figure 3) Deacon and Firebaugh (1988) conceptualize output as "demand responses and resource changes" of the family system. Shown in the Management Model Applied to Meal Management (Figure 4, page 42), the provision of meals is the particular demand response and resource change of meal management. If, as suggested by Deacon and Firebaugh (1988) and supported by Buehler and Hogan (1984), that input is related to throughput then it must follow that changes in input demands will effect changes in system throughputs.

In their family systems model, Deacon and Firebaugh (1988) suggest that a personal subsystem, containing a composite of social, psychological, physiological and spiritual realms, is in constant interaction with the managerial subsystem. This understanding, in conjunction with the results of this study, induces new insights. Therefore, based on results of this study together with Deacon and Firebaugh's family systems perspective, the following tentative hypotheses are offered for further consideration:

(1) The higher the level of the homemaker's education the more likely efficient meal management strategies will be practiced.
(2) The older individual family members are, the more likely they will participate in meal management decisions and time expenditures.
(3) Increased time constraints lead to time saving meal management strategies.
(4) Elements of the personal subsystem enter meal management throughputs as input demands. These demands (e.g. social norms, family values) exert a stabilizing influence over meal management choices.

**Recommendations for Further Study**

Time use studies are sometimes focused on the burden of housekeeping activities on farm women or employed women, or on inequities among family members. Time reductions through efficiency have often been recommended. However, when considering meal management, it is necessary to recognize that efficiency and minimum time inputs are not always in the best interests of the family or of society. Issues of nutrition, psychological well-being, family interaction, socialization, and economy are of major concern. It has been suggested that time constraints exerted by a wife's employment (Goebel & Hennon, 1983; Miller & Ackerman, 1990), by family structure (Sullivan & Peters, 1988), or by the economic and social climate of contemporary society (Sharpe & Winter, 1991) may reduce the
amount of time devoted to meal preparation or the number of meals families eat together.

This study has suggested that meal patterns have changed very little over the past decade. It is therefore conjectured that other demands, such as social norms and family values, may exert an overriding influence on family meal patterns.

It is recommended that further studies examine these additional input demands, as well as closely considering the output of meals in a more detailed way. That is, nutritional value and satisfaction levels should be measured. In addition, concrete and detailed measures of food purchase and preparation behavior are needed. Further, as suggested by Rettig (1987) the social productivity\(^8\) of the family should be considered. It is also recommended that future studies continue to document meal patterns over time, considering not only the changes themselves, but the reasons behind behaviors and their possible implications.

Hypotheses based on the Deacon and Firebaugh (1988) family system perspective and on the findings of this study should be tested in further research. In particular, elements of the personal subsystem should be explored in

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\(^8\)Social productivity, as defined by Rettig, is the effectiveness rather than the efficiency of the input-output ratio. It recognizes that process may be as important as product.
another step of meal management research in a search for stronger predictors of management behavior. Emotional and social needs as well as individual and family values, goals, and standards may provide some answers. The influence of social norms, unexpected events, and personal capabilities are examples of other input variables that should be considered. Also, the effect of feedback as input to meal management decisions should be examined. Finally, concrete measures of output (e.g., the nutritional value of food provided, family satisfaction levels) must be included in additional research efforts.

Implications

This study adds to the growing body of literature concerning household management in general, and meal management in particular. In the ten years that have elapsed since the 1977 time use data were collected, it has been supposed that increasing time pressures exerted by contemporary society may motivate families to reduce the time spent in food preparation, the number of meals eaten together as a family, and other meal management strategies. This study suggests that meal patterns and the time expenditures of meal provision in Utah have not changed significantly in that time. The lack of strong predictors of meal management behavior, coupled with insignificant changes in meal patterns over the past decade, suggest that
the provision of meals is infused with deeper meaning than the mere satisfaction of physical hunger.

Tentative hypotheses suggested by this study have implications for families, educators, policy makers, and for the market place. If the hypothesis that higher levels of education lead to efficient management practices can be supported by further research, then educators and policy makers will have a mandate to increase general levels of education. Further, if increased time constraints lead to time saving management strategies, then the possible ramifications of reduced family interaction must be considered. The possibility that elements of the personal subsystem may exert influence over meal management choices may induce greater sensitivity to family and social values.

Teachers and Cooperative Extension home economists will find this understanding useful in developing curricula that assist families to meet their needs and goals. For example, the recognition that social norms and individual family values are important inputs to management decisions dictates a liberal approach to assumptions concerning "right" behavior.

Policy makers should also take note of the study in making decisions concerning the information and resources to be made available to families. The assumption that families no longer need or want to cook or eat together in these times of readily available market substitutes is not
supported by this study. Whether based on economics or preferences, families continue to be fully engaged in providing at-home meals. Marketers will find the study useful in determining the products and services that best meet the needs of their customers. For example, products that reduce time expenditures in meal preparation or which can be prepared by inexperienced cooks, while still promoting at-home family meals may find a ready market.

