Buying Behavior and Decisions About the Purchase of Dairy Products by Urban Families At Three Income Levels

SUMMARY

Annual family income and income-related characteristics, such as family size or type, race, and per capita food expenditures, appear to influence the purchase of milk products. In an effort to determine the nature of influencing factors, hypotheses based on the social systems theories of Talcott Parsons and his associates were developed by Southern region research workers in food consumer behavior.

The major hypothesis stated that decision making in food buying entailed collective action by family members, and their awareness of homemaker activities was an important determinant in these purchases. Shopping practice scores, at three income levels, became the intervening variable between known factors influencing milk product purchases and mean values of per capita expenditures for food, the most popular milk products, and total dairy products. Data obtained from 934 families in four Alabama cities of varying populations were used to test the hypothesis.

Parsons states that a social system, such as a family, to remain viable, must adapt to the environment by obtaining from other groups the attitudes, goods, and services its members have learned to need. Integration of the family results if members exchange attitudes, goods, and services with each other, and finally, the group must appraise the effectiveness of its efforts and initiate needed improvements if the family is to continue as a functioning group. These categories were implemented through use of scores based on 18 shopping practices performed with varying frequency by homemakers. The respondent then selected the activities in each of the adaptive, integrative and satisfaction groups used most and least often to provide data as to awareness of family members of her practices, and the probable reactions to change.

Use of shopping practice scores as the intervening variable was only partially successful, but additional information was provided concerning the income-related characteristics of families.

The Parsons theory has possibilities in studies of family oriented consumer behavior under certain conditions. Scores are based on actual instances. Use of a five-point scale in which the homemaker made her own determinations of frequency of action resulted in a limited distribution of scores in the middle

ranges. Integration and satisfaction scores would be strengthened if family members were included in a sub-schedule. Scores based on actual performance data from which scales were constructed might provide very different answers. Use of foods other than milk products would also alter results.

CONTENTS

Buying Behavior and Decisions About the Purchase of Dairy Products by Urban Families at Three Income Levels[1]

MILDRED S. VAN de MARK[2] and RUTH A. HAMMETT[3]

INTRODUCTION

T HE IMPORTANCE of income as a limiting factor in milk product purchases was emphasized in previous studies of consumer behavior in Alabama urban families. Income-related characteristics such as size of family, education of the principal earner, or family type have also had a bearing on the kind and quantity of milk products used (1,2). However, income does not provide the entire answer to milk use, as there has always been a dispersion in tables that indicated the presence of other influences, especially in nonwhite families.

Several studies have shown the importance of marketing devices such as advertised prices, or the influence of family members on food selection by homemakers. Food also provides more than nutrients as it functions in the psychological development and socialization of the family. The Talcott Parsons social systems theory presented an opportunity to evaluate the effect of forces within and outside the family that might explain the effect of variables other than income on milk product purchases.

Families from a 1968-69 survey taken in four Alabama cities of varying sizes were selected for the study. Low income white

families were compared with nonwhite families having similar incomes, and with white families having middle or high incomes in per capita expenditures for food, total dairy products purchased, and the five most popular milk products used during the 7 days previous to the interview.

Shopping practice scores were based on 18 items grouped into adaptive, integrative, and satisfaction categories. Respondents reported frequency of activity in each of the practices, also awareness of family members and their attitude toward a change in performance.

Findings should be of interest to family economists, consumer behavior research personnel in marketing organizations, or other persons interested in factors related to policy making and food buying decisions.

BACKGROUND OF THE STUDY

Families were selected by use of standard statistical procedures, although the sample was not designed to be representative of an Alabama urban population. Samples were collected from 798 white and 82 nonwhite families in Dothan, Tuscaloosa, and Huntsville, Alabama. Population of these cities ranged between 35,000 and 135,000. In addition, 41 nonwhite and 14 white families from Birmingham were added to the original number to provide a balanced sample by race for the low income study. Information was taken by personal interview using fully trained and closely supervised mature women as enumerators.

Data from families in the original sample were utilized for a comparison of milk product use by Alabama urban families in 1954 and 1958 (3). A study of the role of family income and food expenditures in consumption of nutritionally adequate milk equivalent by urban families was also based on these data (4).

Shopping practice score methods and rationale for the selection of family characteristics used in the study are outlined in the Appendix. Milk product mean expenditures per family per week by income, race, stage in family life cycle, family size, and shopping practice scores are in the Appendix Table.

Family data reduced to per capita dimensions made possible generalizations in which the original magnitude of income, family size, or weekly food expenditures were no longer major

factors. Milk products most frequently used by both races were selected for analysis purposes. These included whole milk, ice cream, American cheese, buttermilk, and evaporated milk, Table 1.

Because other studies indicate that families with or without children have differing purchase habits, the six commonly accepted chronological stages in the family life cycle were related to the presence or absence of children. The composition of the families in each stage was as follows:

Stage 1: Childless couples married less than 10 years.

Stage 2: Post-parental families — couples, widows or widowers who have reared children, but all children have left home.

Stage 3: Older childless couples married 10 years or more.

Stage 4: Expanding families — Youngest child under 6 years, and no child over 16 years.

Stage 5: Stable families — All children between 6 and 15 years, or youngest child under 6 years and oldest child over 15 years.

Stage 6: Contracting families — No child less than 6 years and at least one child 16 years or older.

The objectives of the study were (1) to compare food or milk product expenditures and shopping practices scores of low in-

TABLE 1. PERCENTAGES OF FAMILIES USING SELECTED MILK PRODUCTS, BY ANNUAL FAMILY INCOME LEVEL AND BY RACE, URBAN AREAS OF ALABAMA, 1968-69

Milk products	Annual family income level			
	Low[1]		Middle[2]	High[3]
	White	Nonwhite	White	White
	Pct.	Pct.	Pct.	Pct.
Whole milk	90	82	93	92
Ice cream	51	71	74	73
American cheese	47	47	72	77
Buttermilk	39	54	39	32
Evaporated milk	55	49	34	25
Cottage cheese	10	1	21	41
Cream	8	2	15	33
Skimmilk	15	11	20	36
Dry milk	11	21	16	17
Cheese spread	4	2	8	11
Chocolate milk	9	6	10	9
Ice cream bars	14	7	12	13
Cream cheese	1	1	7	11
Half and half	4	0	4	11
Roquefort cheese	0	0	2	5

[1] Under $4,500.
[2] $4,500-$9,999.
[3] $10,000 and over.

come white families with those of nonwhite families, and to compare purchase behavior of low income white families with middle and high income white families, (2) to evaluate the influence of shopping adaptive, integrative, and satisfaction scores as an intervening variable between income-related family characteristics and the purchase of milk products, and, (3) to determine the effect of family size and stage in the life cycle on dairy product purchases.

SHOPPING PRACTICE SCORES

The family, rather than the homemaker, was the unit investigated in the study. Previous studies showed that family preferences were an important factor in food purchases. The homemaker shops differently for the family than she would for herself. In the role of food selector for the family, homemakers use experience, knowledge, and concern for physical and emotional health to discriminate among thousands of available products.

The social action theories of Talcott Parsons and his associates were selected for an interdisciplinary approach to the problem of why consumers behave as they do in the market place. It was believed that utilization of the social system elements and categories might relate to the decision making process and structure at individual and group levels.

The successful operation of a social system is a dynamic process in which there is interaction of its members with each other, with other persons, and objects outside the unit. Parson's theory states that the adaptation of a group refers to the extent that the group as a whole obtains from other groups the attitudes, goods, and services its members have learned they need, and the extent to which it secures from its physical environment the things it requires. The integration of a group refers to the extent the members exchange with one another the attitudes, goods, and services necessary for maintenance of the system. Goal attainment is the appraisal of the effectiveness of the group's efforts in maintaining its values, norms, and performance levels that continue the unit as a functioning system.

Since families differ in the significance they attach to situations involving food purchase and use, it was hypothesized that functions of food could be measured. The consumer process was

considered to be a sequence of choices among alternative possibilities in which procurement of needed goods and services would contribute to the solidarity of the family as a viable social system.

Decision making in food buying was assumed to be a collective action by family members, and their awareness of the homemaker's role activities as important determinant in purchases. It was hypothesized that shopping practice scores based on adaptation, integration, and goal attainment or satisfaction would be related to homemaker and family characteristics and become the intervening variable in channeling purchase decisions. The area of research was a fusion of what the food purchaser does and how the family reacts to those practices.

Shopping practice scores were placed in four ranges designated as very low (under 31), low (31-45), high (46-60), and very high (61 and over). Homemakers with very low adaptive scores would seldom use a shopping list, buy foods on sale, shop for less expensive items, compare package size and price, or read articles about food. Families were unaware of homemaker practices, and would probably not notice if shopping habits were changed. Homemakers with very high adaptive scores would almost always use several of the practices. The family was aware of the care used in food shopping, and would complain if the buying procedures were altered.

