To the Graduate Council:

I am submitting herewith a dissertation written by Alice Elaine Calkins entitled "Conforming and Nonconforming Food-Related Behavior, Values, and Sociodemographic Characteristics of Young Adults." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Home Economics.

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We have read this dissertation
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CONFORMING AND NONCONFORMING FOOD-RELATED BEHAVIOR, VALUES, AND SOCIODEMOGRAPHIC CHARACTERISTICS OF YOUNG ADULTS

A Dissertation

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ABSTRACT

Young adults who responded to a short survey about food habits were divided into two groups, conformists and nonconformists, on the basis of their reported consumption of selected foods and food groups. Nonconformists were defined as those who avoided culturally accepted foods and/or preferred foods considered natural, organic, or health foods. Data were collected on the sociodemographic characteristics, food and nutrition attitudes/beliefs, food-related attitudes, nutrition knowledge, value systems, food preferences, time and money allocations, food consumption patterns, and perceived well-being of 84 conformists and 75 nonconformists.

Univariate and multivariate analyses of variance and chi-square analyses, with conformance group and gender as the independent variables, were used to determine differences among the groups. Nonconformists were older, had completed more years of education, worked more hours per week, and had higher incomes than conformists. More nonconformists than conformists reported non-Christian religious orientations and had spent their childhood years outside the Southeastern states.

Differences between conformance groups were found in food acceptance, food and nutrition attitudes/beliefs, food-related attitudes and food preferences, nutrition knowledge, perceived nutritional adequacy of the diet, time and money allocations, and instrumental value systems. Foods avoided by nonconformists included meats, refined foods, and sweetened foods. Nonconformists ate more fruits and vegetables, whole grain products, and legumes than did conformists. Nonconformists believed in health foods; distrusted food processing, additives, and synthetic

vitamins; and recognized weight control misconceptions more than conformists did. Nonconformists tended to rate foods they avoided as less healthful/nutritious and less preferred/accepted than conformists rated those foods. Nutrition knowledge of both groups was low; nonconformists received slightly higher scores than conformists. Nonconformists rated their diets as more adequate nutritionally than conformists rated theirs. Nonconformists reported having changed their food consumption patterns more since childhood than conformists did, decreasing use of foods they avoided and increasing use of foods they regarded as more healthful/nutritious.

Nonconformists reported spending a larger proportion of their income on housing and on medical, dental, and optical expenses than conformists reported. Nonconformists used more time for work or professional activities and for food preparation, shopping, and cleaning than did conformists. Instrumental value systems differed in that nonconformists ranked the values broadminded, imaginative, independent, and intellectual higher than did conformists.

Men and women were different in use of time and money, recognition of weight control misconceptions, instrumental values, food preferences, and food acceptance. Men used more beef, nuts and seeds, and regular soft drinks than did women. Women used more low-calorie soft drinks than did men.

Because of the differences in value systems, food and nutrition attitudes/beliefs, and food-related attitudes, different educational approaches should be appropriate for each group. Causes of changes in food consumption patterns between childhood and adulthood remain to be determined.

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CHAPTER I

INTRODUCTION

The ultimate goal of food and nutrition education programs is to influence the selection of foods that will provide adequate levels of all nutrients whether a traditional or a nontraditional diet is chosen. Consumption of an adequate diet will contribute to optimal physiological and psychological well-being.

Effective food and nutrition education programs must be relevant to the individual's frame of reference, which has been defined as the mutual interaction of environmental, biological, and personal factors. Personal factors include individual needs for a stabilizing life experience, ego protection, and control over one's destiny (Schafer & Yetley, 1975). Because food-related behavior is associated closely with emotional well-being, attacks on food-related behavior as are common in many food and nutrition education programs may alienate the recipient of the program (Erhard, 1971; McKenzie, 1967).

Paradoxically, individuals adopting dietary patterns that may be hazardous to health (such as extreme vegetarian regimes) may be more concerned about good health than are individuals following culturally accepted, though not necessarily nutritionally adequate, food consumption patterns (Dwyer, Kandel, Mayer, & Mayer, 1974; Dwyer, Mayer, Dowd, Kandel, & Mayer, 1974; Dwyer, Mayer, Kandel, & Mayer, 1973; Erhard, 1971, 1974; Sims, 1978b). Researchers who have focused on sociocultural factors or on the foods and nutrition attitude and knowledge paradigm have failed to give nutrition educators the information needed to mediate

effectively in the food patterns of young adults. There is evidence (Dwyer, Kandel, Mayer, & Mayer, 1974; Dwyer, Mayer, Dowd, Kandel, & Mayer, 1974; Dwyer et al., 1973; Erhard, 1974; Sims, 1978b) that the value systems of young adults may be related to their dietary patterns.

Conceptual Framework

There are many perceptions of the organization of the influences on the food consumption of individuals. The task of determining which variables actually affect food selection and consumption (food acceptance) is a complex one. In investigating this question, an interdisciplinary approach using concepts drawn from food science and nutrition, sociology, psychology, and marketing is more effective than disciplinary approaches.

This study was based on the conceptual model presented in Figure 1. Adapted from Penfield and Snell (1977), this model includes more factors than most models presented in the literature. In the model are combined the influences on food selection, consumption, and nutrient intake presented in discussions and models by Bayton (1966, 1977); Dickens (1965); Lund and Burk (1969); Sims, Paolucci, and Morris (1972); Sims and Morris (1974); Steelman (1976); and Yetley (1974).

A number of investigators have shown that education, income, social class, attitudes and beliefs about nutrition and food, and knowledge about nutrition are related to nutrient intake (Eppright, Fox, Fryer, Lamkin, & Vivian, 1970; Hinton, Eppright, Chadderdon, & Wolins, 1963; Sims, 1978a, 1978b; Yetley, 1974). For purposes of this study, it is assumed that these factors do not affect nutrient intake directly but are part of the complex system depicted in Figure 1.

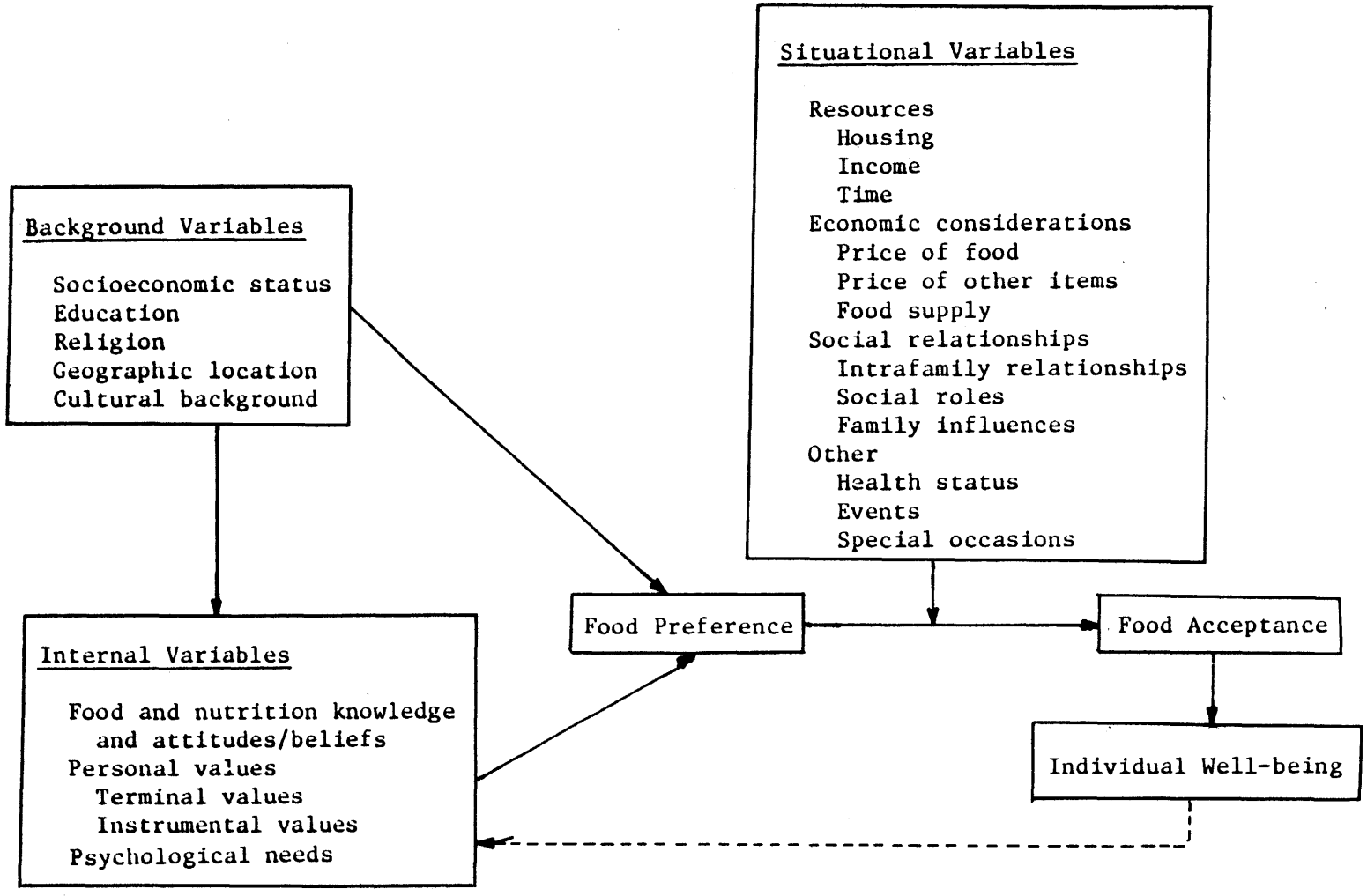


Figure 1. Conceptual model depicting variables influencing the translation of food preference into food acceptance.

Background variables include those influences on the availability of food to the young child. Early food preferences are based on familiarity with foods (Lewin, 1943). Background variables also include those cultural, societal, political, and familial influences that affect the intellectual, emotional, and moral development of the individual. As the individual matures, belief systems, value systems, and psychological needs develop which influence food preference.

The internal variables are the value systems, food and nutrition belief systems, psychological needs, and related components of the individual's frame of reference. The food and nutrition belief systems include knowledge and attitudes/beliefs about foods and nutrition.

Thus, the food preferences of the individual are those food choices which would be made if there were no further constraints on those choices. Given his/her background, value system, psychological needs, and perceptions about food, the individual wants, likes, desires, and prefers a set of foods with corresponding preferred frequencies and combinations, that is, a dietary pattern.

Determining the actual preference pattern of an individual is difficult because actual food consumption, or food acceptance, is affected by numerous constraints. Intervening variables such as resources, economic considerations, social relationships, changes in health status, and other situational variables influence the translation of food preferences into food acceptance.

The foods that are consumed have an effect on individual psychological and social, as well as physical, well-being. The state of well-being of the individual in turn affects both the individual's perception of the world, especially of food, and various situational variables.

Definitions

Food-related behavior is defined as any action related to the procuring, selecting, manipulating, eating, and disposing of food, including thinking about foods and nutrition and communicating attitudes and beliefs regarding foods and nutrition (Lowenberg, 1972; Lowenberg et al., 1979; NRC, 1945). Of specific concern in this context are food preferences and food acceptance. In this study, food preference was defined as the pattern of food choices an individual would make if there were no constraints other than internal and background variables on those choices. Food acceptance was defined as the pattern of foods actually selected and consumed by that individual. This includes the types, frequencies, and amounts of foods consumed.