Researchers in Family Resource Management may use the results of this study to suggest new directions in the search for predictors of meal management behavior and as a marker for current meal patterns. The present exploratory study may serve as a base upon which to build. That meal management is a frequent, regular, and measurable instance of family resource management in general is an exciting concept which may lead to useful new insights. Finally, families may benefit from this study as the results are incorporated into educational curricula, public policy, and the market place.
REFERENCES


APPENDICES
APPENDIX A

Time Use Diary
APPENDIX B

Information Questionnaire
HOUSING AND HOUSEHOLD EQUIPMENT

1. Do you own or rent your home?
   — Own or buying
   — Rent
   — Other

2. Is your household primarily responsible for care of the yard?
   — Yes
   — No

   IF YES, what is the approximate size of the lot that you take care of?
   ______
   — Don't Know (DK)

3. How many rooms are in your home? (DO NOT COUNT BATHROOMS OR HALLS)

4. How many full bathrooms do you have?

5. How many partial bathrooms do you have?

6. What is the main source of heat for your home?
   — Electric
   — Gas
   — Oil
   — Coal
   — Wood
   — Other
   — DK

7. What is the main source of heat for cooking?
   — Electric
   — Gas
   — Oil
   — Coal
   — Wood
   — Other

8. How many vehicles do you have that are used for transportation by members of your household?
   — 1
   — 2
   — 3
   — 4
   — 5
   — 6
   — 7+

9. How many drivers are in your household?
   — 1
   — 2
   — 3
   — 4
   — 5
   — 6
   — 7+

10. Do you have any household pets?
    — Yes
    — No

11. Is your refrigerator/freezer a:
    — Manual defrost
    — Partial automatic defrost (must defrost freezing compartment)
    — Full automatic (no frost)
    — DK

12. Do you have a separate freezer?
    — Yes
    — No
13. If you own a separate freezer, is it a:

- Manual defrost
- Frost-free
- DK

14. If you have a conventional oven, is it:

- Continuous cleaning
- Self-cleaning
- Neither
- DK

15. In your home do you have a: IF YES, how many times was it used during:

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>recall day</th>
<th>record day</th>
<th>past 7 days</th>
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<tbody>
<tr>
<td>Microwave oven?</td>
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<td>Dishwasher?</td>
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<td>Garbage disposal?</td>
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<td>Trash compactor?</td>
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<td>Washing machine?</td>
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<td>Clothes dryer?</td>
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<td>Sewing machine?</td>
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<td>Vacuum cleaner?</td>
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<td>Power garden and/or yard equipment?</td>
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<td>Personal computer?</td>
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<td>Power shop tools?</td>
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</table>
1. Please list the meals prepared or assembled to be eaten at home or to be eaten away from home, such as a sack lunch; note the number of individuals who ate each one.

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<tr>
<th>Recall day Meal</th>
<th>Number who ate the meal</th>
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<tr>
<th>Record day Meal</th>
<th>Number who ate the meal</th>
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2. Please list the meals eaten away from home, where the meal was eaten and the number of household members who ate the meal.

<table>
<thead>
<tr>
<th>Recall Day Meal</th>
<th>Location</th>
<th>Number of household members who ate the meal</th>
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<tr>
<td>Meal</td>
<td>Location</td>
<td>Number of household members who ate the meal</td>
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3. Please list the take-out foods such as pizza, hamburgers, or fried chicken purchased and brought home to be eaten as a meal or as part of a meal.

<table>
<thead>
<tr>
<th>Recall Day</th>
<th>Record Day</th>
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4. How many times were the following done by a household member for your family?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Recall Day</th>
<th>Record Day</th>
<th>Past 7 Days</th>
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</thead>
<tbody>
<tr>
<td>Shopping for items or services?</td>
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<tr>
<td>Of the items or services, how many cost over $100.</td>
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<tr>
<td>Special housecleaning?</td>
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<tr>
<td>Painting, redecorating?</td>
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<td>Inside household repairs?</td>
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<td>Repairing appliances?</td>
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<tr>
<td>Repairing an automobile(s)</td>
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</table>
5. How many times did any household member(s) chauffeur another household member?

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<tr>
<th></th>
<th>recall day</th>
<th>record day</th>
<th>past 7 days</th>
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<tbody>
<tr>
<td>To and/or from doctor, dentist or barber?</td>
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<td>To and/or from paid work?</td>
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<td>To and/or from school or classes?</td>
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<td>To and/or from a social function?</td>
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<td>To and/or from an organization, including church?</td>
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<td>To and/or from an educational or athletic activity?</td>
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<tr>
<td>To and/or from a store?</td>
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6. Did you or any family member have someone from outside the household do any of the following?