Respondents with low integrative scores seldom or never prepared food to celebrate special occasions, bought food that family members could prepare, offered food to console a family member with a problem, or taught family members to be good shoppers. The family was unaware they were not included in the planning, and would complain if the homemaker changed the practice. High-scoring homemakers usually included family members in some phase of food selection or preparation with family approval.

Shopping satisfaction scores reflected attitudes of homemakers in the role of provider of food for families. Scores were based on the degree of dissatisfaction or unhappiness with the amount of time spent in food shopping and meal preparation, the attention given her own and the family's food preferences, the healthfulness of the food eaten by family members, and the frequency of meals eaten together.

Low satisfaction scores indicated unresolved conflicts in food aspects of homemaking and lack of concern by the family in homemaker attitudes. The higher the score, the greater the satisfaction with role performance in food selection and utilization. The degree of pleasure exhibited by the family in the homemaker's role performance was an added factor in satisfaction scores. Inclusion of the time element spent in food selection and preparation strongly influenced low scores in high income families, especially those with two members.

INFLUENCE OF FAMILY LIFE CYCLE AND
FAMILY SIZE ON DAIRY PRODUCT PURCHASES
Low Income Families, by Race

Several Alabama studies have shown that white and nonwhite urban families constitute separate universes in the use of milk products. In both races, small families composed of adults usually consumed optimum amounts of milk products. At relatively equal levels of income, nonwhite families spent about the same percentage of the food dollar for dairy products, but food expenditures averaged about four-fifths that of white families. Lower purchases of fresh fluid milk in nonwhite families resulted in consumption of two-thirds the amount of milk equivalent nutritionists recommended (1,2,3,4).

In most stages of the family life cycle, white families spent the larger amounts for milk products, food, and whole milk. Families with children had the largest per capita expenditures for whole milk and evaporated milk. Families without children at home had the highest per capita incomes and the highest expenditures for ice cream, American cheese, and buttermilk. Per capita food costs were highest in the young couple families, and lowest in the expanding or stable stage in the family life cycle. The greatest variety of milk products was used in the older couples or stable stages. The fewest kinds of dairy products were purchased in the post-parental or contracting stages, Table 2.

Previous studies of consumer behavior and dairy product use have shown family size to be an important indicator of probable purchases. In both races, per capita income and expenditures for food and buttermilk declined with increase in family size. Shopping satisfaction scores increased with family size in non-

white families, which indicated greater confidence or acceptance of the status quo in food-related aspects of role performance by homemakers.

TABLE 2. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE PER WEEK, BY RACE AND STAGES IN FAMILY LIFE CYCLE WITHOUT AND WITH CHILDREN PRESENT, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita food and milk product purchase expenditure per week by race	Stage in family life cycle					
	No children			Children present		
	Yng. mar.	Post par.	Older mar.	Expanding	Stable	Contracting
	Unit	Unit	Unit	Unit	Unit	Unit
Per capita income, dol.						
White families	1,750	1,333	1,875	1,005	825	1,150
Nonwhite families	1,875	1,575	1,351	608	775	841
Size of family, no.						
White families	2.0	2.1	2.0	4.0	3.4	3.2
Nonwhite families	2.0	2.0	2.1	4.6	6.3	3.3
Per capita milk cost, dol.						
White families	0.99	0.83	1.06	1.00	1.14	1.02
Nonwhite families	0.88	0.90	0.71	0.78	0.47	0.69
Per capita food cost, dol.						
White families	7.91	7.55	7.50	4.82	6.18	6.37
Nonwhite families	6.87	6.30	6.73	3.52	3.38	5.65
Number milk products used						
White families	3.7	3.4	5.0	3.8	4.3	4.3
Nonwhite families	4.0	3.8	3.4	3.6	5.0	3.2
Shopping adaptive score						
White families	48.0	45.0	59.0	46.0	48.0	48.0
Nonwhite families	44.0	50.0	45.0	44.0	45.0	47.0
Shopping integrative score						
White families	49.0	46.0	44.0	48.0	48.0	44.0
Nonwhite families	46.0	44.0	47.0	39.0	40.0	44.0
Shopping satisfaction score						
White families	47.0	52.0	65.0	46.0	49.0	51.0
Nonwhite families	54.0	47.0	52.0	45.0	47.0	48.0
Whole milk cost, dol.						
White families	0.40	0.43	[1]	0.54	0.48	0.56
Nonwhite families	0.31	0.26	0.25	0.36	0.13	0.31
Ice cream cost, dol.						
White families	0.35	0.19	0.40	0.13	0.34	0.18
Nonwhite families	0.21	0.26	0.20	0.16	0.12	0.14
American cheese cost, dol.						
White families	0.20	0.19	0.08	0.12	0.12	0.18
Nonwhite families	0.19	0.22	0.31	0.15	0.05	0.17
Buttermilk cost, dol.						
White families	[1]	0.15	0.23	0.08	0.18	0.11
Nonwhite families	0.21	0.27	0.16	0.09	0.08	0.10
Evaporated milk cost, dol.						
White families	0.08	0.12	[1]	0.20	0.14	0.07
Nonwhite families	0.09	0.12	0.10	0.07	0.07	0.20
Families, pct.						
White families	7.0	24.0	1.0	49.0	6.0	13.0
Nonwhite families	4.0	10.0	7.0	55.0	4.0	15.0
Total families, no.	11	35	8	107	10	29

[1] Product not used.

TABLE 3. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE PER WEEK, BY NUMBER OF FAMILY MEMBERS AND BY RACE, LOW INCOME FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita food and milk product expenditure per week, by race	Number of family members						
	Two	Three	Four	Five	Six	Seven	Eight
	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Per capita income, dol.							
White families	1,488	1,157	820	567	625	536	469
Nonwhite families	1,489	804	653	543	549	100	281
Per capita milk cost, dol.							
White families	0.94	1.15	0.96	0.87	0.97	0.57	0.69
Nonwhite families	0.74	0.87	0.49	0.59	0.77	0.32	0.19
Per capita food cost, dol.							
White families	7.80	6.30	5.69	4.33	5.17	3.78	3.12
Nonwhite families	6.51	5.69	4.00	4.80	3.55	3.55	1.29
Number milk products used							
White families	3.7	3.6	3.8	5.0	5.3	4.5	5.0
Nonwhite families	3.6	3.5	3.4	3.9	4.0	2.5	4.0
Shopping adaptive score							
White families	46.0	49.0	44.0	41.0	48.0	44.0	36.0
Nonwhite families	47.0	47.0	45.0	50.0	47.0	48.0	40.0
Shopping integrative score							
White families	47.0	47.0	46.0	52.0	37.0	41.0	66.0
Nonwhite families	47.0	47.0	45.0	50.0	47.0	48.0	40.0
Shopping satisfaction score							
White families	51.0	47.0	47.0	39.0	50.0	53.0	60.0
Nonwhite families	49.0	44.0	50.0	50.0	50.0	58.0	59.0
Whole milk cost, dol.							
White families	0.45	0.62	0.47	0.43	0.51	0.17	0.31
Nonwhite families	0.23	0.44	0.21	0.24	0.25	0.25	0.08
Ice cream cost, dol.							
White families	0.25	0.20	0.09	0.24	0.08	0.13	0.08
Nonwhite families	0.22	0.23	0.13	0.14	0.08	0.08	0.08
American cheese cost, dol.							
White families	0.22	0.15	0.21	0.10	0.10	0.08	[1]
Nonwhite families	0.23	0.11	0.16	0.12	0.08	[1]	[1]
Buttermilk cost, dol.							
White families	0.18	0.13	0.06	0.03	0.08	0.08	[1]
Nonwhite families	0.20	0.15	0.13	0.07	0.08	[1]	0.03
Evaporated milk cost, dol.							
White families	0.13	0.09	0.29	0.01	0.15	0.10	0.04
Nonwhite families	0.09	0.09	0.09	0.09	0.52	0.15	[1]
Families, pct.							
White families	33.0	40.0	10.0	4.0	3.0	2.0	1.0
Nonwhite families	35.0	48.0	20.0	7.0	6.0	2.0	1.0
Total families, no.	68	88	30	11	9	4	2

[1] Product not used.

Families of two or three members in both races had the highest per capita income and the highest expenditures for ice cream, American cheese, and buttermilk. Small size white families had the larger per capita expenditures for milk products, food, and whole milk, and the highest adaptive scores.

The larger size families of six or more members had the low-

est per capita incomes, the lowest per capita expenditures for milk products, food, whole milk, American cheese, and buttermilk. These families had the lowest adaptive and integrative scores, but the highest satisfaction scores. Larger families in both races used the greatest variety of milk products. Larger nonwhite families had the highest expenditures for evaporated milk, Table 3.