In this study, attitudes/beliefs were defined as opinions or inclinations about objects or ideas held by individuals. Such opinions include affective and cognitive components and may have positive, negative, or neutral dimensions. In this context, food and nutrition attitudes/beliefs include opinions and convictions abut foods, food groups, and/or food and nutrition concepts. Food and nutrition knowledge was defined as cognitive awareness of information and principles that are considered valid by the community of food and nutrition scientists and practitioners.

Behavior is influenced by the value system of the individual. A value is the belief that a certain type of behavior (instrumental values) or goal (terminal values) is preferable to another behavior or goal. An organization of beliefs regarding preferred behaviors and goals in a hierarchy of relative importance comprises a value system (Rokeach, 1973).

Within a culture, especially when the food supply is abundant and varied, patterns of food preference and food acceptance may be very diverse yet remain acceptable. In this study a conformist was defined as an individual whose food-related behavior was considered traditional in that culturally accepted foods and classes of foods were not excluded from the diet for reasons that are not accepted culturally. Therefore, a nonconformist was an individual who relied solely on one kind of food for nourishment and/or excluded culturally accepted foods or classes of foods from the diet for perceived health, ecological, safety, ethical, philosophical, religious, political, aesthetic, and/or metaphysical reasons.

Within the American culture, vegetarians, health food users, and natural and/or organic foods users are considered to be examples of nonconformists. Vegetarianism is the practice of avoiding flesh foods in the diet (lacto-ovo-vegetarianism) extended to avoidance of all animal products by some people (veganism). Health foods are defined by an individual or group in the context of a belief system and may include "natural" or "organic" foods, conventional foods subjected to less processing than usual, less conventional foods thought to have health-giving properties (Amer. Acad. Ped., 1977), dietary supplements, and/or manufactured foods thought to be more healthful than the conventional foods resembled. Organic foods (more properly termed organically grown foods) are plant products grown in soil enriched with humus, compost, and/or animal manure and on which no chemical pesticides, herbicides, or inorganic fertilizers have been used (IFT Expert Panel, 1974). The term may refer also to meat and/or dairy products from animals fed

"natural" foods and not treated with hormones or antibiotics. Natural foods are defined as animal or plant foods which have been altered as little as possible with few, if any, additives introduced during processing (Amer. Acad. Ped., 1977).

Rationale

The number of people following alternative food consumption patterns appears to be increasing in the United States. This change may be reflective of changes in society. Cultural shifts in food preferences may be occurring or a parallel cultural pattern may be developing. Related to the question regarding changing food consumption patterns is that of how food-related behavior is learned. Known influences include the formal nutrition education process and the less formal child and adult socialization processes. Because food consumption patterns are linked to physiological and psychological well-being, it is important to understand food preference and other food-related behavior, how food-related behavior is acquired, and what variables influence the translation of food preference into food acceptance.

Assumptions

The following assumptions were made as a basis for this study:

1. Culturally accepted food consumption patterns exist in the United States and deviations from these norms can be defined.

2. The relationships among variables associated with food-related behavior are complex. Social, cultural, political, and familial variables influence personal values and food and nutrition beliefs. All of these variables influence food preference.

3. Food preference is not equivalent to food acceptance. Situational variables intervene to affect the translation of food preference into food acceptance.

4. Food and nutrition education programs can be effective. Understanding of the variables influencing food-related behavior will enhance the effectiveness of such educational programs.

5. The study of food acceptance and its effect on individual well-being will not provide enough information to mediate changes in food consumption effectively. Information about the variables influencing food preference and the translation of food preference into food acceptance are necessary also.

Statement of the Problem

In view of the need for an integrated approach to the study of the food-related behavior of young adults, a study of the value systems, sociodemographic characteristics, food and nutrition knowledge and attitudes/beliefs, food preferences, food acceptance, and perceived well-being was proposed. Such information is needed by nutrition educators to enhance the effectiveness of their communication with young adults.

The basic objective of the study was to compare the food-related behavior of young adults who conform to culturally accepted food-related behavior (conformists) with that of young adults who do not conform to culturally accepted food-related behavior (nonconformists). More specifically, the objective of the study was to compare the values, sociodemographic characteristics, knowledge about food and nutrition, and the food and nutrition attitudes/beliefs of the two groups.

CHAPTER II

REVIEW OF THE LITERATURE

Theoretical approaches to the study of food-related behavior have influenced the interpretation of data and the application of research information to food and nutrition education efforts. Some theoretical orientations such as social-psychological and value system approaches to the understanding of behavior show more promise than others for effecting change in the food-related behavior of individuals. Recent methodological developments in the collection and analysis of data about food-related behavior also can provide information that will facilitate attempts to change food-related behavior when such changes would improve individual well-being.

Theoretical Approaches to the Study of Food-Related Behavior

Socio-Cultural Viewpoints

The socialization process has been credited with a major role in the transmission of food-related behavior. From the family, peer group, and community institutions, individuals learn culturally accepted food consumption patterns and attitudes. Food choices are made within the framework of cultural acceptability (de Garine, 1972; Lowenberg, 1974; Lowenberg, Todhunter, Wilson, Savage, & Lubawski, 1979).

As early as 1943, Lewin suggested that people learned to like the foods that are available to them. Food becomes available to the individual through various channels. The "gatekeeper" controls the movement

of foods through the channels to the table, thereby teaching what items are considered appropriate foods for consumption. Other household members influence the decision-making process of the "gatekeeper" and the food preferences of family members (Lewin, 1943; Lowenberg, 1974; Schafer, 1978).

The anthropological viewpoint involves consideration of the ways that people have found to meet physical and psychological needs. Inherent in the anthropological viewpoint are the assumptions that cultural mores are learned; that all cultures are changing constantly, though gradually; that each culture has a value system, which dictates behavior; and that each culture is a logically integrated and functioning whole (de Garine, 1972; Gifft, Washbon, & Harrison, 1972).

Given these assumptions concerning all cultures, foodways are defined within each culture and are interrelated with other culturally defined behaviors (Mead, 1943). Foodways may be defined as the ways people obtain, select, manipulate, and eat food and dispose of food waste (Lowenberg et al., 1979; NRC, 1945). Similarities exist among cultures in the general functions and forms of behavior, but specific behavior patterns are diverse. Similarities in food-related behavior include acceptance of specific items as food, ranging from high acceptance to total rejection; the inclination to manipulate food materials before consumption; the existence of patterns of appropriateness in manner, time, and setting of food consumption; and the significance attached to eating with others. Diversities are observed in the specific patterns within each culture (de Garine, 1972; Lowenberg, 1974; Lowenberg et al., 1979; Schutz, Rucker, & Russell, 1975; Steelman, 1976; Todhunter, 1973).

Social-Psychological Viewpoints

Socio-cultural models frequently are used to explain broad overall patterns of food consumption and the circumstances surrounding food consumption. On the individual level, further explanation is necessary to explain the diversity of food patterns, especially in cultures where the food supply is abundant and varied.

Food may be used in many ways to meet psychological needs of individuals. Food functions in interpersonal relationships as expression and enhancement of the warmth of the relationship. The serving of food as an expression of hospitality and the giving of food for holiday and funeral occasions are examples of social uses of food to meet psychological needs. Food is used to express status, to promote a feeling of security, to relieve tension, to express creativity, and to influence the behavior of others (Lowenberg et al., 1979). Some foods may have sumbolic, superstitious, or religious meanings (de Garine, 1972; Lowenberg et al., 1979; Todhunter, 1973).

Most people use food to meet psychological and physiological needs in culturally accepted ways. However, some individuals reject the specific patterns learned from parents and community and adopt alternative dietary patterns. Terminology for referring to these alternative dietary patterns varies depending on the perspective and biases of the writer. Schafer and Yetley (1975) used the term "food faddism" to refer to "an unusual pattern of food behavior enthusiastically adopted by its adherents" (p. 129) and characterized by beliefs that specific foods are curative or health-threatening and/or that "natural" foods are preferable. Todhunter (1973) defined a faddist as "one who follows a particular food practice with excessive zeal" (p. 305) and a cult as

"a system for promotion of health or prevention and cure of disease based on dogma, tenets, or principles" (p. 305). The term "food zealot" was proposed by Frankle and Heussenstamm (1974). Wolff (1973) coined the term "health foodist." Users of health foods were called "food cultists" by New and Priest (1967). Further definition of food faddism includes 3 basic types of food faddism: (a) particular foods are credited with curative properties for specific diseases, (b) certain foods are believed to contain harmful constituents, and (c) "natural" foods are emphasized ("Food Faddism," 1973).

Olson (1958) pointed out that food has more emotional than intellectual value to food faddists. Schafer and Yetley (1975) identified 2 sets of individual needs that determine how the individual processes information about food. These sets include patterning needs and self-needs. Patterning needs are observed when people adopt alternative dietary patterns because they need structure and stability (as defined by the individual) in their world. To maintain the stability of their world, individuals will accept, interpret, and evaluate information selectively, rejecting or reinterpreting information that does not agree with their frame of reference. The frame of reference is composed of internal and external factors. Internal factors, or those originating in the individual, include personal values, beliefs, attitudes, and needs (psychological and physiological). External factors include the media and the social environment. Groups and organizations constituting the authority for food information serve as a reference group for the individual. The acceptability of this reference group is related to the psychological needs of the individual.

The second set of needs outlined by Schafer and Yetley (1975) is related to the self-concept of the individual. Individuals select foods that allow expression of their personal values and self-concept. Foods are selected to fit the definition of the self that the individual wishes to present to the world. Fad diets also may be adopted to maintain control of one's own life and to maintain a sense of self-worth.

In discussing the difficulties inherent in communicating nutrition information, Bayton (1966) proposed that consumers possess a set of parameters that influence their food preference and acceptance. These parameters form 7 categories as shown in Table 1. Individuals can be profiled according to the parameters which they consider most important in selecting and rejecting foods for consumption. Bayton suggested that food faddists may be concerned almost exclusively with the nutrition and health apprehension parameters.

Specific foods also can be profiled using the parameters. Some foods may be characterized primarily by a cluster of closely related parameters, such as nutrition concerns. Other foods may have profiles incorporating more diverse combinations of parameters, such as the taste-aroma-appearance complex, price, and nutrition considerations. The interaction of the product profile with the consumer profile will influence selection or rejection of the product by the consumer. However, Bayton pointed out that "ideas, attitudes, or beliefs are not necessarily indicators of action" (p. 17). Research is necessary to determine which ideas or beliefs about food constitute "discriminating influences" on the acceptance of foods (Bayton, 1966).

An approach to consumer theory proposed by Lancaster (1966) is similar to the concept suggested by Bayton. Lancaster suggested that

Table 1

Parameters for Food Selection

Category		Parameter	
I.	Nutrition	1.	Body growth needs
		2.	General health needs
		3.	Vitality and energy needs
		4.	Satiety
II.	Economic	5.	Price per se
		6.	Value
III.	Sensory-aesthetic	7.	Taste-aroma-appearance complex
		8.	Refreshment value
IV.	Personableness	9.	General personableness
		10.	Gender personableness
V.	Appropriateness	11.	Age-group appropriateness
		12.	Status-group appropriateness
		13.	Social-setting appropriateness
VI.	Convenience	14.	Convenience in purchasing, e.g., availability
		15.	Convenience in storing
		16.	Convenience in preparation
		17.	Convenience in serving
		18.	Convenience in consumption
V.	Health apprehension	19.	Weight apprehension
		20.	Heart disease apprehension
		21.	Contamination apprehension
		22.	Allergies

Note. Adapted from Bayton (1966).

any product or combination of products possesses a set of characteristics. These characteristics, not the product, give rise to the utility of the product to the consumer. Interaction of the profile of characteristics of a given product with the pattern of importance given those characteristics by a consumer determines whether the product will be selected or rejected in favor of a similar product with a slightly different profile. In the theory proposed by Lancaster, price changes and similar economic considerations are important only if they change the profile of a product out of proportion to changes in profiles of other products in the same group.