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<th></th>
<th>recall day</th>
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<th>record day</th>
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<tr>
<td></td>
<td>yes</td>
<td>no</td>
<td>approx. time</td>
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<td>Take care of your children--in your home?</td>
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<td>Take care of your children--in someone else’s home?</td>
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<td>Take care of your children--in day care center?</td>
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<td>Take care of other household member(s)</td>
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<td>Do housecleaning?</td>
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<td>Do lawn or yard work?</td>
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<td>Do painting, redecorating?</td>
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<td>Service appliances?</td>
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<td>Work on your motor vehicles?</td>
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</table>
7. Were any of the following done by someone in your household?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Recall Day Yes</th>
<th>Recall Day No</th>
<th>Record Day Yes</th>
<th>Record Day No</th>
<th>Number of Times in Past 7 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canning, pickling, making jams &amp; jellies</td>
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<tr>
<td>Freezing food</td>
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<tr>
<td>Preparing food for another day</td>
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<tr>
<td>Shopping for food</td>
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</table>
Household Members' Employment

1. What was the highest grade in school you completed? (IF DEGREE MENTIONED NOTE)..........................

2. Last week were you employed?.......................... _yes _no _yes _no
   IF NO, go to question 17.

3. IF YES, was this for pay?.......................... _yes _no _yes _no
   For pay, but not at work, example, illness or vacation?.......................... _yes _no _yes _no
   Without pay, example, family farm or business?.......................... _yes _no _yes _no

4. If employed, what kind of work did you do?
   (IF MORE THAN 1 JOB, ANSWER FOLLOWING QUESTIONS ABOUT THE FIRST OR PRIMARY JOB)..........................

5. What kind of industry or business were you employed in?..........................

6. How many hours did you work for pay last week?..........................

7. What is the usual number of hours you work for pay a week?..........................

8. Are you:
   An hourly wage earner?..........................
   Salaried?..........................
   On commission?..........................
   Self-employed?..........................
   Other?..........................

9. If hourly, what is your hourly wage rate?...$..........................

10. Did you have more than one paid job last week?... _yes _no _yes _no
   IF NO, go to question 17.

11. IF YES, what kind of work was this?..........................

12. What business or industry was it in?..........................

13. How many hours did you work for pay last week on this job?..........................

14. What is the usual number of hours you work for pay per week on this job?..........................
15. For this second job are you:
   - An hourly wage earner?
   - Salaried?
   - On commission?
   - Self-employed?
   - Other?

16. IF HOURLY, what is your hourly wage for your second job? $__________ $__________

17. If you worked without pay in family business or farm, how many hours did you work last week? ______

18. How many of your children 12 years of age and older worked for pay last week? If NONE go to question 23. IF YES, complete questions 19 through 22.
   CHILD I            CHILD II
   19. What is the age of the child(ren)? ________ ________
       What is the sex of the child(ren)? ________ ________
   20. What kind of work did he/she do? ________ ________
   21. How many hours did he/she work last week? ________ ________
   22. Approximately how much did he/she earn last week? $__________ $__________

23. Which category on this card represents the total income before taxes for your household in the past twelve months? This includes wages and salaries, net income from business or farm, pensions, dividends, interest, rent, Social Security payments and any other money received by members of your household?
   ___A___B___C___D___E___F___G___H___I___J___K___L___M___N___O
   ___P___Q___DK
Household Conditions

1. Were there unusual weather conditions that affected household members' time use?
   on recall day ____________________________________________________________
   on record day __________________________________________________________

2. Were there any unusual physical conditions or situations regarding your residence that affected household members' time use? These would include both the house and care.
   on recall day ____________________________________________________________
   on record day __________________________________________________________

3. Were there any unusual activities of your family or household members that affected household members' time use?
   on recall day ____________________________________________________________
   on record day __________________________________________________________

4. Are there any special situations in your home, for example: handicapped or chronically ill family members, that affected household members' time use?
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

5. Are there special ways your household members "save" time on household activities?
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
The following statements have to do with how you manage. Please rate how often you do each of the following, using this scale.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Occasionally</th>
<th>Frequency</th>
<th>Constantly</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Decide upon the things I want to get or accomplish.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Make a definite decision about things.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Balance use of energy, time, money, and help from others to get the greatest benefit.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Develop plans that can be used over and over for doing certain things.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Decide how to put my time to best use.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Consider the influence of one decision on other decisions that will have to be made.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Develop plans for doing or getting what is wanted.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Use results from previous experiences when making decisions and planning.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Take action on plans that have been made.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Get work done in a reasonable amount of time.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Balance what is wanted now with what is wanted in the future.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Talk with other family members about goals and the plans for accomplishing them.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Usually finish things once you start them.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following questions consider your feelings about your life in general. Please respond to the next four questions using this scale. Responses range from:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Completely dissatisfied</th>
<th>Somewhat dissatisfied</th>
<th>Neutral (about equally satisfied &amp; dissatisfied)</th>
<th>Somewhat satisfied</th>
<th>Completely satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. First, how satisfied are you with your use of time?
2. How satisfied are you with your progress toward improving your life as a whole?
3. Using that same scale, how satisfied are you with your life as a whole?
4. Finally, how satisfied are you with the extent to which you control your life?
APPENDIX C

Dictionary of Activities
Definition of Activities of Household Members

FOOD PREPARATION

All tasks relating to the preparation of food for meals, snacks, and future use.

Include time spent setting the table and serving the food.

DISHWASHING

In addition to washing and drying dishes, loading and unloading dishwasher or dish drainer.

Include after-meal cleanup of table, leftovers, kitchen equipment and refuse.

SHOPPING

All activities related to shopping for food, supplies, equipment, furnishings, clothing, durables, and services, whether or not a purchase was made (by telephone, by mail, at home, or at the store).