Three Income Levels, White Families

Comparison of characteristics, purchase decisions, and shopping practice scores of low income families with those having larger incomes provided added information concerning dairy product use. Analysis was made by (1) stage in the family life cycle, family size, and income level, and, (2) characteristics affected by an increase in the level of income.

Families without children had the largest per capita incomes, especially the older couples. Per capita expenditures for food, milk products, ice cream, American cheese, buttermilk, and evaporated milk at the higher income levels were largest in families without children.

Per capita food expenditures were lowest in expanding families, highest in young couples. Adaptive and integrative scores were lowest in expanding families. Older couples used the largest number of milk products.

In this section, unless otherwise specified, "highest" or "lowest" refer to families within the same income level. Low income young couples had the highest integrative score, and the lowest per capita whole milk expenditures. Middle income young couples spent the most per person for milk products, but per capita food expenditures were highest in the low or high income families. High income young couples and those in the expanding stage of the family cycle had the lowest satisfaction and integrative scores.

Low income post-parental couples had the lowest per capita expenditures for milk products and used the smallest number. Middle income families had the highest buttermilk expenditures and the lowest integrative scores. Post-parental couples in the low or high income brackets had the lowest adaptive scores. Upper income families had the lowest whole milk, but the highest per capita expenditures for American cheese, and the highest satisfaction scores.

Older couples had the largest per capita income at each of the three income levels. The low income older couples had the highest per capita expenditures for buttermilk and ice cream, spent the least for American cheese, and had the highest adaptive and satisfaction scores, but the lowest integrative scores. Moderate income older couples had the highest per capita expenditures for whole milk and evaporated milk, and the lowest adaptive and satisfaction scores. High income couples had the highest per capita milk product and food expenditures. Previous studies showed upper income small size families were consistently high consumers of dairy products.

Expanding stage families in all income levels had the lowest per capita food and buttermilk expenditures, and the lowest satisfaction score. Low income families in the expanding stage spent the most for evaporated milk. High income families had the lowest expenditure for milk products, American cheese, and ice cream, and the low integrative score was similar to that of young couples.

Low income families in the stable stage had the lowest per capita income and the highest milk product expenditures. Middle income families had the lowest ice cream and American cheese expenditures. High income families in the stable stage of the family cycle had the largest family size, the largest expenditures for whole milk but the smallest for ice cream, and the highest adaptive score.

Contracting stage families spent the least for evaporated milk at all income levels. Low income contracting stage families had the largest whole milk expenditures, but the lowest integrative score. Upper income families had the highest adaptive scores. The relatively few high income families in the contracting stage used the largest number of milk products and had the largest whole milk expenditures, Table 4.

Relationship of family size and annual income expressed as per capita income was shown in previous studies to be an important factor in dairy product purchase decisions. Analysis by number of family members and the 12 variables provided an insight into problems faced by homemakers with similar income level, but varying family size.

At all income levels, per capita income and food costs declined with increase in size of family. At all income levels, per capita ice cream expenditures declined with increase in size of the

TABLE 4. FAMILY DATA AND PER CAPITA MILK PRODUCT EXPENDITURE PER WEEK AT THREE LEVELS OF ANNUAL INCOME, BY STAGE IN FAMILY LIFE CYCLE WITHOUT AND WITH CHILDREN, WHITE FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita milk product expenditure per week, levels of annual income	Stage in family life cycle					
	No children			Children present		
	Yng. mar.	Post par.	Older mar.	Expand-ing	Stable	Contract-ing
	Unit	Unit	Unit	Unit	Unit	Unit
Per capita income, *dol.*						
Low income	1,750	1,333	1,875	1,005	825	1,150
Middle income	3,473	4,398	3,986	1,082	1,905	1,967
High income	6,146	6,583	6,607	3,096	3,333	3,428
Size family, *no.*						
Low income	2.0	2.1	2.0	4.0	3.4	3.2
Middle income	2.0	2.1	2.1	4.0	4.5	4.2
High income	2.0	2.2	2.0	4.6	4.6	4.2
Per capita milk cost, *dol.*						
Low income	0.99	0.83	1.06	1.00	1.14	1.02
Middle income	1.31	1.28	1.12	1.16	1.13	1.14
High income	1.45	1.35	1.60	1.18	1.38	1.34
Per capita food cost, *dol.*						
Low income	7.91	7.55	7.50	4.82	6.18	6.37
Middle income	8.85	10.59	9.66	6.48	7.49	7.17
High income	9.91	11.75	13.60	7.13	8.47	8.85
Number milk products used						
Low income	3.7	3.4	5.0	3.8	4.3	4.3
Middle income	4.4	4.3	3.7	4.7	4.9	5.0
High income	4.1	4.8	4.7	5.3	5.8	6.0
Shopping adaptive score						
Low income	48.0	45.0	59.0	46.0	48.0	48.0
Middle income	47.0	48.0	46.0	47.0	48.0	50.0
High income	47.0	46.0	47.0	49.0	51.0	49.0
Shopping integrative score						
Low income	49.0	46.0	44.0	48.0	48.0	44.0
Middle income	48.0	47.0	47.0	48.0	51.0	52.0
High income	46.0	49.0	50.0	47.0	51.0	52.0
Shopping satisfaction score						
Low income	47.0	52.0	65.0	46.0	49.0	51.0
Middle income	46.0	49.0	43.0	45.0	46.0	47.0
High income	46.0	50.0	49.0	47.0	47.0	48.0
Whole milk cost, *dol.*						
Low income	0.40	0.43	[1]	0.54	0.48	0.56
Middle income	0.60	0.54	0.70	0.61	0.60	0.54
High income	0.59	0.51	0.59	0.61	0.66	0.66
Ice cream cost, *dol.*						
Low income	0.35	0.19	0.45	0.13	0.34	0.18
Middle income	0.30	0.26	0.37	0.22	0.17	0.18
High income	0.36	0.40	0.42	0.20	0.20	0.22
American cheese cost, *dol.*						
Low income	0.20	0.19	0.08	0.12	0.12	0.18
Middle income	0.19	0.20	0.19	0.14	0.13	0.14
High income	0.27	0.17	0.23	0.13	0.14	0.14
Buttermilk cost, *dol.*						
Low income	[1]	0.15	0.23	0.08	0.19	0.11
Middle income	0.15	0.22	0.11	0.10	0.15	0.11
High income	0.14	0.19	0.14	0.07	0.08	0.10

Continued

TABLE 4 *(cont.)*. FAMILY DATA AND PER CAPITA MILK PRODUCT EXPENDITURE PER WEEK AT THREE LEVELS OF ANNUAL INCOME, BY STAGE IN FAMILY LIFE CYCLE WITHOUT AND WITH CHILDREN, WHITE FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita milk product expenditure per week, levels of annual income	Stage in family life cycle					
	No children			Children present		
	Yng. mar.	Post par.	Older mar.	Expand-ing	Stable	Contract-ing
	Unit	*Unit*	*Unit*	*Unit*	*Unit*	*Unit*
Evaporated milk cost, *dol.*						
Low income	0.08	0.12	[1]	0.20	0.14	0.07
Middle income	0.06	0.12	0.24	0.08	0.11	0.06
High income	0.07	0.10	0.08	0.07	0.07	0.06
Families, *pct.*						
Low income	7.0	24.0	1.0	49.0	4.0	13.0
Middle income	5.0	19.0	3.0	38.0	16.0	19.0
High income	3.0	33.0	27.0	25.0	10.0	2.0
Total families, *no.*	32	206	114	259	94	77

[1] Product not used.

family, but costs increased in each family size with an increase in the income level. Also, at all income levels, per capita milk product expenditures were greater in small than in large size families.

Families of two members had the highest per capita incomes, and eight-member families the lowest. Per capita expenditures for milk products, ice cream, and buttermilk were largest at all income levels in two-member families, and the amount increased with income. Expenditures were lowest in larger size families, although these also increased with greater incomes. The largest size families used the greater number of dairy products. In most household sizes high income families used the wider variety of milk products.

Per capita expenditures for whole milk were greatest in the largest size families at the higher income levels. Integrative scores at all income levels were highest in the larger families. The families of average size and middle income had the highest adaptive, but the lowest satisfaction scores. The largest low income families had the lowest adaptive but the highest satisfaction scores. Apparently the low income homemaker with the large family had established a satisfactory food purchase pattern. The "average consumer" encountered more conflict as she tried to balance budget, family preferences, and time allocations, Table 5.