Individual Value System Viewpoints

Schafer and Yetley (1975) alluded to the influence of individual value systems on food-related behavior. According to their model, individuals adopt behavior and attitudes which are consistent with their value systems and self-concepts. Values were not defined in this context.

Kluckholn (1951) defined values as "a conception . . . of the desirable which influences the selection from available modes, means, and ends of action" (p. 395). A value orientation was defined as "a generalized and organized conception . . . of the desirable and non-desirable as they relate to man-environment and interhuman relations" (p. 411) which influences behavior. Rokeach (1973) defined values more precisely as beliefs concerning desirable modes of conduct (instrumental values) or desirable end states of existence (terminal values). A value system was defined by Rokeach as "an enduring organization of beliefs concerning preferable modes of conduct or end states of existence along a continuum of relative importance" (p. 5). Values as conceptualized by

Rokeach are not related to specific areas of behavior, such as social or cultural norms, but specific behaviors and attitudes are seen as consequences of the value system. Values are seen as standards by which conduct is guided, evaluated, and interpreted. In Rokeach's view, values transcend specific behaviors. Therefore, behaviors should not be used to define values.

Instrumental and terminal values used by Rokeach in the Value Survey are not related directly to health and nutrition concerns. Such concerns may be regarded as having facilitating or mediating roles in that good nutrition promotes good health which in turn enhances an individual's ability to act in a preferred way (instrumental values) or to attain and enjoy a preferred end state of existence (terminal values).

In the few studies of food-related behavior and values which exist, values have been defined in terms of behavior. Sims (1978b) studied the food-related value orientations of vegetarians and nonvegetarians. Values were defined in relation to food consumption choices. Vegetarians were different from nonvegetarians in their value orientations toward food in the areas of ethics, health, economics, familism, religion, education, and social-psychological uses of food.

Steelman (1976) applied the value configurations designated by Williams (1970) as characterizing institutions in American society in an investigation of attitudes toward food in 2 Louisiana communities. She found that attitudes toward food varied by subculture and that the apparent patterns in these differences could be explained by variations in subcultural value systems.

The food-related values of low-income mothers were studied by Suter and Barbour (1975). An interview schedule was used to identify

the statements most representative of each value. A forced-choice, paired-value method then was used to verify the results. Family life and health values were given high positions in the value hierarchies of these women.

Values defined in relation to food-related behavior have been shown to be related to food consumption and attitudes toward food. Food-related values have been related to subcultural groups, to socioeconomic status, and to dietary patterns. However, the relationship between food-related behavior and value systems as defined by Rokeach and Kluckholn has not been reported.

Recent Methodological Approaches to the Study of Food-Related Behavior

Many of the approaches to the study of food habits, such as dietary surveys, recall data, and intake records, have been focused on the patterns of food intake and the nutritional implications of those various patterns. Much of the literature about changing food-related behavior has reflected an emphasis on the necessity of understanding socio-cultural influences on behavior when attempting to communicate nutrition information. A few researchers have attempted to identify the factors related to individual perceptions of food and the implications of those perceptions for food preference and acceptance. Such information is of value in understanding and changing food-related behavior within a culture or subculture.

Schutz et al. (1975) stated that most food and food-use classifications have not been based on the way(s) food users classify foods. Using the concept of appropriateness for use as the basis for rating

foods, they collected data from 200 female respondents in 4 regions of the United States. The women rated 56 foods according to appropriateness for 48 food uses. Factor analyses for the foods resulted in identification of 5 factors: high-calorie treats, specialty meal items, common meal items, refreshing healthy foods, and inexpensive filling foods. Four food-use factors were identified. They were termed utilitarian, casual, satiating, and social factors. In a study of hospital patients and employees, Schutz, Rucker, and Hunt (1972) demonstrated that some foods may be rejected on the basis of inappropriateness for a situation rather than because the food item is disliked.

Fewster, Bostian, and Powers (1973) investigated the meanings associated with foods. They identified 12 categories of meanings attached to foods and developed terms to reflect each category of meaning. Using the semantic differential technique (Osgood, Suci, & Tannenbaum, 1957) with 38 scales, Fewster et al. collected data on 7 foods and food groups from respondents representing 2 income groups. Factor analyses of the judgments of all respondents led to identification of 4 major factors: evaluation, communication, nutrition, and health apprehension. Differences were found in the connotations of different foods for the same response group and of the same foods for different response groups. Differences also were found between food groups and single foods selected from food groups.

Sims and her associate related nutrition knowledge, attitudes, and beliefs to the nutrient intake and dietary practices of lactating women (Sims, 1978a), the elderly (Grotkowski & Sims, 1978), and vegetarians and nonvegetarians (Sims, 1978b). Nutrition knowledge was assessed with an instrument containing items drawn from several studies

and tested with several groups. Attitudes and beliefs about nutrition were evaluated with Likert-type scales developed by Sims. Categories of attitude and belief statements included (a) importance of nutrition, (b) weight control misconceptions, (c) belief in dietary supplements, (d) distrust of synthetic vitamins, (e) distrust of food processing and additives, and (f) belief in health foods.

For the elderly, attitudes and beliefs were found to be intervening variables between the independent variables of nutrition knowledge and socioeconomic status and the dependent variables of dietary intake and purchase of vitamin supplements (Grotkowski & Sims, 1978). In her study on lactating mothers, Sims (1978a) found that nutrition knowledge became the intervening variable between attitudes and behavior. This result was consistent with earlier work with mothers of preschool children (Sims, 1976). Although vegetarians and nonvegetarians were not different in their knowledge of the four food groups, vegetarians were different from nonvegetarians in food-related value orientations and in specific nutrition attitudes and beliefs (Sims, 1978b). The results of these studies may indicate that internal variables affecting food-related behavior vary among segments of the population and that factors other than internal variables influence the translation of food preferences into food acceptance.

Bayton (1977), like Schutz et al. (1975), stated that prediction of consumer demand for food items must be based on an understanding of how consumers view food. He proposed use of multidimensional scaling to investigate how people mentally group or classify foods. Research on food demand also should include recognition of the fact that people vary in their approach to food. Each "psychological segment" of the

population has a unique set of "needs, expectations, and perceptions" (p. 31) about food. Determination of consumer profiles in relation to food might facilitate nutrition education and marketing strategies (Bayton, 1966, 1977).

Food-Related Behavior of Young Adults

Recent studies of the food-related behavior of young adults have included analyses of the relationships between food and nutrition knowledge, attitudes, and beliefs and food-related behavior; observations and surveys of young adults practicing alternative dietary patterns such as vegetarianism; and determination of the nutrient intake and status of college students and young vegetarians.

Food and Nutrition Knowledge, Attitudes, and Beliefs

Because nutrition knowledge and attitudes have been shown to be related to nutrient intake (Eppright et al., 1970; Grotkowski & Sims, 1978; Sims, 1976, 1978a, 1978b), nutrition educators hope that nutrition education will change food-related behavior to promote improved nutrient intake. Therefore, several investigators have studied these relationships among young adults.

Schwartz (1975) investigated the nutrition knowledge, attitudes, and practices of women who had graduated from selected Ohio high schools 4 years earlier. The graduates had had the opportunity to participate in a revised home economics curriculum. Nutrition education in high school home economics courses was not related to scores in nutrition knowledge, attitudes, or practices. Because correlation coefficients between nutrition knowledge and attitudes and between nutrition attitudes

and practices were significant and the correlation coefficient between nutrition knowledge and practices was not significant, the author concluded that attitudes acted as intervening variables between knowledge and practices.

There is some evidence that interest in food and nutrition topics may be limited among some college students (Werner, 1976). However, because of the relationships among performance, food intake, body weight, and nutrient status, athletes may be more concerned about maintaining optimum nutrition. In a study of women athletes at a midwestern university, Werblow, Fox, and Henneman (1978) found that those who had received nutrition education in high school or college had higher nutrition knowledge scores and more favorable attitudes toward nutrition than those who had not. Most of the women were concerned about body weight. Those with nutrition education were more likely to consume similar foods whether on general, training, pre-event, or weight control diets than were the women without nutrition education. Women on weight control diets tended to increase intake of vitamin and mineral supplements. In nutrition knowledge testing, the athletes tended to answer questions about carbohydrate and protein foods, organic foods, and synthetic vs. natural nutrients incorrectly.

Students in a basic nutrition course and physical education majors were tested for nutrition knowledge and asked to make recommendations for athletic diets (Cho & Fryer, 1974a, 1974b). The recommendations made by physical education majors reflected a serious lack of basic nutrition knowledge. Although nutrition students had higher scores on the nutrition knowledge test than the physical education majors, they also made some recommendations that lacked scientific validity. Both

groups made recommendations emphasizing the use of dietary supplements (Cho & Fryer, 1978b). Main sources of nutrition information included college and high school courses, parents, and coaches. Neither group relied on health-care personnel, print media, or 4-H materials and leaders for nutrition information. Students whose primary source of nutrition information was college courses had higher scores on the nutrition knowledge test than students who gave coaches or parents as their primary source (Cho & Fryer, 1974a).

Alternative Dietary Patterns

Rejection of the customs of their families and childhood communities by some American young adults may be manifested in the adoption of alternative living patterns which include "nonconformist" food-related behavior (New & Priest, 1967; Wolff, 1973). For example, Anderson and Standal (1975) found that 94 out of 140 health food users in Hawaii felt that their food beliefs and behavior differed from those of their parents. Parents were believed to prefer processed foods; to choose foods for taste rather than nutrient value; and not to believe in health foods, good nutrition, or vegetarian diets. Wolff (1973) observed that dissatisfaction with American culture coupled with the recognition of alternative life styles contributed to rejection of traditional food-related behavior. Concern for the environment (Glyer, 1972) and for the well-being of humanity (Erhard, 1973) may influence the adoption of an alternative foodway such as vegetarianism or emphasis on "natural" or "organic" foods.

Vegetarianism can be defined more precisely than other nonconformist food-related behavior patterns. In addition, many of the

vegetarian diets adopted in recent years have been extreme, leading to nutritional problems and widespread publicity. Therefore, it is not surprising that most of the literature on nonconformist food-related behavior among young adults is about vegetarians. During the last 15 years, vegetarianism has been associated with the natural foods movement among young Americans. Frequently, individual choice of vegetarianism has been associated with affiliation with religious or philosophical groups. Food attitudes and beliefs often are essential components of the belief systems of these groups.

Several health-care professionals have described the attitudes and behavior of these groups and individuals. Erhard (1973, 1974) discussed the influence of Eastern religions and the ethical, philosophical, and aesthetic reasoning that has led to rejection of traditional life-style and dietary patterns. Others have noted that many young adults adopt alternative dietary patterns to meet spiritual and emotional needs, which may be expressed as perceived physical needs. Frequently, non-traditional life-styles, such as communal living, have been associated with alternative dietary patterns (Frankle & Heussenstamm, 1974; Johnston, 1973; New & Priest, 1974; Shimoda, 1973).