Also include: Comparison shopping
Putting purchases away
Getting or sending of mail and packages
Hiring of services (cleaning, repair, maintenance, other)

HOUSECLEANING

Any regular or periodic cleaning of house and appliances, including such tasks as:
- Mopping, vacuuming, sweeping, dusting, waxing
- Washing windows or walls
- Cleaning the oven; defrosting and cleaning the refrigerator or freezer
- Making beds and putting rooms in order

MAINTENANCE OF HOME, YARD, CAR, AND PETS

Any repair and upkeep of home, appliances, and furnishings such as
- Painting, papering, redecorating, carpentry
- Repairing equipment, plumbing, furniture
- Putting up storm windows or screens
- Taking out garbage and trash
- Care of houseplants, flower arranging

Daily and periodic care of outside areas such as:
- Yard, garden (If activity is primarily recreation rather than goal motivated, include time under recreation category.)
- Sidewalks, driveways, patios, outside porches
- Garage, tool shed, other outside areas
- Swimming pool
Maintenance and care of family motor vehicles (car, truck, van, motorcycle, snowmobile, boat)

Washing, waxing
Changing oil, rotating tires and other maintenance and repair work
Taking motor vehicle to service station, garage, or car wash

Feeding and care of house pets. Also include trips to kennel or veterinarian.

CARE OF CLOTHING AND HOUSEHOLD LINENS

Washing by machine at home or away from home, including:
Collecting and preparing soiled items for washing
Loading and unloading washer or dryer
Hanging up items and removing from the line
Folding
Hand washing
Ironing and pressing. Also include:
Getting out equipment, sprinkling
Putting away cleaned items and equipment
Polishing shoes
Preparing items for commercial laundry or dry cleaning
Seasonal storage of clothing and textiles

CONSTRUCTION OF CLOTHING AND HOUSEHOLD LINENS
(If activity is primarily recreation rather than goal motivated, include time under recreation category.)

Making alterations or mending
Making clothing and household accessories (draperies, slipcovers, napkins, etc.) include such activities as:
Sewing
Embroidering
Knitting, crocheting, macrame

If these activities are to make product for self, immediate family members or to give as gift, include under here.

If activity is primarily to produce product for sale, include time under paid work category.

PHYSICAL CARE OF HOUSEHOLD MEMBERS

All activities related to physical care of household members other than self such as:
Bathing, feeding, dressing and other personal care
First aid or bedside care
Taking household members to doctor, dentist, barber
All activities related to the social and educational development of household members such as:

- Playing with children
- Teaching, talking, helping children with homework
- Reading aloud
- Chauffering and/or accompanying children to social and educational activities
- Attending functions involving your child

**MANAGEMENT**

Making decisions and planning such as:

- Thinking about, discussing, and investigating alternatives
- Looking for ideas and seeking information
- Assessing resources available (space, time, money, etc.)
- Planning—family activities, vacations, menus, shopping lists, purchases and investments
- Supervising and coordinating activities
- Checking plans as they are carried out
- Thinking back to see how plans worked

Financial activities such as:

- Making bank deposits and checking bank statements
- Paying bills and recording receipts and expenses
- Figuring income taxes
- Using home computer to manage household finances or records

**SCHOOL WORK**

School — Classes related to present or future employment
Include time spent in preparation for each of the above. For example, work or reading done at home or at the library relating to your job or classes.

**Paid Work**

Paid employment and work-related activities, such as work brought home, professional, business and union meetings, conventions, etc.

Paid work for family farm or business, babysitting, paper route

**UNPAID WORK**

Work or service done either as a volunteer or as an unpaid worker for relatives, friends, family business or farm; social, civic, or community organizations.

**ORGANIZATION PARTICIPATION**

Attending and participating in:

- Religious activities and services
- Civic and political organizations
- Other clubs and organizations
Reading (other than required for school or work)
Watching TV
Watching video tapes
Listening to radio, stereo, etc.
"Going out" to movies, car shows, museums, sporting events, concerts, etc.
Participating in any sport, hobby or craft
Taking a class or lesson for personal interest
Walking, cycling, boating, "taking a ride," training animals
Talking with friends or relatives, either in person or by telephone
Entertaining at home or being entertained away from home
Writing letters, or cards to friends, relatives
Playing games, musical instruments, etc. (If adult is playing with child include such activities under nonphysical care.)
Exercising (if done for pleasure)

PERSONAL CARE OF SELF

Sleeping
Bathing, getting dressed, other grooming and personal care
Making appointments and going to doctor, dentist, beautician and other personal services
Relaxing, loafing, resting
Meditation
Exercising (if done to maintain or improve physical condition)

EATING

Eating any meal or snack, alone, with family or friends at home or away from home.