TABLE 5. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE PER WEEK AT THREE LEVELS OF ANNUAL INCOME, BY SIZE OF FAMILY, WHITE FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita food and milk product expenditure per week, at three levels of annual income	Number of family members						
	Two	Three	Four	Five	Six	Seven	Eight
	Unit	Unit	Unit	Unit	Unit	Unit	Unit
Per capita income, *dol.*							
Low income	1,488	1,157	820	567	625	536	469
Middle income	3,545	2,532	1,856	1,484	1,280	1,143	765
High income	6,607	4,386	3,354	2,641	2,283	1,976	1,584
Per capita milk cost, *dol.*							
Low income	0.94	1.15	0.96	0.87	0.97	0.57	0.69
Middle income	1.41	1.19	1.13	0.95	1.14	1.11	0.62
High income	1.46	1.45	1.38	1.24	1.15	1.18	1.26
Per capita food cost, *dol.*							
Low income	7.80	6.30	5.69	4.33	4.17	3.78	3.12
Middle income	10.75	8.11	7.05	6.19	6.20	5.81	4.47
High income	12.54	9.81	8.46	7.47	6.34	6.92	5.21
Number milk products used							
Low income	3.7	3.6	3.8	5.0	5.3	4.5	5.0
Middle income	4.3	4.5	5.0	4.6	5.4	5.7	4.5
High income	4.6	5.3	5.7	5.7	6.1	5.6	7.7
Shopping adaptive score							
Low income	46.0	49.0	44.0	41.0	48.0	44.0	36.0
Middle income	48.0	48.0	46.0	51.0	50.0	47.0	46.0
High income	45.0	48.0	50.0	51.0	53.0	49.0	49.0
Shopping integrative score							
Low income	47.0	47.0	46.0	52.0	37.0	41.0	66.0
Middle income	48.0	49.0	49.0	50.0	51.0	52.0	47.0
High income	48.0	51.0	49.0	49.0	51.0	54.0	52.0
Shopping satisfaction score							
Low income	51.0	47.0	47.0	39.0	50.0	53.0	60.0
Middle income	48.0	47.0	46.0	44.0	46.0	48.0	42.0
High income	49.0	48.0	48.0	47.0	43.0	45.0	44.0

Continued

TABLE 5 *(cont.)*. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE PER WEEK AT THREE LEVELS OF ANNUAL INCOME, BY SIZE OF FAMILY, WHITE FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita food and milk product expenditure per week, at three levels of annual income	Number of family members						
	Two	Three	Four	Five	Six	Seven	Eight
	Unit	*Unit*	*Unit*	*Unit*	*Unit*	*Unit*	*Unit*
Whole milk cost, *dol.*							
Low income	0.40	0.62	0.47	0.43	0.50	0.17	0.27
Middle income	0.67	0.57	0.56	0.55	0.65	0.71	0.36
High income	0.66	0.64	0.68	0.65	0.58	0.71	0.78
Ice cream cost, *dol.*							
Low income	0.25	0.20	0.10	0.19	0.08	0.13	0.08
Middle income	0.31	0.24	0.18	0.15	0.15	0.14	0.12
High income	0.39	0.29	0.22	0.25	0.18	0.17	0.12
American cheese cost, *dol.*							
Low income	0.22	0.15	0.41	0.10	0.10	0.07	[1]
Middle income	0.23	0.19	0.13	0.11	0.11	0.11	0.09
High income	0.20	0.19	0.13	0.13	0.12	0.12	0.08
Buttermilk cost, *dol.*							
Low income	0.18	0.13	0.06	0.03	0.08	0.08	[1]
Middle income	0.23	0.15	0.11	0.10	0.07	0.06	0.07
High income	0.17	0.12	0.10	0.08	0.08	0.04	0.05
Evaporated milk cost, *dol.*							
Low income	0.13	0.09	0.29	0.02	0.15	0.10	0.04
Middle income	0.16	0.08	0.08	0.06	0.06	0.14	0.04
High income	0.12	0.08	0.08	0.06	0.04	0.07	0.02
Families, *pct.*							
Low income	36.0	43.0	11.0	4.0	3.0	2.0	1.0
Middle income	27.0	26.0	23.0	13.0	8.0	2.0	1.0
High income	17.0	22.0	29.0	19.0	9.0	3.0	1.0
Total families, *no.*	184	199	198	122	63	20	8

[1] Product not used.

INFLUENCE OF SHOPPING PRACTICES ON DAIRY PRODUCT PURCHASES

Low Income, by Race

Shopping Adaptive Scores. The shopping adaptive score rated the homemaker on the use of certain devices related to food purchase that would indicate the degree of care used in making

TABLE 6. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE PER WEEK, BY SHOPPING ADAPTIVE SCORE AND BY RACE, LOW INCOME FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita food and milk product expenditure per week, by race	Shopping adaptive score			
	Under 31	31-45	46-60	61 and over
	Unit	*Unit*	*Unit*	*Unit*
Per capita income, *dol.*				
White families	882	1,197	1,231	1,213
Nonwhite families	222	894	1,016	1,875
Size of family, *no.*				
White families	3.8	3.1	2.9	3.0
Nonwhite families	3.0	3.7	3.5	4.0
Per capita milk cost, *dol.*				
White families	0.72	0.88	1.08	1.28
Nonwhite families	0.12	0.63	0.65	0.68
Per capita food cost, *dol.*				
White families	5.63	6.00	5.82	9.00
Nonwhite families	4.00	3.92	5.11	3.00
Number milk products used				
White families	3.2	3.7	3.8	5.4
Nonwhite families	1.0	3.2	3.9	4.0
Shopping integrative score				
White families	42.0	47.0	48.0	51.0
Nonwhite families	39.0	41.0	47.0	59.0
Shopping satisfaction score				
White families	44.0	50.0	49.0	48.0
Nonwhite families	57.0	51.0	47.0	65.0
Whole milk cost, *dol.*				
White families	0.39	0.45	0.58	0.40
Nonwhite families	[1]	0.26	0.25	0.28
Ice cream cost, *dol.*				
White families	0.16	0.17	0.19	0.23
Nonwhite families	[1]	0.16	0.14	0.05
American cheese cost, *dol.*				
White families	[1]	0.16	0.17	0.24
Nonwhite families	[1]	0.14	0.13	0.05
Buttermilk cost, *dol.*				
White families	0.14	0.09	0.12	0.24
Nonwhite families	[1]	0.11	0.12	0.05
Evaporated milk cost, *dol.*				
White families	0.12	0.13	0.20	0.17
Nonwhite families	0.12	0.19	0.14	[1]
Families, *pct.*				
White families	6.0	41.0	47.0	6.0
Nonwhite families	1.0	43.0	55.0	1.0
Total families, *no.*	6	66	81	6

[1] Product not used.

considered decisions in the market place, and the support given by the family in these efforts. A very low score could indicate a habitual or an impulsive homemaker, and an unconcerned family. Conversely, a high score indicated a careful buyer whose family was in accord with her usual purchase procedures. Shopping adaptive scores were lowest in eight-member families in both races, and were highest in two-member white and five-member nonwhite families.

Regardless of race, an increase in the adaptive score was associated with an increase in per capita income, the use of a greater variety of milk products, and larger integrative scores. In white families expenditures for ice cream and American cheese increased with larger adaptive scores, while expenditures for evaporated milk increased in nonwhite families.

Per capita weekly food expenditures by white families in all adaptive score ranges were greater than those of nonwhite families. White families had higher per capita incomes, milk product, and whole milk expenditures. In three of the four score ranges, white families used a greater number of milk products.

By race, there was little difference in buttermilk expenditures in adaptive score ranges above 30. White families had larger per capita expenditures for ice cream and American cheese in very low and high ranges, but in the middle ranges there was no difference. Evaporated milk expenditures showed no pattern of purchase to adaptive score ranges. Nonwhite families with very low adaptive scores had greater integrative or satisfaction scores than white families, Table 6.

Shopping Integrative Scores

The shopping integrative score rated the homemaker on her efforts to include family members in the selection and preparation of food, and the attitude of the family toward these practices. A low integrative score indicated little inclusion of the family in purchase procedures and lack of concern or interest by family members in food eaten at home. A high integrative score was related to much interest by all family members in the selection of food to be prepared and served at home. Integrative scores were highest in the five-member families.