Many authors have published guidelines and recommendations about vegetarian diets for the benefit of health-care professionals, nutrition educators and counselors, college personnel, and food service managers serving these young people. The nutritional and health implications of vegetarian diets have been documented in some detail (Amer. Acad. Ped., 1977; Jenkins, 1975; NRC, 1974; Raper & Hill, 1974; Register & Sonnenberg, 1973; Vyhmeister, Register, & Sonnenberg, 1977). Suggestions for food service managers have included ideas for recipes and menus and

suggestions for promotion and presentation of vegetarian and natural foods alternatives (Boss, 1976; Guley, 1977; "The Vegans," 1976; "Vegetarian Fare," 1977; Williams, 1975; Zolber, 1975). Others (Crosby, 1975; Erhard, 1971; Frankle, McGregor, Wylie, & McCann, 1973; Smith, 1975) have given recommendations for professionals counseling dietary nonconformists.

Research on the food habits, attitudes, values, and physical well-being of young vegetarians is limited. Dwyer and her associates found that young vegetarians in Boston could be grouped and differentiated by the extensiveness of their food avoidances and by their affiliation with groups advocating vegetarian diets (Dwyer, Kandel, Mayer, & Mayer, 1974; Dwyer, Mayer, Dowd, Kandel, & Mayer, 1974; Dwyer et al., 1973). Although health was the most frequently reported reason for this food-related behavior, members of vegetarian groups were more likely to base their dietary restrictions on metaphysical or quasi-religious convictions than were those who were not members of such groups. Sims (1978b) indicated that vegetarians in Pennsylvania and Indiana had stronger ethical, religious, and health value orientations than non-vegetarians. Vegetarians also tended to distrust food processing and additives.

The diets adopted by vegetarians vary, especially in degree of animal food avoidance (Dwyer, Kandel, Mayer, & Mayer, 1974). Erhard (1971, 1973, 1974) in San Francisco and Frankle and Heussenstamm (1974) in Los Angeles reported similar trends in attitudes and practices. Reasons that have been given for other types of nonconformist food-related behavior include nutrition (Rhee & Stubbs, 1976) and health (Anderson & Standal, 1975; Rhee & Stubbs, 1976). There is evidence

that health food consumers may be more rational in their choice of a dietary pattern than frequently is acknowledged by health-care professionals (Calvert & Calvert, 1975; Erhard, 1971; Glyer, 1972).

Nutrient Status

Evaluations of the nutritional status of college students were conducted in Virginia (Driskell, Keith, & Tangney, 1979), New York (Jakobovits, Halstead, Kelley, Roe, & Young, 1977), and Michigan and Nebraska (Chilson & Knickrehm, 1973). For men, mean intake of all nutrients studied approximated the Recommended Dietary Allowances (Chilson & Knickrehm, 1973; Driskell et al., 1979). The mean dietary intake of iron for women was less than the Recommended Dietary Allowance; intake of other nutrients was adequate (Chilson & Knickrehm, 1973; Driskell et al., 1979; Jakobovits et al., 1977). About one-third of the women studied in New York took some form of nutrient supplement, usually a multiple vitamin with added iron. When iron intake from nutrient supplements was included, mean intake of iron for women was only slightly less than the recommended level (Jakobovits et al., 1977). Although iron intakes were lower than the recommended levels, less than 4% of the women studied in Virginia had low hemoglobin levels (Driskell et al., 1979).

Nutrient adequacy was not related to the amount spent for food or to the type of housing (Jakobovits et al., 1977). Students under a contract system of food service obtained more of their total nutrients from cafeteria meals than students under an a la carte system, but total nutrient intake was adequate for both groups (Chilson & Knickrehm, 1973). Although a large proportion of the students studied in Virginia reported eating a "meal" only once a day, the same students consumed

snacks once or twice a day. Snacking and number of meals were not related to hemoglobin and hematocrit values (Driskell et al., 1979).

There are few evaluations of the nutritional status of nonconformist young adults, but the evidence indicates that nutrient intake is adequate unless the diet is lacking in variety. College students in Michigan and Nebraska who were served a lacto-ovo-vegetarian diet obtained adequate nutrient intake (Chilson & Knickrehm, 1973). Nutrient status of 50 young vegetarians in a New England metropolitan area was reported by Brown and Bergan (1975a, 1975b). None of the subjects were below normal weight. Intakes of energy, calcium, and riboflavin were low. Grains were the main component of the diet. A wide variety of fresh and cooked vegetables, raw and dried fruits, fish, cheese, eggs, nuts, and seeds made important contributions to nutrient intake. The investigators concluded that nutrient needs could be met by consuming larger quantities of foods usually eaten by these individuals.

Summary

Theoretical perspectives on the study of food habits can be viewed as a continuum progressing from broad cultural generalities to specific individual preferences. Influenced by cultural and social factors, individuals adopt value systems that affect behavior, including food preference and acceptance. Recent methodological innovations have the potential for explaining and defining the way(s) individuals view food in relation to themselves and for demonstrating the relationships between value systems and food-related behavior.

Nutrient intake of college students has been shown to be adequate for all nutrients studied, with the exception of iron for women.

Nonconformist dietary patterns adopted by young adults have not affected nutrient intake or status adversely unless the diets have been severely limited.

Only 1 study has been identified in which the food-related behavior, attitudes, knowledge, and value orientations of nonconformists were compared with conformists (Sims, 1978b). Value systems defined as precursors of behavior, rather than defined in terms of behavior, have not been used to predict food-related behavior.

In current studies of individuals following nonconformist dietary patterns, nonconformists have been defined by the stated food preferences of the respondents rather than by actual food consumption patterns. Variations and degrees of nonconformist dietary patterns are reported in the literature. Studies of individuals differentiated on the basis of food consumption patterns may provide information to help explain these variations.

CHAPTER III

METHODOLOGY

Hypothesis

The values, knowledge about nutrition and foods, nutrition and food attitudes/beliefs, use of resources, food preferences, food acceptance, and perceived well-being of conformists will be different from those of nonconformists.

Research Design

The present investigation was an ex post facto study. On the basis of self-reported food-related behavior, individuals who volunteered to participate in the study were assigned to 1 of 2 groups, conformists and nonconformists. They also were identified as male and female. Thus, the research design was a 2-way crossed design (conformance group x gender) with 2 levels of each independent variable. Data were collected on sociodemographic variables; food consumption patterns; perceived well-being; time and money allocation; foods and nutrition knowledge, attitudes and beliefs; food preferences; and value systems.

Sample

Selection

A 1-page preliminary questionnaire (Appendix A-1) on food-related behavior was used to recruit and screen respondents. The preliminary questionnaires were distributed during registration for winter quarter 1979 at The University of Tennessee, Knoxville (UTK). In addition, posters

with questionnaires attached were placed on selected bulletin boards at UTK, Knoxville Business College, and Knoxville College and in local health food stores. Approximately 3500 questionnaires were distributed. Advertisements were placed in the campus newspaper and on additional campus bulletin boards.

Preliminary questionnaires were sent to those who responded to the advertising. Potential respondents completed the short questionnaire, signed the attached consent form, and returned the questionnaires by mail. Completed questionnaires were received from 216 potential respondents. Individuals who were between the ages of 18 and 25 years inclusive who were born in the United States or whose cultural background could be classified as North American and who did not modify their diet for therapeutic reasons (such as diabetes) were accepted as respondents in the study. On the basis of their indication of the frequency of use of certain foods and food groups, the potential respondents were classified as conformists and nonconformists.

Sets of questionnaires were mailed to 194 potential respondents. Usable questionnaires were received from 161 respondents (85% of the sample). Two respondents identified themselves as non-Caucasian. Because the proportion of non-Caucasians was so small, data from these respondents were deleted to achieve ethnic homogeneity of the sample. For most analyses, 159 sets of data were used; exceptions were made when 1 or more respondents omitted an item or a section of the questionnaires.

Description

Within the sample, 84 individuals were identified as conformists and 75 as nonconformists. There were 66 males and 93 females in the

sample. The means and standard deviations for age, years of education, weekly hours of employment, and income during 1978 for the 4 groups are presented in Table 2. Differences among the 4 groups (based on conformity and gender) for continuous descriptive variables were determined by 2-way analyses of variance (see Table 3). The interactions were not significant. Nonconformists were older than conformists, had more years of education, worked more hours per week, and had a higher income. Male respondents were not different from female respondents except for hours of work.

Data on the student status, level of employment, occupation, career goal, marital status, children, religious preference, region of childhood, and use of homegrown vegetables and fruits for each of the 4 groups are reported in Table 4. Chi-square analyses were used to determine whether variations between conformance groups and between genders were significant. Most of the respondents were students, but more conformists than nonconformists were students, $\chi^2(1) = 10.43$, $p < 01$. There were no differences in level of employment or occupation for conformance group or for gender. The occupations of most of the respondents were lower than the professional, technical, and kindred workers classification (U. S. Bureau of the Census, 1976). About a third of the respondents listed "student" as their occupation. There were no differences in career goals between conformance groups. More women than men were planning to enter helping professions, $\chi^2(1) = 19.92$. $p < .001$. Food or health-related career goals were expressed by 23 conformists and 17 nonconformists.

Most of the participants in the study were unmarried and had no children. There were no differences between conformance groups or

Table 2

Means and Standard Deviations for Age, Years of Education, Income, and Weekly Hours of Employment for Male and Female Conformists and Nonconformists

Variable	Conformist		Nonconformist	
	Male (n=38)	Female (n=46)	Male (n=28)	Female (n=47)
Age in years				
Mean	21.2	20.5	22.1	22.2
Standard deviation	2.1	1.8	2.4	1.9
Years of education				
Mean	14.9	14.7	15.3	15.5[a]
Standard deviation	1.4	1.4	1.5	1.3
Weekly hours of work				
Mean	17.4	8.4	19.9	16.8
Standard deviation	17.7	12.6	16.6	16.0
Income in thousands of dollars				
Mean	6.2	4.8[b]	6.7[c]	7.7[d]
Standard deviation	3.9	3.0	4.6	6.9

[a] $n = 46$

[b] $n = 41$

[c] $n = 27$

[d] $n = 44$

Table 3

Summary of Analyses of Variance of Descriptive Variables for Male and Female Conformists and Nonconformists

Variable/Source	F	p <
Age[a]		
Conformance group	18.82	.0001
Gender	.84	.3598
Conformance group x gender	1.44	.2314
Years of education[b]		
Conformance group	7.75	.0060
Gender	.00	.9808
Conformance group x gender	.98	.3235
Weekly hours of work[a]		
Conformance group	4.86	.0296
Gender	6.28	.0132
Conformance group x gender	1.35	.2477
Income[c]		
Conformance group	5.18	.0243
Gender	.10	.7529
Conformance group x gender	2.15	.1449

[a] *df* = 1,155.

[b] *df* = 1,154.

[c] *df* = 1,146.