OTHER

Any activity not classified in other categories.
Any time block for which you cannot recall, do not know, or do not wish to report.
APPENDIX D

Tables
### Table D-1

**Frequency of Advance Meal Preparation in 7 Days**

<table>
<thead>
<tr>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>127</td>
</tr>
<tr>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>4 - 8</td>
<td>19</td>
</tr>
<tr>
<td>9 or more</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTAL** 214 100.0

$\bar{X} = 1.1$, $s.d. = 2.1$

### Table D-2

**Frequency of Food Shopping in 7 Days**

<table>
<thead>
<tr>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>1 - 3</td>
<td>135</td>
</tr>
<tr>
<td>4 - 7</td>
<td>38</td>
</tr>
<tr>
<td>8 - 15</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL** 214 100.0

$\bar{X} = 2.4$, $s.d. = 2.1$
Table D-3

Frequency of the Use of Take-out Foods on Record Day

<table>
<thead>
<tr>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>195</td>
</tr>
<tr>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

TOTAL 214 100.0

$\bar{x} = .13$, s.d. = .44

Table D-4

Frequency of the Use of Microwave Ovens on Record Day

<table>
<thead>
<tr>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>41</td>
</tr>
<tr>
<td>1 - 3</td>
<td>78</td>
</tr>
<tr>
<td>4 - 6</td>
<td>41</td>
</tr>
<tr>
<td>7 - 9</td>
<td>9</td>
</tr>
<tr>
<td>10 or more</td>
<td>18</td>
</tr>
</tbody>
</table>

TOTAL 187 99.9*

$\bar{x} = 3.7$, s.d. = 3.1

* does not equal 100% due to rounding error
Table D-5

Meals Eaten Away from Home

<table>
<thead>
<tr>
<th>Meal</th>
<th>Persons</th>
<th>Families</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>0</td>
<td>207</td>
<td>96.7</td>
</tr>
<tr>
<td></td>
<td>1-3</td>
<td>7</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0</td>
<td>0.</td>
</tr>
<tr>
<td>Lunch</td>
<td>0</td>
<td>110</td>
<td>51.4</td>
</tr>
<tr>
<td></td>
<td>1-3</td>
<td>92</td>
<td>43.0</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>12</td>
<td>5.6</td>
</tr>
<tr>
<td>Dinner</td>
<td>0</td>
<td>178</td>
<td>83.2</td>
</tr>
<tr>
<td></td>
<td>1-3</td>
<td>27</td>
<td>12.6</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>9</td>
<td>4.2</td>
</tr>
<tr>
<td>All meals</td>
<td>0</td>
<td>91</td>
<td>42.5</td>
</tr>
<tr>
<td></td>
<td>1-3</td>
<td>123</td>
<td>57.5</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>0</td>
<td>0.</td>
</tr>
</tbody>
</table>

$\bar{x} = 1.17, \text{ s.d.} = .52$
Table D-6

Meals Eaten Together

<table>
<thead>
<tr>
<th>Meal</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>together</td>
<td>73</td>
<td>34.1</td>
</tr>
<tr>
<td>apart</td>
<td>141</td>
<td>65.9</td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>together</td>
<td>46</td>
<td>21.5</td>
</tr>
<tr>
<td>apart</td>
<td>168</td>
<td>78.5</td>
</tr>
<tr>
<td>Dinner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>together</td>
<td>96</td>
<td>44.9</td>
</tr>
<tr>
<td>apart</td>
<td>118</td>
<td>55.1</td>
</tr>
<tr>
<td>All meals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 meal together</td>
<td>63</td>
<td>29.4</td>
</tr>
<tr>
<td>2 meals together</td>
<td>43</td>
<td>20.1</td>
</tr>
<tr>
<td>3 meals together</td>
<td>22</td>
<td>10.3</td>
</tr>
<tr>
<td>all meals apart</td>
<td>86</td>
<td>40.2</td>
</tr>
</tbody>
</table>

\( \bar{x} = 1.04, \text{ s.d.} = 1.02 \)
### Table D-7

**Proportion of Food Preparation Time by Family Members**

<table>
<thead>
<tr>
<th>Proportion Contributed by Husbands and Children</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>120</td>
<td>55.9</td>
</tr>
<tr>
<td>1% - 25%</td>
<td>22</td>
<td>10.3</td>
</tr>
<tr>
<td>26% - 50%</td>
<td>25</td>
<td>11.7</td>
</tr>
<tr>
<td>51% - 75%</td>
<td>18</td>
<td>8.5</td>
</tr>
<tr>
<td>75% - 100%</td>
<td>12</td>
<td>5.6</td>
</tr>
<tr>
<td>missing</td>
<td>17</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>214</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\[ X = 18.3\% , \text{ s.d. 29.2} \]
Table D-8

Homemakers' Time in Food Preparation and Dishwashing

<table>
<thead>
<tr>
<th>Minutes</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>19</td>
<td>8.9</td>
</tr>
<tr>
<td>1 - 30</td>
<td>33</td>
<td>15.4</td>
</tr>
<tr>
<td>31 - 60</td>
<td>48</td>
<td>22.4</td>
</tr>
<tr>
<td>61 - 90</td>
<td>45</td>
<td>21.0</td>
</tr>
<tr>
<td>91 - 120</td>
<td>20</td>
<td>9.3</td>
</tr>
<tr>
<td>121 - 150</td>
<td>18</td>
<td>8.4</td>
</tr>
<tr>
<td>151 - 180</td>
<td>9</td>
<td>4.3</td>
</tr>
<tr>
<td>181 - 210</td>
<td>10</td>
<td>4.7</td>
</tr>
<tr>
<td>over 210</td>
<td>12</td>
<td>5.6</td>
</tr>
<tr>
<td>TOTAL</td>
<td>214</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$\bar{x} = 87.4$, s.d. = 78.9
<table>
<thead>
<tr>
<th>Minutes</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>133</td>
<td>62.1</td>
</tr>
<tr>
<td>1 - 30</td>
<td>47</td>
<td>22.0</td>
</tr>
<tr>
<td>31 - 60</td>
<td>21</td>
<td>9.8</td>
</tr>
<tr>
<td>61 - 90</td>
<td>6</td>
<td>2.8</td>
</tr>
<tr>
<td>over 90</td>
<td>7</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>214</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