In general, with an increase in integrative score in white families, there was an increase in expenditures for American cheese but a decrease in the amount spent for whole milk. Adaptive

TABLE 7. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE
PER WEEK BY SHOPPING INTEGRATIVE SCORE AND BY RACE, LOW
INCOME FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita food and milk product expenditure per week, by race	Shopping integrative score			
	Under 31	31-45	46-60	61 and over
	Unit	Unit	Unit	Unit
Per capita income, *dol.*				
White families	605	1,046	1,341	431
Nonwhite families	409	1,003	1,011	750
Size of family, *no.*				
White families	6.0	3.1	2.8	4.2
Nonwhite families	5.8	3.2	3.6	5.0
Per capita milk cost, *dol.*				
White families	0.95	1.00	0.95	1.07
Nonwhite families	0.60	0.35	0.62	0.91
Per capita food cost, *dol.*				
White families	5.00	5.75	6.43	5.90
Nonwhite families	3.14	4.98	4.16	3.50
Number milk products used				
White families	4.0	3.6	3.8	5.6
Nonwhite families	2.6	3.5	3.8	5.0
Shopping adaptive score				
White families	40.0	45.0	47.0	47.0
Nonwhite families	47.0	44.0	49.0	56.0
Shopping satisfaction score				
White families	31.0	47.0	51.0	61.0
Nonwhite families	28.0	47.0	49.0	65.0
Whole milk cost, *dol.*				
White families	0.68	0.50	0.51	0.35
Nonwhite families	0.42	0.27	0.22	0.36
Ice cream cost, *dol.*				
White families	[1]	0.16	0.20	0.15
Nonwhite families	[1]	0.19	0.12	0.20
American cheese cost, *dol.*				
White families	0.11	0.14	0.17	0.30
Nonwhite families	0.28	0.13	0.14	0.13
Buttermilk cost, *dol.*				
White families	0.09	0.13	0.13	0.02
Nonwhite families	0.09	0.11	0.13	[1]
Evaporated milk cost, *dol.*				
White families	0.07	0.24	0.09	0.11
Nonwhite families	0.27	0.10	0.18	0.04
Families, *pct.*				
White families	1.0	39.0	54.0	6.0
Nonwhite families	6.0	33.0	48.0	13.0
Total families, *no.*	6	56	81	15

[1] Product not used.

and satisfaction scores tended to increase with greater integrative
scores. In nonwhite families the number of milk products used
almost doubled with greater integrative scores. In white families,
whole milk expenditures declined with increase in integrative
score.

In all integrative score ranges, white families spent more for
food than nonwhite families. Size of family was similar by race

in score ranges under 46 but was greater in nonwhite families with higher scores. White families used more milk products in very low and very high integrative score ranges, but there was no difference by race in the middle ranges. Nonwhite families in the extreme ranges had higher evaporated milk expenditures and higher adaptive and satisfaction scores, but there was no difference in the middle ranges.

Highest scoring nonwhite homemakers had not used buttermilk. There was no difference in buttermilk purchases by race in the lower integrative ranges. Whole milk expenditures were greatest in white families in all except the very high range where there was no difference by race. Ice cream and American cheese expenditures showed no pattern of relationships to integrative score and race, Table 7.

Shopping Satisfaction Score

The shopping satisfaction score was designed to rate homemaker level of unhappiness with efforts in food selection and preparation, and family awareness of attitude. A low satisfaction score indicated the homemaker was almost always unhappy about the time spent in food-related activities of her role or the food habits of the family, and there was lack of concern by family members about her attitude. A higher satisfaction score indicated the homemaker felt she was in control of time, preferences, and other food-related aspects of her role, and that the family supported her performance. Shopping satisfaction scores increased with family size in nonwhite families and were highest in the largest families in both races.

Among white families with larger satisfaction scores, per capita expenditures for buttermilk and evaporated milk increased, while expenditures for whole milk, or integrative scores declined. In nonwhite families, size of family and expenditures for evaporated milk increased with higher satisfaction scores, but per capita income and integrative scores decreased.

There was no difference by race in per capita incomes of families scoring under 46, but white families had larger incomes in the higher satisfaction score ranges. Size of family was similar in families scoring under 46, but nonwhite families had larger size in those scoring above 45. Milk product expenditures were similar in score ranges under 31, but white families spent more in the ranges above 30.

White families in all satisfaction score ranges had higher per capita food and whole milk expenditures than nonwhite families. No white family with satisfaction scores under 31 had purchased ice cream, buttermilk, or evaporated milk. There was no difference by race in the score range over 30 in the purchase of ice cream, cheese, and evaporated milk. There was no difference by satisfaction score ranges between 31 and 60 in the use of

TABLE 8. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE PER WEEK, BY SHOPPING SATISFACTION SCORE, AND BY RACE, LOW INCOME FAMILIES, URBAN AREAS OF ALABAMA 1968-69

Family data and per capita food and milk product expenditure per week, by race	Shopping satisfaction score			
	Under 31	31-45	46-60	61 and over
	Unit	Unit	Unit	Unit
Per capita income, dol.				
White families	1,229	1,166	1,211	1,201
Nonwhite families	1,250	1,189	899	597
Size of family, no.				
White families	3.0	3.1	3.1	2.6
Nonwhite families	3.0	3.0	3.7	4.7
Per capita milk cost, dol.				
White families	0.83	1.02	1.07	0.74
Nonwhite families	0.84	0.74	0.57	0.62
Per capita food cost, dol.				
White families	6.89	6.01	6.20	6.21
Nonwhite families	3.33	5.67	3.72	4.66
Number milk products used				
White families	2.0	4.1	4.1	3.2
Nonwhite families	3.0	4.1	3.3	3.4
Shopping adaptive score				
White families	47.0	47.0	46.0	48.0
Nonwhite families	[1]	49.0	44.0	50.0
Shopping integrative score				
White families	50.0	47.0	48.0	44.0
Nonwhite families	51.0	46.0	43.0	44.0
Whole milk cost, dol.				
White families	0.72	0.52	0.48	0.44
Nonwhite families	0.42	0.23	0.26	0.30
Ice cream cost, dol.				
White families	[1]	0.19	0.16	0.15
Nonwhite families	0.13	0.16	0.15	0.12
American cheese cost, dol.				
White families	[1]	0.16	0.17	0.18
Nonwhite families	[1]	0.15	0.13	0.16
Buttermilk cost, dol.				
White families	[1]	0.09	0.14	0.18
Nonwhite families	0.29	0.12	0.11	0.12
Evaporated milk cost, dol.				
White families	0.11	0.10	0.18	0.24
Nonwhite families	[1]	0.13	0.14	0.21
Families, pct.				
White families	4.0	35.0	43.0	18.0
Nonwhite families	1.0	38.0	44.0	17.0
Total families, no.	4	59	69	27

[1] Product not used.

buttermilk, but in the very high range, white families had purchased larger amounts of buttermilk.

Racially, there was no difference in adaptive scores, and only in the high satisfaction score range did white families have higher integrative scores, Table 8.

Characteristics Associated with Dairy Product Expenditures

Decisions as to what dairy product to buy and how much to spend for it must be made by food purchasers at quite regular intervals. From the five sets of data those characteristics and scores most pertinent to high and low per capita expenditures were assembled for a comprehensive look at affective factors. For some products, relationships appeared to be logical representations of family types, in others there were conflicts, particularly in shopping practice scores.

Highest total milk product expenditures were associated with three-member households, stable stage, very high adaptive and integrative, and high satisfaction scores in white families. Lowest expenditures were found in eight-member households, stable stage, very low adaptive, low integrative, and high satisfaction score groups in nonwhite families.

Highest expenditures for whole milk were associated with three-member households, contracting stage, and very low integrative and satisfaction, but high adaptive scores in white families. Lowest expenditures were found in eight-member households, stable stage, high adaptive and integrative score, but low satisfaction score in nonwhite families.

Highest expenditures for ice cream were associated with two-member households, older couples, very high adaptive, high integrative, and low satisfaction scores in white families. Lowest expenditures were found in households of six persons or more, in both races, and in nonwhite families with very high adaptive or high integrative scores. Lowest expenditures were found in expanding and stable stages, and in families with very high satisfaction scores in both races.

Highest expenditures for American cheese were associated with nonwhite older couples, two-member families in both races, and very high adaptive, integrative, and satisfaction scores in white families. Lowest expenditures were found in six-member households, stable stage, very high adaptive, very low integrative, and low satisfaction scores in nonwhite families.

TABLE 9. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE PER WEEK AT THREE LEVELS OF INCOME, BY SHOPPING ADAPTIVE SCORE, WHITE FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita food and milk expenditure per week at three levels of annual income	Shopping adaptive score			
	Under 31	31-45	46-60	61 and over
Per capita income, *dol.*	*Unit*	*Unit*	*Unit*	*Unit*
Low income	882	1,197	1,231	1,213
Middle income	2,579	2,351	2,342	2,330
High income	4,827	4,100	4,195	3,344
Size of family, *no.*				
Low income	3.8	3.1	2.9	3.0
Middle income	3.3	3.3	3.7	3.8
High income	3.3	3.8	4.1	4.3
Per capita milk cost, *dol.*				
Low income	0.72	0.88	1.08	1.28
Middle income	1.39	1.13	1.11	1.38
High income	1.30	1.22	1.34	1.37
Per capita food cost, *dol.*				
Low income	5.63	6.00	5.82	9.00
Middle income	8.27	7.79	7.34	7.47
High income	9.09	8.37	9.35	7.87
Number milk products used				
Low income	3.2	3.7	3.8	5.4
Middle income	4.6	4.5	4.7	5.3
High income	5.1	5.2	5.7	6.0
Shopping integrative score				
Low income	42.0	47.0	48.0	51.0
Middle income	46.0	48.0	49.0	52.0
High income	51.0	48.0	52.0	52.0
Shopping satisfaction score				
Low income	44.0	50.0	49.0	48.0
Middle income	48.0	47.0	46.0	47.0
High income	50.0	47.0	47.0	50.0
Whole milk cost, *dol.*				
Low income	0.39	0.45	0.58	0.40
Middle income	0.73	0.58	0.58	0.63
High income	0.68	0.61	0.68	0.64
Ice cream cost, *dol.*				
Low income	0.16	0.17	0.19	0.23
Middle income	0.24	0.22	0.20	0.20
High income	0.22	0.23	0.23	0.20
American cheese cost, *dol.*				
Low income	[1]	0.16	0.17	0.24
Middle income	0.17	0.15	0.15	0.15
High income	0.17	0.15	0.17	0.17
Buttermilk cost, *dol.*				
Low income	0.14	0.11	0.12	0.24
Middle income	0.14	0.13	0.12	0.15
High income	0.10	0.09	0.10	0.07
Evaporated milk cost, *dol.*				
Low income	0.12	0.09	0.20	0.17
Middle income	0.11	0.09	0.07	0.13
High income	0.08	0.07	0.07	0.07
Families, *pct.*				
Low income	6.0	41.0	47.0	6.0
Middle income	7.0	29.0	55.0	9.0
High income	2.0	32.0	55.0	11.0
Total families, *no.*	37	253	431	77

[1] Product not used.