Table 4

Descriptive Characteristics of Sample

Variable	Conformist		Nonconformist	
	Male	Female	Male	Female
Student				
Yes	35	44	22	35
No	3	2	6	12
Level of employment				
Full-time	8	4	8	12
Part-time	17	14	12	17
None	13	28	8	18
Occupation				
Professional, technical, and kindred workers	8	4	6	12
Other occupations	17	19	13	18
Student (unemployed)	13	23	9	17
Career goal				
Helping professions	9	32	9	24
Other professions	27	12	17	17
Undecided	2	2	2	6
Married				
Yes	5	8	4	8
No	33	38	24	39
Children				
Yes	3	1	3	6
No	35	45	25	41
Religious preference				
Christian	30	41	14	32
Non-Christian	8	5	14	15
Region of childhood residence				
Southeastern states	33	34	10	34
Other areas	5	12	18	13
Use of homegrown vegetables and fruits				
Yes	33	36	22	36
No	5	10	6	11

between genders in marital status or in whether or not they had children. Religious preferences varied between conformists and nonconformists. Most repondents were affiliated with Christian denominations, but a higher proportion of nonconformists than conformists considered themselves aligned with non-Christian philosophies, $\chi^2(1) = 10.96$, $p < .001$. Of the nonconformists identifying themselves as Christians, 1 man and 4 women were Seventh-day Adventists. Most of the conformists (69%) spent their childhood years in Tennessee; more than half of the nonconformists (60%) were from outside the state. The percentage of conformists who spent their childhood years outside the Southeastern states (20%) was smaller than that of nonconformists who had done so (41%), $\chi^2(1) = 8.3$, $p < .01$.

Most of the respondents used some homegrown vegetables and fruits. There were no differences between conformance groups or between genders in use of homegrown vegetables and fruits.

Instrumentation

Development

Preliminary questionnaire. Most investigators of nonconformist food-related behavior have identified nonconformists by requesting individuals (e.g., vegetarians) to identify themselves to the researchers and/or by interviewing groups believed to contain nonconformists (e.g., patrons of health food stores). In 1 study, a nutrition attitude instrument was used to differentiate between "faddists" and "nonfaddists" (Jalso, Burns, & Rivers, 1965). For the present investigation,

conformists and nonconformists were differentiated on the basis of reported frequency of consumption of selected foods and food groups.

From review of the literature, 22 foods and food groups that are promoted or avoided by nonconformists were selected. Approximately 20 known conformists and nonconformists who would not be included in the study were asked to indicate how often they used these foods and food groups. Five options were given, ranging from "seldom or never" to "exclusively." The frequency with which each group marked each option was tabulated. When a food did not appear to discriminate between conformists and nonconformists, it was dropped from the list. Foods deleted from the list were eggs, dairy products, desserts, honey, vegetables, fruits, processed foods, and dietary supplements.

The food frequency section of the preliminary questionnaire was redesigned with 15 foods and food groups and 3 categories of food frequency: never, occasionally, and frequently. Questions about preferred food practices, reasons for food selection or rejection, medical conditions requiring dietary modification, affiliation with groups suggesting or promoting food practices, and sources of meals and food were added, and the questionnaire was retested on essentially the same group. When respondents expressed difficulty in using only 3 categories to indicate food frequency, a fourth ("seldom") was added between "never" and "occasionally" and the scale was tested with 15 students in an upper-division general interest food science class.

In conjunction with development of the food list, a scoring system was developed to weigh the use of each item according to whether that frequency of use of the item was characteristic of conformists or of nonconformists. For example, -3 was used when the frequency of use

appeared to characterize nonconformists, +3 was used when the frequency of use characterized conformists, and 0 was used when the frequency of use did not discriminate between the 2 groups. Intermediate values (±1, ±2) were used when the frequency of use appeared to characterize a group but not as strongly as an absolute value of 3 would indicate.

The scoring system was refined and adapted so that a positive total score would reflect conformist dietary practices and a negative total score reflected nonconformist practices. Thus, one food item alone did not determine nonconformance, because dislike of an item could account for a nonconformist score for that food. Only if a respondent indicated nonconformist tendencies on several items could the score be negative. This reflects the evidence in the literature that nonconformist dietary practices include several patterns of food preference and acceptance (Dwyer et al., 1973; Erhard, 1973, 1974; Glyer, 1972; New & Priest, 1967). In the final preliminary questionnaire, frequency of consumption of each of 15 foods and food groups was indicated on a continuous line labeled "never" and "daily" at the ends of the line and "weekly" in the middle. For scoring purposes the line was divided into 5 equal segments and a mark anywhere within the segment was given the appropriate score. The final scales for obtaining the conformance score are depicted in Figure 2. After review of the instrument by 11 departmental faculty and graduate students and because of the conceptual basis of the instrument, it was concluded that the instrument was valid for differentiating between conformists and nonconformists.

Additional information obtained with the final form of the preliminary questionnaire included gender, age, country of birth,

	Frequency of Use				
	Never	Weekly			Daily
Beef	-3	-1	+1	+2	+3
Pork	-3	+1	+3	+3	+3
Poultry	-3	-1	+1	+2	+3
Fish	-3	-1	+2	+3	+3
Cured meats	-3	-1	+2	+3	+3
Legumes (dry beans and peas)	+1	+1	0	0	-3
White sugar or white sugar products	-3	-2	0	+1	+3
Nuts, seeds, sprouts	+1	+1	0	-1	-3
Whole grain breads and cereals	0	0	0	-1	-3
Refined grain breads and cereals	-3	-1	0	0	0
Soft drinks	-3	0	0	+2	+3
Coffee or tea (not herb tea)	-3	-1	0	+2	+3
Foods labeled or sold as natural	+2	+1	0	-1	-2
Foods labeled or sold as organic	+3	0	-1	-2	-3
Foods sold mainly in health food stores	+3	0	-1	-2	-3

Figure 2. Scale for obtaining conformance score.

Note. In the preliminary questionnaire, the lines were 100 mm long. The numbers indicate the value assigned to a mark within that space. The spaces were not indicated on the questionnaire; the lines were continuous.

student status, preferred food practices, foods excluded, reasons for food exclusion, and ranking of sources of meals and food in order of importance for the respondent. The form also included space for the name and address of the respondent, a short explanation of the study, a consent form, and the names and telephone numbers of the investigators. The form was arranged so that the name and address could be detached with the signed consent form. The form was designed to be folded and mailed, postage-paid, to the investigators. The final form of the preliminary questionnaire appears in Appendix A-1.

Food habits of young adults. Food frequency assessment is regarded as a reliable and valid method for evaluating and comparing food habits of groups of people. The focus of this method is on specific foods and food groups rather than on nutrient intake (Abramson, Slome, & Kosovosky, 1963; Hankin, Rhoads, & Glober, 1975; Stefanik & Trulson, 1962). The list of 35 foods and food groups chosen for consideration in this study represents the 4 food groups, desserts, and beverages with emphasis on foods and food groups promoted or avoided by nonconformists. The list was adapted from an instrument used in a study of high school health and home economics teachers (Skinner, 1978).

Methods of comparing current food consumption with childhood dietary patterns were not found in the literature. In the method adopted for this study, respondents were asked to indicate whether they ate each food more or less often than when they were children and to give an indication of the magnitude of the difference.

Other data obtained in the Food Habits of Young Adults questionnaire included descriptive and sociodemographic data and information about perceived health status, perceived nutritional adequacy of the

diet, perceived use of time and money, and use of homegrown vegetables and fruits (see Appendix A-2). The instrument was reviewed by several departmental faculty and graduate students who agreed that the instrument was appropriate for obtaining these data. Reliability of this instrument was not determined.

Nutrition questionnaire. An instrument adapted from one developed by Sims and coworkers (Grotkowski & Sims, 1978; Sims, 1978a, 1978b) was used to obtain self-assessment of nutrition knowledge, a nutrition knowledge score, and food and nutrition attitude/belief information. The nutrition knowledge test consisted of items used in studies of lactating women, the elderly, and young vegetarians and nonvegetarians. A self-rating of nutrition knowledge was obtained by asking respondents to indicate on a graphic scale where their level of nutrition knowledge would be in relation to that of experts in nutrition and people with no knowledge of nutrition.

Food and nutrition attitude/belief items were selected and adapted from scales developed to measure (a) the attitude that nutrition is important, (b) belief in health foods, (c) distrust of food processing and additives, (d) belief in vitamin supplements, (e) distrust of synthetic vitamins, and (f) weight control misconceptions. Items reported to have loadings above .40 on the respective factors and that did not appear to duplicate other items within the factor were selected from scales developed by Sims (1978b). The items selected for each factor appear in Appendix B. Items were arranged in random order and scored on a Likert-type, 5-point scale. The complete Nutrition Questionnaire appears in Appendix A-3.

Validity of the adaptations of the nutrition knowledge and the attitude/belief portions of the questionnaire was established by review of the instrument by departmental faculty and graduate students. In addition, the instruments from which the questionnaire was derived were validated conceptually and empirically by Sims and her coworkers (Grotkowski & Sims, 1978; Sims, 1978a, 1978b). Internal reliability (Cronbach's alpha) of Sims' nutrition knowledge instruments ranged from .77 to .80. Cronbach's alpha reliability coefficients on the food and nutrition attitude/belief scales ranged from .73 to .90 (Grotkowski & Sims, 1978; Sims, 1978a, 1978b). Reliability coefficients obtained in the present investigation for the scales were from .44 to .88 (see Table 5.

Table 5

Cronbach's Alpha Reliability Coefficients for Food and Nutrition Attitude/Belief Scales

Scale	Number of items	Reliability
Importance of nutrition	6	.62
Belief in health foods	7	.88
Distrust of food processing and additives	6	.67
Belief in vitamin supplements	4	.69
Distrust of synthetic vitamins	3	.82
Weight control misconceptions	4	.44

Note. $n = 149$.

Value Survey. In the Value Survey developed by Rokeach (1973), respondents were asked to arrange sets of 18 terminal and 18 instrumental values in order of importance as guiding principles in their lives. The values included appear in Tables 6 and 7. Form D of the instrument was used in this study. The rank of each value was tabulated as the score for that value, with "1" indicating the value most important to the individual and "18" indicating the value least important to the individual.

According to Rokeach (1973), median test-retest reliability for Form D ranged from .78 to .80 for terminal values and from .70 to .72 for instrumental values with college students at Michigan State University. Reliability coefficients for Form D were consistently higher than those obtained with other forms of the Value Survey. The Value Survey was developed using concepts from attitude, value, and behavior theory and was validated further with field testing (Rokeach, 1973).

Food Opinion Survey. Food-related attitudes and food preferences were measured with a technique adapted from one developed by Fewster et al. (1973) for the measurement of connotative meanings of foods. Semantic differential scales were selected from the items retained by Fewster et al. for further testing. Additional scales were developed to reflect the health foods and health apprehensions aspects more fully. A good-bad scale was added for evaluation of qualitative perceptions of the foods. Table 8 includes the terms used in the Food Opinion Survey.

Literature directed toward people interested in health foods, natural or organic foods, and/or vegetarianism was reviewed and a list of 50 foods that were considered representative of the foods used by conformists and nonconformists was developed. The foods selected for

Table 6

Terminal Values

Value	Synonyms
A comfortable life	A prosperous life
An exciting life	A stimulating, active life
A sense of accomplishment	Lasting contribution
A world at peace	Free of war and conflict
A world of beauty	Beauty of nature and the arts
Equality	Brotherhood, equal opportunity for all
Family security	Taking care of loved ones
Freedom	Independence, free choice
Happiness	Contentedness
Inner harmony	Freedom from inner conflict
Mature love	Sexual and spiritual intimacy
National security	Protection from attack
Pleasure	An enjoyable, leisurely life
Salvation	Saved, eternal life
Self-respect	Self-esteem
Social recognition	Respect, admiration
True friendship	Close companionship
Wisdom	A mature understanding of life

Note. Adapted from Rokeach (1973).