$\bar{x} = 16.29, \text{ s.d.} = 27.6$
Table D-10

Total Family Time in Food Preparation and Dishwashing

<table>
<thead>
<tr>
<th>Minutes</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>4.7</td>
</tr>
<tr>
<td>1 - 30</td>
<td>26</td>
<td>12.1</td>
</tr>
<tr>
<td>31 - 60</td>
<td>37</td>
<td>17.3</td>
</tr>
<tr>
<td>61 - 90</td>
<td>43</td>
<td>20.1</td>
</tr>
<tr>
<td>91 - 120</td>
<td>36</td>
<td>16.8</td>
</tr>
<tr>
<td>121 - 150</td>
<td>19</td>
<td>8.9</td>
</tr>
<tr>
<td>151 - 180</td>
<td>10</td>
<td>4.7</td>
</tr>
<tr>
<td>181 - 210</td>
<td>13</td>
<td>6.1</td>
</tr>
<tr>
<td>over 210</td>
<td>20</td>
<td>9.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>214</td>
<td>100.0</td>
</tr>
</tbody>
</table>

X = 104.4, s.d. = 91.6
<table>
<thead>
<tr>
<th>Family Income</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $10,000</td>
<td>8</td>
<td>3.7</td>
</tr>
<tr>
<td>$10,000 - $14,999</td>
<td>12</td>
<td>5.6</td>
</tr>
<tr>
<td>$15,000 - $24,999</td>
<td>51</td>
<td>23.8</td>
</tr>
<tr>
<td>$25,000 - $34,999</td>
<td>54</td>
<td>25.2</td>
</tr>
<tr>
<td>$35,000 - $44,999</td>
<td>47</td>
<td>22.0</td>
</tr>
<tr>
<td>$45,000 and over</td>
<td>32</td>
<td>15.0</td>
</tr>
<tr>
<td>Missing</td>
<td>10</td>
<td>4.7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>214</td>
<td>100.0</td>
</tr>
<tr>
<td>Category</td>
<td>n</td>
<td>Percent</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>----</td>
<td>---------</td>
</tr>
<tr>
<td>Grade School (1-8)</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td>Partial High School (no degree)</td>
<td>9</td>
<td>4.2</td>
</tr>
<tr>
<td>High School Diploma</td>
<td>70</td>
<td>32.7</td>
</tr>
<tr>
<td>Vocational or Technical Training</td>
<td>5</td>
<td>2.3</td>
</tr>
<tr>
<td>Partial College (no degree)</td>
<td>58</td>
<td>27.1</td>
</tr>
<tr>
<td>Associate's Degree</td>
<td>10</td>
<td>4.7</td>
</tr>
<tr>
<td>Bachelor's Degree</td>
<td>45</td>
<td>21.0</td>
</tr>
<tr>
<td>Master's Degree</td>
<td>14</td>
<td>6.5</td>
</tr>
<tr>
<td>Doctoral or Professional Degree</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>214</td>
<td>100.0</td>
</tr>
<tr>
<td>Behavior</td>
<td>$\bar{x}$</td>
<td>S.D.</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------</td>
<td>------</td>
</tr>
<tr>
<td>1. Decide upon the things I want to get or accomplish.</td>
<td>3.3</td>
<td>.80</td>
</tr>
<tr>
<td>2. Make a definite decision about things.</td>
<td>3.2</td>
<td>.75</td>
</tr>
<tr>
<td>3. Balance use of energy, time, money, and help from others to get the greatest benefit.</td>
<td>2.7</td>
<td>.92</td>
</tr>
<tr>
<td>4. Develop plans that can be used over and over for doing certain things.</td>
<td>2.8</td>
<td>.90</td>
</tr>
<tr>
<td>5. Decide how to put my time to best use.</td>
<td>2.8</td>
<td>.94</td>
</tr>
<tr>
<td>6. Consider the influence of one decision on other decisions that will have to be made.</td>
<td>2.8</td>
<td>.91</td>
</tr>
<tr>
<td>7. Develop plans for doing or getting what is wanted.</td>
<td>3.0</td>
<td>.82</td>
</tr>
<tr>
<td>8. Use results from previous experiences when making decisions and planning.</td>
<td>3.3</td>
<td>.74</td>
</tr>
<tr>
<td>9. Take action on plans that have been made.</td>
<td>3.2</td>
<td>.74</td>
</tr>
<tr>
<td>10. Get work done in a reasonable amount of time.</td>
<td>3.1</td>
<td>.80</td>
</tr>
<tr>
<td>11. Balance what is wanted now with what is wanted in the future.</td>
<td>2.9</td>
<td>.86</td>
</tr>
<tr>
<td>12. Talk with other family members about goals and the plans for accomplishing them.</td>
<td>2.9</td>
<td>.89</td>
</tr>
<tr>
<td>13. Usually finish things once you start them.</td>
<td>3.1</td>
<td>.78</td>
</tr>
<tr>
<td>Overall skills:</td>
<td>3.0</td>
<td>.55</td>
</tr>
</tbody>
</table>
Table D-14