Highest expenditures for buttermilk were associated with two-member households and high integrative scores in both races, post-parental stage and very low satisfaction scores in non-white families, and very high adaptive scores in white families. Lowest expenditures were associated with five-member households and low satisfaction scores in white families, the expanding stage in both races, and eight-member households, stable stage, and very high adaptive and integrative scores in nonwhite families.

Highest expenditures for evaporated milk were associated with the expanding stage, high adaptive, and very high satisfaction scores in white families, and with six-member households, contracting stage, and very low integrative scores in nonwhite families. Lowest expenditures were found in five-member households, contracting stage, and low satisfaction scores in white families. The expanding stage and very high integrative score were related to low expenditures in nonwhite families. Very low adaptive scores were associated with low evaporated milk expenditures in both races.

Three Income Levels, White Families

Shopping Adaptive Scores. One of the objectives of the study was to evaluate the relationship of income level and shopping practice scores, inasmuch as previous studies had shown income and income-related family characteristics were important determinants in milk purchase decisions. Shopping practice scores were divided into four ranges designated as very low, low, high, and very high.

Among low income families, with an increase in adaptive score ranges from very low to very high, mean values of milk products purchased, as well as expenditures for ice cream, American cheese, and buttermilk increased, and a greater number of products were used. In middle income families, ice cream expenditures declined, and in high income families a greater number of products were used as adaptive scores increased.

Adaptive scores below 46 were associated with high expenditures for whole milk. High scores were associated with high expenditures for total milk products, buttermilk, and a larger number of products were used, but low expenditures for evaporated milk, Table 9.

TABLE 10. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE PER WEEK AT THREE LEVELS OF INCOME, BY SHOPPING INTEGRATIVE SCORE, WHITE FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita food and milk product expenditures per week, three levels of annual income	Shopping integrative score			
	Under 31	31-45	46-60	61 and over
Per capita income, *dol.*	*Unit*	*Unit*	*Unit*	*Unit*
Low income	652	1,046	1,341	931
Middle income	3,250	2,392	2,374	2,044
High income	4,025	3,914	3,740	3,840
Size of family, *no.*				
Low income	6.0	3.1	2.8	4.2
Middle income	2.5	3.6	3.6	4.2
High income	3.5	3.9	4.1	4.1
Per capita milk cost, *dol.*				
Low income	0.95	1.00	0.95	1.07
Middle income	1.36	1.12	1.12	1.21
High income	0.76	1.26	1.30	1.42
Per capita food cost, *dol.*				
Low income	5.00	5.75	6.43	5.90
Middle income	6.60	7.18	7.53	7.00
High income	8.00	7.93	8.52	8.69
Number milk products used				
Low income	4.0	3.6	3.8	5.6
Middle income	4.5	4.6	4.6	5.2
High income	2.0	5.2	5.6	6.1
Shopping adaptive score				
Low income	40.0	45.0	47.0	47.0
Middle income	51.0	45.0	49.0	50.0
High income	48.0	48.0	49.0	51.0
Shopping satisfaction score				
Low income	31.0	47.0	51.0	50.0
Middle income	46.0	48.0	46.0	47.0
High income	50.0	49.0	46.0	49.0
Whole milk cost, *dol.*				
Low income	0.68	0.50	0.51	0.35
Middle income	0.58	0.60	0.56	0.59
High income	1.18	0.62	0.65	0.70
Ice cream cost, *dol.*				
Low income	[1]	0.16	0.20	0.15
Middle income	[1]	0.20	0.21	0.19
High income	0.17	0.22	0.23	0.24
American cheese cost, *dol.*				
Low income	0.11	0.14	0.17	0.30
Middle income	[1]	0.14	0.15	0.15
High income	[1]	0.13	0.15	0.17
Buttermilk cost, *dol.*				
Low income	0.09	0.13	0.13	0.02
Middle income	0.21	0.11	0.13	0.15
High income	0.12	0.12	0.09	0.08
Evaporated milk cost, *dol.*				
Low income	0.08	0.24	0.09	0.11
Middle income	[1]	0.09	0.08	0.12
High income	0.04	0.06	0.07	0.08
Families, *pct.*				
Low income	1.0	38.0	55.0	6.0
Middle income	[1]	31.0	60.0	9.0
High income	1.0	31.0	57.0	11.0
Total families, *no.*	4	254	463	76

[1] Product not used.

Shopping Integrative Scores

As the integrative score increased, at all income levels, expenditures for American cheese increased. No American cheese was purchased by high income families in the very low score range. In low income families expenditures for whole milk were highest in the very low integrative score range, and declined with an increase in scores. In upper income families, a greater number of products was used as scores increased. In high income families expenditures for milk products, ice cream, and evaporated milk increased with higher integrative scores, but expenditures for buttermilk declined.

Integrative scores below 46 were associated with high expenditures for whole milk and buttermilk. High integrative scores were related to high expenditures for ice cream and American cheese, Table 10.

Shopping Satisfaction Scores

In high income families expenditures for American cheese declined as satisfaction score increased. Evaporated milk expenditures became larger with increase in satisfaction scores in all income levels.

Satisfaction scores below 46 were associated with greater numbers of milk products used, and low expenditures for buttermilk and evaporated milk. Low scores were also associated with high expenditures for whole milk in low income families, and for ice cream at all income levels. High satisfaction scores were associated with a greater number of products used, high expenditures for milk products, evaporated milk and whole milk at upper income levels, and for American cheese in low income families, Table 11.

Characteristics Associated with Dairy Products Expenditures

Comprehensive characteristics and shopping scores for white families at three levels of income in the purchase of the five most used milk products were assembled to determine if elimination of race would cause typing of low and high users.

Highest expenditures in total milk products were associated with two or three-member households, older couples, very high integrative and very low satisfaction scores in high income families, and very low adaptive scores in middle income families. Lowest expenditures were found in eight-member middle income

TABLE 11. FAMILY DATA AND PER CAPITA FOOD AND MILK PRODUCT EXPENDITURE PER WEEK AT THREE LEVELS OF INCOME, BY SHOPPING SATISFACTION SCORE, WHITE FAMILIES, URBAN AREAS OF ALABAMA, 1968-69

Family data and per capita food and milk product expenditure per week, three levels of annual income	Shopping satisfaction score			
	Under 31	31-45	46-60	61 and over
Per capita income, *dol.*	*Unit*	*Unit*	*Unit*	*Unit*
Low income	1,229	1,166	1,211	1,201
Middle income	2,296	2,309	2,335	2,896
High income	2,935	3,694	4,007	3,341
Size of family, *no.*				
Low income	3.0	3.1	3.1	2.6
Middle income	3.5	3.8	3.6	3.2
High income	4.6	4.1	3.8	4.6
Per capita milk cost, *dol.*				
Low income	0.83	1.02	1.07	0.74
Middle income	1.05	1.15	1.08	1.32
High income	1.47	1.28	1.36	1.11
Per capita food cost, *dol.*				
Low income	6.89	6.01	6.20	6.21
Middle income	7.07	7.26	7.29	8.31
High income	8.15	8.66	8.42	7.44
Number milk products used				
Low income	2.0	4.1	4.1	3.2
Middle income	4.5	4.8	4.6	4.6
High income	6.0	5.4	5.5	5.5
Shopping adaptive score				
Low income	47.0	47.0	46.0	48.0
Middle income	53.0	48.0	47.0	50.0
High income	47.0	50.0	49.0	48.0
Shopping integrative score				
Low income	50.0	47.0	48.0	44.0
Middle income	48.0	48.0	48.0	47.0
High income	52.0	51.0	49.0	50.0
Whole milk cost, *dol.*				
Low income	0.72	0.52	0.48	0.44
Middle income	0.57	0.59	0.55	0.69
High income	0.64	0.66	0.67	0.56
Ice cream cost, *dol.*				
Low income	[1]	0.19	0.16	0.15
Middle income	0.20	0.20	0.20	0.18
High income	0.28	0.21	0.25	0.07
American cheese cost, *dol.*				
Low income	[1]	0.16	0.17	0.18
Middle income	0.16	0.14	0.15	0.23
High income	0.21	0.14	0.15	0.04
Buttermilk cost, *dol.*				
Low income	[1]	0.09	0.14	0.18
Middle income	0.06	0.12	0.12	0.17
High income	0.12	0.09	0.10	0.09
Evaporated milk cost, *dol.*				
Low income	0.11	0.10	0.18	0.24
Middle income	0.07	0.08	0.08	0.19
High income	0.06	0.06	0.09	0.17
Families, *pct.*				
Low income	4.0	35.0	43.0	18.0
Middle income	2.0	46.0	45.0	7.0
High income	2.0	41.0	50.0	7.0
Total families, *no.*	21	337	376	63

[1] Product not used.

families, post-parental couples, low adaptive scores, and very high satisfaction scores in low income families, and very low integrative scores in high income families.