Table 7

Instrumental Values

Value	Synonyms
Ambitious	Hard-working, aspiring
Broadminded	Open-minded
Capable	Competent, effective
Cheerful	Lighthearted, joyful
Clean	Neat, tidy
Courageous	Standing up for your beliefs
Forgiving	Willing to pardon others
Helpful	Working for the welfare of others
Honest	Sincere, truthful
Imaginative	Daring, creative
Independent	Self-reliant, self-sufficient
Intellectual	Intelligent, reflective
Logical	Consistent, rational
Loving	Affectionate, tender
Obedient	Dutiful, respectful
Polite	Courteous, well-mannered
Responsible	Dependable, reliable
Self-controlled	Restrained, self-disciplined

Note. Adapted from Rokeach (1973).

Table 8

Terms Used on Food Opinion Survey

Negative descriptor		Positive descriptor
unimportant	. . .	important[a]
inferior	. . .	superior[a]
not needed for general health	. . .	needed for general health[a]
I never use this food	. . .	I frequently use this food[a]
bad	. . .	good
I dislike this food	. . .	I like this food[a]
dangerous	. . .	safe
fattening	. . .	slimming[a]
will cure some diseases	. . .	will not cure disease
low energy	. . .	high energy[a]
threatens health	. . .	promotes health
unappetizing	. . .	appetizing[a]
disliked by almost everybody	. . .	liked by almost everybody[a]
not nutritious	. . .	nutritious

Note. In the instrument, scales were presented as 100 mm lines with polar phrases at each end. Half of the scales were reversed from the direction shown here to avoid response set.

[a]Selected from Fewster, Bostian, & Powers, 1973.

use in the Food Opinion Survey were more specific than the food groups in the food frequency determinations in the Food Habits of Young Adults questionnaire. The foods in the list were arranged in random order.

In the questionnaire, 2 foods, with a set of 14 scales for each, were presented on each page. Seven of the scales were presented with the positive or more scientifically valid option on the right-hand side; the other half of the scales had the negative or less valid option on the right. The scales were presented randomly but in the same order for all foods. Page order also was varied. After pretesting of the instrument, the food list was shortened to 42 foods by omitting those that appeared to be superfluous or unfamiliar to both nonconformists and conformists. The final list of foods used in the Food Opinion Survey appears in Table 9. The instructions to the respondents and a sample page are presented in Appendix A-4.

Fewster et al. (1973) used the test-retest method to measure reliability of the technique. Because of the small sample size (6), they had difficulty establishing reliability for most of the scales. Reliability of the adaptation of the instrument used in this study was not established. Several methods were used to establish validity of the technique. In addition to face validity, construct validity was established by factor analysis, discriminant analysis, and 2-way univariate analysis (Fewster et al., 1973). In the present investigation, departmental faculty and graduate students reviewed the instrument for face validity. During statistical analysis of the data, factor analysis of the scales was used to identify 3 factors: Health/Nutrition, Energy Value/Weight Consciousness, and Preference/Acceptance (see Table 10).

Table 9

Food List for Food Opinion Survey

Beef	Potato chips
Chicken	Corn chips
Fish	
Pork	Candy
Hot dogs or weiners	Chocolate
Bacon	White sugar
	Brown sugar
Peanut butter	Raw sugar
Soy beans	Honey
Legumes	Soft drinks, regular
Eggs	Soft drinks, low-calorie
Cheese	Coffee
Yogurt	Herb teas
Pasteurized milk	Wine
Raw milk	
	Sunflower seeds
Leafy green vegetables (e.g., spinach, kale)	Lecithin
	Food yeast
Sprouts	Corn oil
Carrot juice	
Dried fruits	
Whole wheat bread	
White bread	
Wheat germ	
Bran	
Presweetened cereals	
Granola	
Brown rice	

Note. In the instrument, items were presented in random order.

Table 10

Factor Analyses of Scales from
Food Opinion Survey

Item	Factor 1	Factor 2	Factor 3
Health/Nutrition factor			
Important-unimportant	.77	.39	-.05
Superior-inferior	.77	.45	-.07
Needed for general health-not needed for general health	.81	.24	-.05
Good-bad	.68	.55	-.10
Safe-dangerous	.77	.28	-.14
Will not cure some diseases-will cure some diseases	-.62	.04	-.02
Promotes health-threatens health	.85	.19	-.11
Nutritious-not nutritious	.84	.14	.00
Preference/Acceptance factor			
I frequently use this food-I never use this food	.36	.78	-.03
I like this food-I dislike this food	.23	.87	.05
Appetizing-unappetizing	.14	.85	.16
Energy Value/Weight Consciousness factor			
Slimming-fattening	.41	-.01	-.67
High energy-low energy	.31	.02	.82

Note. The scale "Liked by almost everybody-disliked by almost everybody" did not have a high loading on any one scale and was excluded from the analyses.

Pilot Testing

Individuals not likely to participate in the study were asked to complete the preliminary questionnaire, the Food Habits of Young Adults questionnaire, Nutrition Questionnaire, and Food Opinion Survey. They were asked to indicate how much time was required to complete each section, to comment on the clarity of items, and to react to the overall set of questionnaires. The Value Survey has been tested exclusively and used by Rokeach and others; therefore, it was not evaluated in advance. On the basis of the pretesting, the questionnaires were revised for clarity and some foods were deleted from the Food Opinion Survey.

Data Collection

Potential respondents who met the criteria for inclusion in the study were mailed a packet containing the 4 questionnaires, a cover letter, and a postage-paid or campus-mail envelope for returning the questionnaires. On the basis of pilot testing, it was estimated that the questionnaires could be completed in 1.5 to 3 hours. A telephone number was provided and respondents were invited to call if they had any questions or difficulties with the questionnnaires.

Reminder letters were sent about 2.5 and 7 weeks after mailing of the packets to potential respondents who had not returned the questionnaires. Attempts were made to contact by telephone any potential respondents who had not responded to 2 follow-up letters. After 10 weeks it was assumed that missing questionnaires would not be returned.

Copies of the cover letter, reminder letters, and the acknowledgment letter sent after return of the questionnaires appear in Appendices

C-1 through C-4. The letter sent to potential respondents who did not qualify for the study is in Appendix C-5.

Operational Definitions

Conformance Group

The conformance score was derived from the frequency of consumption of 15 foods and food groups on the preliminary questionnaire (see Figure 2, p. 37). The possible range for the conformance score was from -44 to +34. A conformist was a respondent whose score was greater than +5. A nonconformist had a score of +5 or less.

Preferred food practices were derived from options on the preliminary questionnnaire that were checked by the respondents. A conformist orientation was defined as indication of 1 or both conformist practices and none of the nonconformist practices. A nonconformist orientation was defined as indication of a preference for 1 or more of the nonconformist practices. Other orientations were defined as indication of a preference other than the options given.

Values, Knowledge, Attitudes, and Preferences

The ranking given each value in the Value Survey was considered to be the score for that value. Scores ranged from 1 (most important) to 18 (least important) for both terminal values and for instrumental values.

The number of correct answers on the nutrition knowledge test in the Nutrition Questionnaire was considered to be the nutrition knowledge score. Self-rating of nutrition knowledge was obtained by measuring the 100-mm line on which the respondent had evaluated his/her knowledge

of nutrition to determine the point at which the line was marked. Possible values for the nutrition knowledge score ranged from 1 to 24 and for the self-rating of nutrition knowledge, they ranged from 0 (know nothing) to 99 (expert).

Food and nutrition attitude/belief scores were derived by computing the mean scores for the items pertaining to each scale (see Appendix B). The food and nutrition attitude/belief scales were (a) importance of nutrition, (b) belief in health foods, (c) distrust of food processing and additives, (d) belief in vitamin supplements, (e) distrust of synthetic vitamins, and (f) weight control misconceptions. The range of scores for each was from 1 (strongly disagree) to 5 (strongly agree).

Food-related attitudes and food preferences were obtained from the Food Opinion Survey. Scores for each scale were obtained by determining the point at which each 100 mm line was marked, with 0 being the more negative or less scientifically valid option and 99 being the more positive or more valid option. Mean scores for the 3 factors identified from factor analysis (Health/Nutrition, Energy Value/Weight Consciousness, and Preference/Acceptance) were computed from the scales pertaining to each factor. The range of each factor score was from 0 to 99.

Resource Allocation

Use of the resources of time and money was defined as the number of hours each week reportedly occupied with each of 10 activities and the percentage of net income reportedly spent in each of 10 categories. The actual values indicated by each respondent were used in data analyses. If the sum of percentages of income was less than 95 or more than 105,

the observation was omitted from analyses of expenditure. For analyses of time allocation, if the total number of hours per week reported was less than 30 or more than 175, the observation was deleted.

Perceived Well-Being

Respondents indicated perceived health status by marking a 100-mm line labeled poor (left end) and excellent (right end). The lines were measured and the points at which they were marked were determined. The range of values was from 0 (poor) to 99 (excellent). A perceived nutritional adequacy of the diet score was obtained in the same manner.

Food Acceptance

The food frequency data from the Food Habits of Young Adults questionnaire were used to indicate food acceptance or food consumption. The 100 mm lines were measured and the points at which they were marked were determined. The range of values for each food was from 0 (never) to 99 (daily). Changes in food consumption since childhood were determined from the data on comparison of current diets with childhood dietary patterns from the Food Habits of Young Adults questionnaire. Foods and food groups were the same as those used in determining food acceptance. Lines (100 mm long) were measured as previously described. Values for each food ranged from 0 (eaten less often now) to 99 (eaten more often now) with a score of 50 meaning "the same now as then." A perceived change score was computed by subtracting 50 from each value. The scale range was -50 (eaten much less often now) to +50 (eaten much more often now).

Four measures of use of homegrown fruits and vegetables were obtained from data in the Food Habits of Young Adults questionnaire.

Total number of kinds of homegrown vegetables used was derived by adding the number of products reportedly grown by the respondent to the number reportedly grown by friends and relatives and used by the respondent. The total number of kinds of fruits eaten was obtained in the same manner. A score for months of use of homegrown products was derived by computing the mean of the months of use of products grown by the respondent and the months of use of products grown by others. The percentage of total vegetable and fruit use was computed in the same manner from the percentage of total vegetable and fruit use from products grown by the respondent and the percentage of total vegetable and fruit use from products grown by others. Data from those reporting no use of homegrown products were omitted from analyses on the use of homegrown vegetables and fruits.

Data Reduction and Transformation

Noncontinuous descriptive data (i.e., marital status, children, student status, occupation, career goal, and religious preference) were tabulated into categories that seemed appropriate after inspection of the data. Foods excluded and reasons for exclusion were divided into categories developed on the basis of review of the literature, pilot test data, and early returns of questionnnaires. Where 100-mm lines were used, the lines were measured and the points at which they were marked recorded. All lines were measured with 0 at the left end except for those scales on the Food Opinion Survey that had been reversed. All data were keypunched on computer cards for data transformation and analysis. Data transformations (e.g., computation of scale scores) were performed as part of the computer analysis.

Data Analyses

Data transformation and analyses were performed using Statistical Analysis System 76 (Barr, Goodnight, Sall, & Helwig, 1976) and Statistical Package for the Social Sciences (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975) computer programs. IBM 360 and IBM 370 computers were used for data analyses.

Descriptive data were obtained for all variables. Chi-square analyses for conformance group and for gender were performed on categorical descriptive data to determine whether the groups were homogenous with respect to those variables. Two-way analyses of variance were performed on age, years of education, income, and hours of employment to determine whether the groups were different on these sociodemographic variables.