Homemakers' Ages

<table>
<thead>
<tr>
<th>Age Group</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 21</td>
<td>2</td>
<td>.9</td>
</tr>
<tr>
<td>21-25</td>
<td>35</td>
<td>16.3</td>
</tr>
<tr>
<td>26-30</td>
<td>62</td>
<td>29.0</td>
</tr>
<tr>
<td>31-35</td>
<td>32</td>
<td>14.9</td>
</tr>
<tr>
<td>36-40</td>
<td>37</td>
<td>17.3</td>
</tr>
<tr>
<td>41-45</td>
<td>24</td>
<td>11.2</td>
</tr>
<tr>
<td>46-50</td>
<td>10</td>
<td>4.7</td>
</tr>
<tr>
<td>51-55</td>
<td>10</td>
<td>4.7</td>
</tr>
<tr>
<td>56-60</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td>Over 60</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>214</td>
<td>100.0</td>
</tr>
</tbody>
</table>

$\bar{x} = 34$, s.d. = 8.5
Table D-15

Homemakers' Hours of Employment

<table>
<thead>
<tr>
<th>Hours</th>
<th>n</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>83</td>
<td>38.8</td>
</tr>
<tr>
<td>1 - 14</td>
<td>23</td>
<td>10.7</td>
</tr>
<tr>
<td>15 - 34</td>
<td>50</td>
<td>23.4</td>
</tr>
<tr>
<td>35 or more</td>
<td>58</td>
<td>27.1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>214</td>
<td>100.0</td>
</tr>
</tbody>
</table>

X = 17.7, s.d. = 18.4
Table D-16

**Multiple Stepwise Regression of Significant Variables on Number of Times Meals Were Prepared in Advance**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Beta</th>
<th>Standard Error</th>
<th>F Value (sig.level)</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Skills</td>
<td>0.22</td>
<td>2.03</td>
<td>9.10 (.002)</td>
<td>0.21</td>
<td>0.042</td>
</tr>
<tr>
<td>Homemaker Employment</td>
<td>0.16</td>
<td>2.01</td>
<td>7.73 (.001)</td>
<td>0.26</td>
<td>0.070</td>
</tr>
<tr>
<td>Urban/Rural Residence</td>
<td>-0.13</td>
<td>1.99</td>
<td>6.64 (.001)</td>
<td>0.30</td>
<td>0.089</td>
</tr>
</tbody>
</table>

Table D-17

**Regression on Number of Times Shopping for Food**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Beta</th>
<th>Standard Error</th>
<th>F Value (sig.level)</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homemaker Education</td>
<td>0.24</td>
<td>2.04</td>
<td>12.66 (.001)</td>
<td>0.24</td>
<td>0.058</td>
</tr>
</tbody>
</table>
Table D-18

Multiple Stepwise Regression of Significant Variables on Number of Times a Microwave Oven Was Used

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Beta</th>
<th>Standard Error</th>
<th>F Value (sig.level)</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homemaker Education</td>
<td>.16</td>
<td>2.53</td>
<td>5.65 (.018)</td>
<td>.16</td>
<td>.027</td>
</tr>
<tr>
<td>Day of Week</td>
<td>.14</td>
<td>2.51</td>
<td>5.01 (.008)</td>
<td>.22</td>
<td>.047</td>
</tr>
</tbody>
</table>

Table D-19

Regression on Number of Meals Eaten Away from Home

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Beta</th>
<th>Standard Error</th>
<th>F Value (sig.level)</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of Older Child</td>
<td>.20</td>
<td>1.72</td>
<td>8.92 (.003)</td>
<td>.20</td>
<td>.042</td>
</tr>
</tbody>
</table>

Table D-20

Regression on Number of Meals Eaten Together

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Beta</th>
<th>Standard Error</th>
<th>F Value (sig.level)</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homemaker Education</td>
<td>.19</td>
<td>0.99</td>
<td>8.00 (.005)</td>
<td>.19</td>
<td>.037</td>
</tr>
</tbody>
</table>
Table D-21

Regression on Homemakers' Time 
in Food Preparation and Dishwashing

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Beta</th>
<th>Standard Error</th>
<th>F Value (sig.level)</th>
<th>R</th>
<th>R^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homemaker Education</td>
<td>-.15</td>
<td>78.64</td>
<td>4.63 (0.032)</td>
<td>-.15</td>
<td>.022</td>
</tr>
</tbody>
</table>

Table D-22

Regression on Children's Time 
in Food Preparation and Dishwashing

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Beta</th>
<th>Standard Error</th>
<th>F Value (sig.level)</th>
<th>R</th>
<th>R^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of Younger Child</td>
<td>.39</td>
<td>12.09</td>
<td>36.82 (.000)</td>
<td>.39</td>
<td>.152</td>
</tr>
</tbody>
</table>
Table D-23