Highest expenditures for whole milk were associated with older couples, seven-member households, and very low adaptive scores in middle income families, seven-member households and very low integrative scores in high income families, and very low satisfaction scores in low income families. Lowest expenditures were associated with seven-member households, young couples, very high integrative and satisfaction scores, and very low adaptive scores in low income families.

Highest expenditures for ice cream were associated with low income older couples, very low adaptive scores in middle income families, and two-member households, very high integrative or very low satisfaction scores in high income families. Lowest expenditures were associated with low income six- to eight-member households with very low adaptive and very high integrative scores. Expenditures for ice cream were also lowest in high income expanding stage families and those with very high satisfaction scores.

Highest expenditures for American cheese were associated with high income young couples, very high satisfaction scores in middle income families, and four-member households, very high adaptive and integrative scores in low income families. Lowest expenditures were associated with older couples, seven-member households, and very low integrative scores in low income families, and very high satisfaction scores in middle income families. There was no difference in adaptive scores in income levels and ranges except for the low income families noted above.

Highest expenditures for buttermilk were associated with two-member households, and very low integrative scores in middle income families, and older couples, very high adaptive and satisfaction scores in low income families. Lowest expenditures were associated with the expanding stages at all income levels, five-member households and very high integrative scores in low income families, very low satisfaction scores in middle income families, and low adaptive scores in high income families.

Highest expenditures for evaporated milk were associated with older couples, four-member households, high adaptive, low integrative and very high satisfaction scores in low income families. Lowest expenditures were more often found among five-

member families in low income families, and young couples in middle income families. Low expenditures were also associated with adaptive scores beyond the lowest, and very low integrative and satisfaction scores in high income families.

ROLE OF INCOME LEVEL IN DAIRY PRODUCT PURCHASES

An increase in expenditures occurred with greater income level in these areas: (1) Whole milk expenditures in young couples, expanding and stable stages of the life cycle, and in medium and large size families, (2) Ice cream expenditures in post-parental and contracting stage of the life cycle, and in all family sizes, (3) American cheese expenditures in young couples, older couples, and stable stages, and in three and seven-member families, and (4) Evaporated milk expenditures in expanding and contracting stages of the life cycle.

Expenditures for American cheese decreased with increase in income level in the contracting stage of the family cycle. In four and seven-member families and the post-parental stage, evaporated milk expenditures were higher in low than high income families.

Shopping practice scores also showed relationships to income level. With greater income, adaptive scores increased in the expanding and stable stages, and in the four-member and larger families. That is to say, the higher income, larger families were making more use of shopping aides, and the families were aware of and approved homemaker practices. With added income, in all adaptive score ranges the number of milk products used, and satisfaction scores increased, and in all except the very low adaptive score range, size of family and expenditures for whole milk increased. At ranges below the very high, food expenditures increased with greater income level.

Low income childless couples had higher adaptive scores than those with high incomes. In all adaptive score ranges, evaporated milk expenditures by low income families were larger than in those with high income. In the very low or very high adaptive score range, integrative scores were greater in low income families.

Integrative scores were higher in larger families at all income levels. Scores increased with income level in post-parental, older

couples, stable and contracting stages (middle-aged homemakers and higher per capita incomes), but decreased in young couples and expanding stage (young homemakers, low annual or per capita income).

In all integrative score ranges, food expenditures increased with added income levels. In all except very low scores ranges, expenditures for whole milk or ice cream, and adaptive scores increased with greater incomes. In the middle integrative score ranges, size of family and the number of milk products used became larger in high income families, but expenditures for American cheese and evaporated milk were greater in low income families. In families with high integrative scores, satisfaction scores were greater in high income families, but in very high integrative score range, satisfaction scores declined.

At all satisfaction score ranges, with increase in income level, size of family, food expenditures and number of milk products used increased. In ranges below the highest, milk products and ice cream expenditures increased. In the middle score ranges, American cheese and evaporated milk expenditures declined, but whole milk costs and adaptive scores increased with added income. Satisfaction scores were not affected by income level in smaller families, but increased in five-member families and declined in larger size families. Satisfaction scores declined with increased income in the young couple and contracting stages of the family cycle (low income had higher scores).

EVALUATION OF SHOPPING PRACTICES AS AN INTERVENING VARIABLE IN DAIRY PRODUCT PURCHASES

From the description of characteristics and score levels associated with high or low expenditures for the five milk products, the following instances indicated lack of relationship of scores and mean values.

Among low income white and nonwhite families, high satisfaction scores were associated with highest and lowest total milk product expenditures. High adaptive and low satisfaction scores were related to both high and low whole milk expenditures. Very high adaptive and high integrative scores were related to high expenditures for ice cream in white families, but to low expenditures in nonwhite families.

Very high adaptive scores were associated with high American cheese and buttermilk expenditures in white families, but to very low expenditures in nonwhite families.

In white families at three levels of income, shopping scores were associated with either high or low expenditures for certain products depending on the income level of a particular group. Very low adaptive scores were associated with high expenditures for whole milk or ice cream in middle income families, but low expenditures in low income families. Very high integrative scores were related to high expenditures for ice cream in high income families, but low expenditures in low income families.

High expenditures for evaporated milk were associated with high adaptive scores in low income families, but low expenditures in high income families. Low integrative scores were related to high expenditures for evaporated milk in low income families, but with low expenditures in high income families. Very high satisfaction scores were related to high expenditures for American cheese in middle income families, and also with very low expenditures.

The shopping practice scores were most useful in adding to descriptions of families grouped by size and type. When elements of a score were reviewed, it was possible to visualize the shopper who was impatient about the time spent in food selection and preparation, the shopper who liked to get the most for the money, or who involved the family in some aspect of food purchase and use.

When analysis was made in income-related areas, shopping practice scores provided further insight into motives contributing to consumer behavior, but proved to be unreliable in channelization of purchase decisions, except to a limited extent in low income families. This may have been a result of the limited numbers of families, or restrictions placed by income on food purchases may have caused homemakers to behave in a more uniform manner. However, white and nonwhite families did not spend food money in the same way when incomes were relatively uniform.

It is possible that selection of the items to be used in scoring, and probable family reaction obtained from family members, rather than the homemakers' presumptions, would have made scores relevant to actual behavior. The homemaker decided on frequency of action within five possibilities, which resulted in a

wide range of interpretations, and resulted in a clustering within the middle ranges. Scores could have been more reliable if the homemaker had answered in terms of actual performances from which the scoring plan would have been constructed. The theory, properly implemented, has many possibilities, but a pilot study in which selection of the test items was empirically determined should precede the project plan.

Inclusion of income and income-related family characteristics in factors determining probable dairy product purchases appears to remain the most reliable indicator. Shopping practice scores, especially the adaptive, were based on activities which have been shown to be related to income, integrative scores were of little more value than family type, and satisfaction scores covered areas in which less cumbersome methods would have provided needed information. Use of shopping practice theory in which foods other than relatively expensive protein forms were the test vehicle might have provided very different results.

APPENDIX

Multiple Regression
Analysis for the Value of Dairy Products

Multiple regression analysis of the sample was utilized to obtain a quantitative measure of the interrelationships between the value of dairy products used per person per week by surveyed families and the corresponding behavioral and socioeconomic patterns of these families. Initially a group of 23 behavioral and socioeconomic variables descriptive of the families surveyed were analyzed by stepwise multiple regression[1]. Several of the variables most closely related to the value of dairy products used were identified by the regression procedure and were selected for detailed analysis.