Multivariate analyses of variance were used to determine differences among the groups on (a) food and nutrition attitude/belief scales, (b) food-related attitude and food preference factors, (c) instrumental and terminal values, (d) use of income, (e) use of time, (f) food consumption, and (g) comparisons with childhood dietary patterns. Univariate analyses also were computed within each set of variables. Univariate analyses of variance were used to detect differences among the groups on the nutrition knowledge score, self-rating of nutrition knowledge, perceived health status, perceived nutritional adequacy of diet, and use of homegrown vegetables and fruits. To determine whether childhood consumption of foods and food groups was different from current consumption for each group, *t* tests were used.

Frequency data were compiled for primary and secondary sources of meals and foods, foods excluded, and reasons for food exclusion. In addition, the preferred food practices as indicated on the preliminary questionnaire were tabulated.

A significance level of .05 was selected as the criterion for use with all univariate and multivariate analyses. Two-tailed tests were used to test all statistical hypotheses.

CHAPTER IV

RESULTS

Frequency distributions were obtained for preferred food practices, foods excluded and reasons for exclusion, and sources of meals and foods. Multivariate and univariate analyses of variance were used to determine whether differences existed among the 4 groups: male conformists, female conformists, male nonconformists, and female nonconformists. Changes in dietary patterns since childhood were tested by *t* tests for each group on each food.

Descriptive Data

Preferred Food Practices

Respondents indicated their preferred food practice(s) (i.e., dietary patterns) from 5 options. Those choosing "convenience or fast food eater" or "traditional American diet" and no nonconformist practices were considered to have a conformist orientation. Those choosing any of the "health food user," "natural or organic foods user," or "vegetarian" options were classified as having a nonconformist orientation. Summaries of these results are presented in Table 11. For most subjects, classification by practice agreed with classification by stated preferences. A discrepancy was observed between stated preference and expressed practices for 15 respondents, or 9% of the sample. Several respondents listed dietary patterns other than or in addition to the 5 options offered (see Table 11).

Table 11

Preferred Food Practices as Reported by Respondents

Practice	Conformist		Nonconformist	
	Male	Female	Male	Female
Conformist orientation[a]	32	44	6	3
Convenience or fast food eater	10	14	2	1
Traditional American diet	33	41	10	14
Nonconformist orientation[b]	4	2	22	43
Health food user	1	1	11	20
Natural or organic foods user	3	1	16	22
Vegetarian	0	1	15	33
Other[c]	2	0	0	1
Ethnic, gourmet	5	3	2	0
Nutrition conscious	1	2	0	1
Weight control conscious	0	0	0	1

Notes. Item totals may be larger than category totals because some respondents marked more than 1 practice. In some cases, practices under more than 1 classification were checked.

n = 159.

[a]Defined as indication of 1 or both conformist practices and none of the nonconformist practices.

[b]Defined as indication of a preference for 1 or more of the nonconformist practices.

[c]Defined as indication of a preference other than the options given.

Food Items Excluded from the Diet

Nonconformists excluded more foods from the diet than conformists did (see Table 12). Foods excluded by conformists were usually specific foods such as specific cuts of meat (e.g., liver) or specific fruits or vegetables (e.g., tomatoes, okra), whereas food exclusions of nonconformists were more general, such as "meat" or "processed foods." Women tended to exclude foods which usually are perceived as high-calorie or fattening foods. Women gave weight-related reasons for food avoidance more often than men did (see Table 13). Health-related reasons in general were given by nonconformists. Nonconformists also gave ecological, ethical, religious or philosophical, and political or economic reasons. In general, conformists who indicated food avoidances gave reasons related to weight consciousness, allergies, perceived physical effects, perceived hazards, preferences, and social or emotional reactions toward the food.

Sources of Meals and Food

The top-ranked primary source of meals for all respondents was home, where more than half of the conformists and almost all of the nonconformists obtained their meals (see Table 14). Campus cafeterias were very important; more conformists than nonconformists obtained meals there. This may be in part a reflection of the greater proportion of students in the conformist group.

Secondary sources of meals were most diverse. Conformists frequented snack shops and fast food restaurants more than nonconformists did. Snack shops were important for conformist males, both types of restaurants (snack shops/fast food and sit-down restaurants) important

Table 12

Frequency of Foods Excluded from the Diet

Items	Conformist		Nonconformist	
	Male[a]	Female[b]	Male[c]	Female[d]
Meats (general or red meats)	0	1	14	30
Cured meats	1	1	0	2
Fish or seafood	0	2	3	4
Specific meats or cuts	5	1	3	7
Sugar, candy	5	6	11	22
Dessert foods	1	8	0	7
Starchy foods	0	6	0	3
White bread	3	1	2	7
Fried foods	0	4	0	5
Fatty foods	0	4	1	7
Fruits and vegetables	7	8	0	3
Snack foods ("junk foods")	0	0	1	3
Refined and processed foods	0	1	3	15
Salt	1	2	3	4
Artificial sweeteners	0	1	1	0
Alcoholic beverages	0	2	2	2
Soft drinks	1	1	1	4
Coffee, tea, caffeine-containing beverages	1	1	1	7
Milk or dairy products	3	2	1	2
Other	1	3	7	3
None	19	18	7	2

[a] n = 38

[b] n = 46

[c] n = 28.

[d] n = 47

Table 13

Frequency of Reasons for Food Exclusion

Reasons	Conformist		Nonconformist	
	Male[a]	Female[b]	Male[c]	Female[d]
Health-related				
General, nonspecific	1	5	8	16
Weight consciousness	3	11	3	10
Acne	0	2	1	1
Perceived hazard to health	2	4	10	14
Heart disease apprehensions	2	1	3	8
Allergies	2	2	0	4
Perceived lack of nutrient value	0	2	8	15
Perceived mental or emotional effects	0	0	1	3
Perceived physical effects	1	6	4	10
Other health	2	3	4	3
Non-health-related				
Preference (gustatory)	8	9	0	9
Preference (not specific)	2	3	2	7
Ecological (waste, food chain)	0	0	5	7
Ethical (respect for life, nonviolence)	0	0	1	3
Religious, philosophical	0	1	2	4
Political or economic protest	0	0	4	2
Economic (personal)	0	0	1	8
Convenience	0	0	2	0
Social or emotional reactions	1	2	1	0
Other non-health	1	0	0	2

[a] $n = 38$.

[b] $n = 46$.

[c] $n = 28$.

[d] $n = 47$.

Table 14

Number of Respondents Reporting Possible Sources of Meals as Primary and Secondary Sources

Source	Conformist				Nonconformist			
	Male [a]		Female [b]		Male [c]		Female [d]	
	Primary source	Secondary source	Primary source	Secondary source	Primary source	Secondary source	Primary source	Secondary source
Campus cafeterias	14	1	18	2	4	4	3	4
Fraternity house	0	0	0	0	0	0	0	0
Home	22	8	27	7	23	3	42	3
Homes of friends and relatives	0	5	2	7	1	10	1	14
Snack shops, fast food restaurants	1	17	1	13	0	0	0	2
Sit-down restaurants	2	4	0	12	1	3	1	18
Other								
Carry lunch	0	0	0	0	0	0	0	1
Work	0	0	2	0	0	0	0	0
Dormitory room	1	0	1	0	0	0	1	0
Market or delicatessen	1	0	0	0	1	1	1	0

Note. Primary source defined as the source ranked as the most important; secondary source defined as the one ranked second in importance.

[a] $n = 38$

[b] $n = 46$

[c] $n = 28$

[d] $n = 47$

for conformist females, homes of friends and relatives important for nonconformist males, and sit-down restaurants and homes of friends and relatives for nonconformist females.

The primary source of food prepared and served at home was the supermarket (Table 15). Many nonconformists ranked the health food store as the second in importance; gardens and convenience markets were important secondary sources of food for all groups.

Multivariate Analyses

Multivariate analyses of variance were used to test the hypothesis that differences existed among the groups with respect to several dependent variables. Independent variables for the multivariate analyses were conformance group and gender. Dependent variables were (a) food and nutrition attitude/belief scales, (b) food-related attitude and food preference factors, (c) values--instrumental and terminal, (d) allocation of income, (e) allocation of time, (f) food frequency data, and (g) comparison of current food consumption with childhood dietary patterns.

Food and Nutrition Attitudes/Beliefs

The interaction of conformance group by gender was not significant for food and nutrition attitudes/beliefs. Conformance groups were different (see Table 16). Conformists indicated less belief in health foods, more trust of food processing and additives, more trust of synthetic vitamins, and more belief of weight control misconceptions (see Table D-1, Appendix D). The main effect for gender was significant, primarily because women were more likely to recognize weight control misconceptions than men were (see Table D-1, Appendix D). Means and

Table 15

Number of Respondents Reporting Sources of Food Prepared and Served at Home as Primary and as Secondary Sources

Source	Conformist				Nonconformist			
	Male[a]		Female[b]		Male[c]		Female[d]	
	Primary source	Secondary source	Primary source	Secondary source	Primary source	Secondary source	Primary source	Secondary source
Convenience market	1	9	2	8	0	7	1	2
Delicatessen	0	1	0	1	0	0	0	2
Food co-op	0	1	1	1	2	2	2	2
Farmer's market	1	1	0	6	1	1	2	4
Garden	1	10	3	9	0	2	1	10
Health food store	0	0	0	0	0	11	2	18
Supermarket	29	1	30	4	22	2	39	3
Other								
Relatives and friends	0	0	1	2	0	0	0	0
Specialty stores	1	1	0	0	1	0	1	1
Homegrown livestock or wild game	0	0	0	0	0	0	1	0

Note. Primary source defined as the source ranked as the most important; secondary source defined as the one ranked second in importance.

[a] $n = 38$

[b] $n = 46$

[c] $n = 28$

[d] $n = 47$

Table 16

Summary of Analyses of Food and Nutrition Attitude/Belief Scales by Conformance Group and Gender

Variable	Conformance group		Gender	
	F	p <	F	p <
Multivariate analysis (df = 6 and 143)				
Nutrition attitudes/beliefs	11.13	.0001	2.82	.0127
Univariate analyses (df = 1 and 148)				
Importance of nutrition	1.86	.1749	.30	.5841
Belief in health foods	30.40	.0001	1.08	.2995
Distrust of food processing and additives	15.85	.0001	.53	.4686
Belief in vitamin supplements	2.83	.0949	.01	.9122
Weight control beliefs	20.10	.0001	16.61	.0001
Distrust of synthetic vitamins	4.54	.0348	.09	.7696

standard deviations for the 4 groups are reported in Table D-2 (Appendix D).

Food-Related Attitudes and Food Preferences

The interaction was not significant for the Health/Nutrition factor, the Energy Value/Weight Consciousness factor, or the Preference/Acceptance factor. The main effects conformance group and gender were significant for the Health/Nutrition factor (see Table 17). Nonconformists tended to be more extreme in rating foods as healthful/nutritious or not healthful/nutritious (see Table D-3, Appendix D). Foods rated more healthful/nutritious by nonconformists than by conformists were peanut butter, soybeans, legumes, yogurt, sprouts, dried fruits, whole wheat bread, wheat germ, bran, granola, brown rice, herb teas, sunflower seeds, lecithin, and food yeast. Nonconformists believed beef, chicken, pork, hot dogs, white bread, presweetened cereals, potato chips, candy, chocolate, white sugar, brown sugar, raw sugar, and soft drinks (regular and low-calorie) to be less healthful/nutritious than conformists did. Women believed bacon, peanut butter, raw milk, and potato chips to be less healthful/nutritious than men did (see Table D-3, Appendix D). The means and standard deviations on the Health/Nutrition factor are reported for the 4 groups in Table D-4 (Appendix D).