Regression on Total Family Time
in Food Preparation and Dishwashing

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Beta</th>
<th>Standard Error</th>
<th>F Value (sig.level)</th>
<th>R</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homemaker Age</td>
<td>.26</td>
<td>87.40</td>
<td>14.61 (.001)</td>
<td>.26</td>
<td>.067</td>
</tr>
</tbody>
</table>

Table D-24

Comparison of Time Spent in Food Preparation
by Non-Employed Homemakers in 1977 and 1987

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>148</td>
<td>84</td>
<td>48</td>
<td>2.20*</td>
</tr>
<tr>
<td>1987</td>
<td>106</td>
<td>69</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

* significant at p = < .05
Table D-25

Comparison of Time Spent in Food Preparation by Employed Homemakers in 1977 and 1987

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>62</td>
<td>65</td>
<td>36</td>
<td>1.44*</td>
</tr>
<tr>
<td>1987</td>
<td>108</td>
<td>54</td>
<td>54</td>
<td></td>
</tr>
</tbody>
</table>

*not significant at p = <.05
<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>210</td>
<td>7</td>
<td>13</td>
<td>4.88*</td>
</tr>
<tr>
<td>1987</td>
<td>214</td>
<td>11</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

*significant at p = <.001

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>200</td>
<td>8</td>
<td>14</td>
<td>1.60*</td>
</tr>
<tr>
<td>1987</td>
<td>223</td>
<td>6</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

*not significant at p = <.05
Table D-28

Comparison of Time Spent in Food Preparation
by the Total Family in 1977 and 1987

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>210</td>
<td>93</td>
<td>53</td>
<td>2.46*</td>
</tr>
<tr>
<td>1987</td>
<td>214</td>
<td>80</td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>

*significant at p = < .02

Table D-29

Comparison of Number of Meals Eaten Away from Home
by Dual-Earner Families in 1977 and 1987

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>62</td>
<td>1.36</td>
<td>.92</td>
<td>1.70*</td>
</tr>
<tr>
<td>1987</td>
<td>108</td>
<td>1.61</td>
<td>.94</td>
<td></td>
</tr>
</tbody>
</table>

*not significant at p = < .05
Table D-30
Comparison of Number of Meals Eaten Away from Home by Single-Earner Families in 1977 and 1987

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>148</td>
<td>1.02</td>
<td>.89</td>
<td>2.20*</td>
</tr>
<tr>
<td>1987</td>
<td>106</td>
<td>1.26</td>
<td>.79</td>
<td></td>
</tr>
</tbody>
</table>

*significant at p = < .05

Table D-31
Comparison of Number of Meals Eaten Away from Home by Rural Families in 1977 and 1987

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>105</td>
<td>.95</td>
<td>.95</td>
<td>1.81*</td>
</tr>
<tr>
<td>1987</td>
<td>107</td>
<td>1.14</td>
<td>.53</td>
<td></td>
</tr>
</tbody>
</table>

*not significant at p = < .05
Table D-32  

Comparison of Number of Meals Eaten Away from Home by Urban Families in 1977 and 1987

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>105</td>
<td>1.30</td>
<td>.84</td>
<td>1.05*</td>
</tr>
<tr>
<td>1987</td>
<td>107</td>
<td>1.20</td>
<td>.51</td>
<td></td>
</tr>
</tbody>
</table>

*not significant at p = < .05

Table D-33  

Comparison of Number of Meals Eaten Together by Dual-Earner Families in 1977 and 1987

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>62</td>
<td>.93</td>
<td>.67</td>
<td>.22*</td>
</tr>
<tr>
<td>1987</td>
<td>108</td>
<td>.96</td>
<td>.97</td>
<td></td>
</tr>
</tbody>
</table>

*not significant at p = < .05
Table D-34

Comparison of Number of Meals Eaten Together
by Single-Earner Families in 1977 and 1987

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>148</td>
<td>.90</td>
<td>.78</td>
<td>1.78*</td>
</tr>
<tr>
<td>1987</td>
<td>106</td>
<td>1.13</td>
<td>1.05</td>
<td></td>
</tr>
</tbody>
</table>

*not significant at p = <.05

Table D-35

Comparison of Number of Meals Eaten Together
by Rural Families in 1977 and 1987

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>X</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>105</td>
<td>.95</td>
<td>.79</td>
<td>1.13*</td>
</tr>
<tr>
<td>1987</td>
<td>107</td>
<td>1.09</td>
<td>1.01</td>
<td></td>
</tr>
</tbody>
</table>

*not significant at p = <.05
Table D-36

Comparison of Number of Meals Eaten Together by Urban Families in 1977 and 1987

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>(\bar{X})</th>
<th>s.d.</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>105</td>
<td>.87</td>
<td>.72</td>
<td>1.18*</td>
</tr>
<tr>
<td>1987</td>
<td>107</td>
<td>1.00</td>
<td>1.02</td>
<td></td>
</tr>
</tbody>
</table>

*not significant at \(p = .05\)