Selected variables included classification by race, and family life cycle, social class, per capita income, and orientation or integration scores. Race and family life cycle variables designated to which race or family structure class an observation belonged and accounted for differences among classes in the regression analysis. The race and family cycle variables were:

X_1 = Race

X_2 = Childless couple married less than 10 years

X_3 = Expanding family, youngest child less than 6 years of age, no child over 15 years of age

X_4 = Stable family, youngest child more than 5, no child older than 15

X_5 = Contracting family, no child less than 6, at least one child more than 15

X_6 = Post-parental childless, at least one parent in family, no children remaining at home

X_7 = Multiple family household, family includes relatives, but no children

X_8 = Childless couples married more than 10 years

X_9 = Social class

X_{10} = Per capita income

---

[1] Variables were added to the regression equation sequentially. At each step the variable most highly correlated with value of dairy products was selected from the variables remaining after the previous step and added to the equation; i.e., the variable with the highest absolutely valued partial correlation coefficient was added.

X_{11} = Conservative, rational, or impulsive orientation score

X_{12} = Integrative score

The values for X_1 were '1' if the family was classed as white and '-1' if the family was nonwhite. The values of the family life cycle variables X_2 and X_8, inclusive, were '1' whenever the family structure conformed to the specifications given and were '0' otherwise.

Multiple Regression
Analysis for Food Expenditures

The initial regression analysis included 23 independent variables. When these were considered with per capita weekly food expenditures as the dependent variable, six independent variables showed a strong relationship. A stepwise multiple regression analysis was repeated using these six variables with the per capita weekly dollar food expenditures as the dependent variable.

Family life cycle, one of the independent variables, was treated as a dummy variable in the regression analysis adding seven variables to the regression equation instead of one. Discrete variables are usually treated in this manner for a regression analysis. Thus consideration was made of separate effects of each stage of the family life cycle on the dependent variable.

The regression equation which resulted from the second analysis was as follows: $Y = 5.80 + .63X_1 + .04X_2 - 1.33X_3 - .41X_4 - .19X_5 + 1.09X_6 - .04X_7 + .83X_8 + .89X_9 - .38X_{10} + .33X_{11} + .02X_{12}$ where:

X_1 = Race

X_2 = Childless couple married less than 10 years

X_3 = Expanding family

X_4 = Stable family

X_5 = Contracting family

X_6 = Post-parental family

X_7 = Multiple family household

X_8 = Childless couple married more than 10 years

X_9 = Per capita income

X_{10} = Homemaker's economic orientation

X_{11} = Homemaker's planning orientation

X_{12} = Shopping integrative score

Multiple Regression
Analysis of the Value of Whole Milk Utilized

Only two of the 23 behavioral and socioeconomic variables describing the families surveyed had any impact on the differences in per capita value of whole milk used, per capita income and integrative score. The linear regression equation relating the two socioeconomic variables to value of whole milk per capita used was:

$$\nu = .428 + .111X_{10} + .0019X_{12}$$

where ν = per capita value of whole milk used
(dollars/week)

X_{10} = per capita income
(thousand dollars/year)

X_{12} = Integrative score

Number of Dairy Products Used

The number of dairy products used by families in the study was analyzed as one measure of the decision-making process. It was hypothesized that the number of dairy products used would be affected by the socioeconomic characteristics of the family i.e., race, social class, stage of family life cycle and per capita income, and that identifiable patterns of buying behavior could be derived from this relationship. To this end, respondents were asked to indicate their use or non-use of 18 selected dairy products during the week preceding the interview. Further information as to methodology appears in the regional bulletin (5).

MEAN VALUES OF MILK PRODUCTS USED PAST 7 DAYS AT THREE LEVELS OF
ANNUAL FAMILY INCOME, BY FAMILY LIFE CYCLE, SIZE OF FAMILY AND
SHOPPING PRACTICE SCORES, URBAN AREAS OF ALABAMA, 1968-69

Family data and shopping practice scores	Mean values milk products purchased previous 7 days			
	Annual family income level			
	Low income		Middle income	High income
	Nonwhite	White		
	Dol.	*Dol.*	*Dol.*	*Dol.*
Stage in family life cycle				
Young married	.44	.54	.59	.71
Post-parental	.47	.52	.62	.62
Older married	.44	.42	.64	.68
Expanding	1.01	1.04	1.00	1.03
Stable	.59	.90	1.03	1.03
Contracting	.71	.76	.88	.94
Size of family, *no.*				
Two	.41	.57	.66	.64
Three	.74	.95	.79	.82
Four	.57	1.02	.90	.97
Five	.63	.87	1.04	1.08
Six	1.14	1.10	1.26	1.13
Seven	.90	.89	1.39	1.48
Eight	.38	1.11	1.10	1.32
Shopping adaptive score				
Under 31	.36	.85	.98	.84
31-45	.72	.74	.83	.90
46-60	.58	.81	.88	.97
61 and over	.68	.71	.98	.97
Shopping integrative score				
Under 31	1.34	1.42	.76	1.33
31-45	.60	.86	.88	.94
46-60	.59	.71	.87	.96
61 and over	.91	.81	.98	.95
Shopping satisfaction score				
Under 31	.84	1.25	.82	1.12
31-45	.54	.78	.92	.96
46-60	.64	.82	.85	.94
61 and over	.86	.60	.92	.94
No. families	123	93	323	395

LITERATURE CITED

(1) HAMMETT, RUTH A. AND J. H. BLACKSTONE. 1964. Alabama Urban Homemakers and What They Know About, How They Use, and What They Think About Milk Products. Auburn University (Ala.) Agr. Exp. Sta. Bull. 352.

(2) HAMMETT, RUTH A. AND J. H. BLACKSTONE. 1965. Response of Urban Homemakers to Mailed Advertising. Auburn University (Ala.) Agr. Exp. Sta. Bull. 359.

(3) HAMMETT, RUTH A. 1971. Use of Dairy Products by Alabama Urban Families 1954, 1958, 1968. Auburn University (Ala.) Agr. Exp. Sta. Bull. 415.

(4) HAMMETT, RUTH A. 1971. Role of Income and Food Cost in Milk Product Use by Alabama Urban Families, 1968. Auburn University (Ala.) Agr. Exp. Sta. Bull. 423.

(5) STUBBS, ALICE C., MILDRED S. VAN DE MARK, DENNIS R. KEFFE AND JOHN S. LYTLE, principal authors. 1972. Relationships Between Food Purchasing Behavior and the Behavioral Socioeconomic Characteristics of Families. So. Coop. Series Bull. In Press.

AGRICULTURAL EXPERIMENT STATION SYSTEM OF ALABAMA'S LAND-GRANT UNIVERSITY

With an agricultural research unit in every major soil area, Auburn University serves the needs of field crop, livestock, forestry, and horticultural producers in each region in Alabama. Every citizen of the State has a stake in this research program, since any advantage from new and more economical ways of producing and handling farm products directly benefits the consuming public.
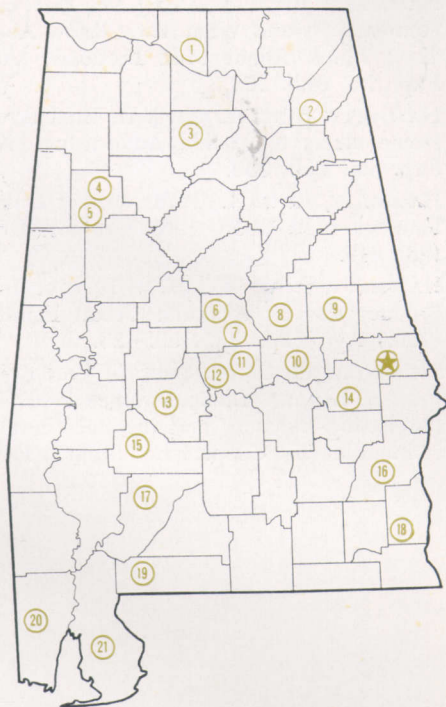
Research Unit Identification

⭐ Main Agricultural Experiment Station, Auburn.

1. Tennessee Valley Substation, Belle Mina.
2. Sand Mountain Substation, Crossville.
3. North Alabama Horticulture Substation, Cullman.
4. Upper Coastal Plain Substation, Winfield.
5. Forestry Unit, Fayette County.
6. Thorsby Foundation Seed Stocks Farm, Thorsby.
7. Chilton Area Horticulture Substation, Clanton.
8. Forestry Unit, Coosa County.
9. Piedmont Substation, Camp Hill.
10. Plant Breeding Unit, Tallassee.
11. Forestry Unit, Autauga County.
12. Prattville Experiment Field, Prattville.
13. Black Belt Substation, Marion Junction.
14. Tuskegee Experiment Field, Tuskegee.
15. Lower Coastal Plain Substation, Camden.
16. Forestry Unit, Barbour County.
17. Monroeville Experiment Field, Monroeville.
18. Wiregrass Substation, Headland.
19. Brewton Experiment Field, Brewton.
20. Ornamental Horticulture Field Station, Spring Hill.
21. Gulf Coast Substation, Fairhope.