On the Energy Value/Weight Consciousness factor, the conformance groups were different (see Table 18). Foods contributing most to this difference were hot dogs, legumes, white bread, presweetened cereals, brown rice, candy, white sugar, brown sugar, raw sugar, and lecithin. Nonconformists gave higher scores to legumes and brown rice (see Table D-5, Appendix D). Men and women were not different on the Energy Value/

Table 17

Summary of Analyses of Food-Related Attitude Scores on Health/Nutrition Factor by Conformance Group and Gender

Food	Conformance group		Gender	
	F	p <	F	p <
Multivariate analysis (df = 42 and 20)				
All foods	2.92	.0060	2.72	.0093
Univariate analyses (df = 1 and 61)				
Beef	30.65	.0001	.69	.4092
Chicken	15.16	.0002	.25	.6192
Fish	3.75	.0575	.30	.5840
Pork	19.90	.0001	.90	.3479
Hot dogs	38.57	.0001	.22	.6378
Bacon	41.15	.0001	4.67	.0347
Peanut butter	13.34	.0005	6.21	.0155
Soy beans	12.30	.0009	.01	.9110
Legumes	4.47	.0386	.03	.8708
Eggs	.94	.3373	3.90	.0527
Cheese	1.97	.1660	1.43	.2365
Yogurt	14.72	.0003	.67	.4175
Pasteurized milk	1.89	.1748	1.69	.1987
Raw milk	.97	.3298	12.16	.0009
Leafy green vegetables	.90	.3473	.80	.3753
Sprouts	10.84	.0017	2.56	.1149
Carrot juice	2.37	.1287	.06	.8085
Dried fruits	4.08	.0479	4.56	.0368
Whole wheat bread	8.85	.0042	1.92	.1711
White bread	57.62	.0001	.03	.8616
Wheat germ	18.23	.0001	.02	.9018
Bran	4.57	.0365	1.38	.2446
Presweetened cereals	38.73	.0001	.03	.8524
Granola	9.73	.0028	2.31	.1338
Brown rice	10.63	.0018	.00	.9784

Table 17, continued

Food	Conformance group F	Conformance group p <	Gender F	Gender p <
Potato chips	25.50	.0001	10.44	.0020
Corn chips	9.79	.0027	2.35	.1305
Candy	36.86	.0001	.65	.4219
Chocolate	43.55	.0001	1.19	.2792
White sugar	64.86	.0001	.88	.3514
Brown sugar	10.91	.0016	.38	.5377
Raw sugar	4.01	.0496	.81	.3709
Honey	.50	.4837	.72	.3991
Soft drinks, regular	38.15	.0001	2.60	.1122
Soft drinks, low-calorie	23.55	.0001	.02	.8962
Coffee	1.94	.1683	1.17	.2842
Herb teas	10.81	.0017	.53	.4682
Wine	.66	.4184	.01	.9182
Sunflower seeds	5.55	.0217	.02	.8926
Lecithin	5.83	.0188	.13	.7148
Food yeast	5.92	.0179	.16	.6921
Corn oil	2.26	.1383	.60	.4421

Table 18

Summary of Analyses of Food-Related Attitude Scores on Energy Value/Weight Consciousness Factor by Conformance Group

Food	F	p <
Multivariate analysis (df = 42 and 41)		
All foods	2.61	.0076
Univariate analyses (df = 1 and 82)		
Beef	2.80	.0980
Chicken	.00	.9994
Fish	.21	.6461
Pork	.29	.5908
Hot dogs	4.30	.0411
Bacon	.97	.3287
Peanut butter	.52	.4714
Soy beans	.52	.4723
Legumes	5.30	.0239
Eggs	2.94	.0901
Cheese	1.00	.3205
Yogurt	.08	.7833
Pasteurized milk	1.84	.1785
Raw milk	3.32	.0721
Leafy green vegetables	.14	.7064
Sprouts	.88	.3497
Carrot juice	.98	.3240
Dried fruits	.07	.7900
Whole wheat bread	3.25	.0752
White bread	10.95	.0014
Wheat germ	.37	.5456
Bran	1.47	.2285
Presweetened cereals	11.27	.0012
Granola	.02	.8874
Brown rice	18.74	.0001

Table 18, continued

Food	F	p <
Potato chips	1.47	.2285
Corn chips	.10	.7575
Candy	10.21	.0020
Chocolate	3.13	.0807
White sugar	9.15	.0033
Brown sugar	9.34	.0030
Raw sugar	6.05	.0160
Honey	1.96	.1658
Soft drinks, regular	.96	.3306
Soft drinks, low-calorie	3.14	.0803
Coffee	.01	.9298
Herb teas	.97	.3265
Wine	.42	.5202
Sunflower seeds	.35	.5572
Lecithin	6.74	.0112
Food yeast	3.80	.0547
Corn oil	.81	.3695

Weight Consciousness factor. The means and standard deviations for this factor for each of the 4 groups are reported in Table D-6 (Appendix D).

Conformance group scores were different on the Preference/Acceptance factor (see Table 19). Beef, chicken, pork, hot dogs, bacon, white bread, presweetened cereals, potato chips, corn chips, candy, chocolate, white sugar, brown sugar, raw sugar, and regular and low-calorie soft drinks were preferred/accepted by conformists more than by nonconformists (see Table D-7, Appendix D). Foods preferred/accepted more by nonconformists than by conformists were soy beans, legumes, yogurt, leafy green vegetables, sprouts, carrot juice, dried fruits, whole wheat bread, wheat germ, granola, honey, and herb teas. Men and women rated foods differently ($p < .001$) on the Preference/Acceptance factor (see Table 19). Men preferred/accepted beef, pork, bacon, and raw milk more than women did; women preferred/accepted low-calorie soft drinks more than men did (see Table D-7, Appendix D). Means and standard deviations for the Preference/Acceptance factor for all groups are reported in Table D-8 (Appendix D).

Values

No differences were found in terminal values for the conformance group by gender interaction or for either main effect. The interaction was not significant for instrumental values. However, conformist group scores differed ($p < .05$) for the instrumental values (see Table 20). The values broadminded, clean, imaginative, independent, intellectual, and self-control contributed particularly to the significance of this effect. Nonconformists ranked the values broadminded, imaginative, independent, and intellectual higher than conformists did (see Table D-9,

Table 19

Summary of Analyses of Food Preference Scores on Preference/Acceptance Factor by Conformance Group and Gender

Food	Conformance group		Gender	
	F	p <	F	p <
Multivariate analysis (df = 42 and 24)				
All foods	4.44	.0001	3.57	.0007
Univariate analyses (df = 1 and 65)				
Beef	45.21	.0001	8.10	.0059
Chicken	16.38	.0001	.90	.3468
Fish	.73	.3976	.05	.8232
Pork	54.17	.0001	5.11	.0272
Hot dogs	46.91	.0001	.34	.5639
Bacon	63.16	.0001	6.76	.0115
Peanut butter	.62	.4334	.03	.8746
Soy beans	17.99	.0001	1.34	.2519
Legumes	7.65	.0074	.75	.3912
Eggs	.02	.8804	.93	.3391
Cheese	.12	.7332	.13	.7240
Yogurt	5.14	.0267	2.75	.1019
Pasteurized milk	.61	.4374	.82	.3698
Raw milk	.01	.9140	26.52	.0001
Leafy green vegetables	8.72	.0044	1.36	.2476
Sprouts	27.38	.0001	1.57	.2149
Carrot juice	13.39	.0005	.28	.5991
Dried fruits	18.83	.0001	.11	.7432
Whole wheat bread	5.00	.0288	1.10	.2988
White bread	105.76	.0001	1.60	.2109
Wheat germ	8.05	.0061	.01	.9234
Bran	.74	.3932	.19	.6679
Presweetened cereals	25.77	.0001	.86	.3575
Granola	11.14	.0014	.38	.5419
Brown rice	3.10	.0829	.23	.6296

Table 19, continued

Food	Conformance group		Gender	
	F	p <	F	p <
Potato chips	5.64	.0205	.53	.4686
Corn chips	15.70	.0002	.51	.4798
Candy	23.68	.0001	.75	.3884
Chocolate	14.73	.0003	.00	.9798
White sugar	20.97	.0001	.02	.9012
Brown sugar	9.30	.0033	.23	.6330
Raw sugar	.15	.7039	.05	.8257
Honey	2.42	.1244	.37	.5457
Soft drinks, regular	19.05	.0001	.95	.3330
Soft drinks, low-calorie	9.33	.0033	13.65	.0005
Coffee	.48	.4903	.49	.4886
Herb teas	13.03	.0006	1.04	.3109
Wine	.32	.5722	.20	.6578
Sunflower seeds	2.53	.1165	.37	.5459
Lecithin	.02	.8831	.40	.5318
Food yeast	1.40	.2418	.50	.4838
Corn oil	.22	.6429	.64	.4273

Table 20

Summary of Analyses of Instrumental Values
by Conformance Group and Gender

	Conformance group		Gender	
Variable	F	p <	F	p <
	Multivariate analysis (df = 18 and 138)			
Values	1.75	.0381	2.06	.0103
	Univariate analyses (df = 1 and 155)			
Ambitious	2.41	.1224	.99	.3212
Broadminded	4.34	.0389	.06	.8034
Capable	.01	.9384	1.92	.1679
Cheerful	1.36	.2445	1.24	.2672
Clean	5.24	.0234	2.87	.0923
Courageous	.93	.3365	3.47	.0643
Forgiving	.22	.6397	.54	.4620
Helpful	.34	.5629	.20	.6541
Honest	.05	.8225	5.01	.0266
Imaginative	19.72	.0001	5.94	.0160
Independent	6.36	.0127	.04	.8473
Intellectual	6.17	.0141	.20	.6528
Logical	.01	.9107	10.35	.0016
Loving	.01	.9230	3.02	.0844
Obedient	3.37	.0683	.64	.4235
Polite	2.35	.1270	1.57	.2124
Responsible	2.79	.0971	1.40	.2389
Self-control	4.50	.0355	.36	.5519

Appendix D). Males were different from females in that women ranked the value honest higher than men did. The values imaginative and logical were ranked higher by men than by women (see Table D-9, Appendix D). Median rankings of instrumental and terminal values for each group are reported in Tables D-10 and D-11 (Appendix D).

Income Allocation

The conformance group by gender interaction for income allocation was not significant. The conformance group and gender main effects were significant (see Table 21). Nonconformists reported spending a larger proportion of their income for housing and for medical, dental, and optical expenses than did conformists (see Table D-12, Appendix D). Males reported spending a smaller proportion of their income on clothing and education and a larger proportion on transportation than women reported (see Table D-12, Appendix D). Means and standard deviations for male and female conformists and nonconformists appear in Table D-13 (Appendix D).

Time Allocation

The interaction was not significant for time spent in activities. Conformance groups and genders were different (see Table 22). Nonconformists spent more time on food preparation, shopping, and cleaning and on work or professional activities than did conformists (see Table D-14, Appendix D). Males spent less time on food preparation, shopping, and cleaning and on personal care and more time in personal leisure activities than did females. Means and standard deviations of time spent in activities for each group are presented in Table D-15 (Appendix D).

Table 21

Summary of Analyses for Percentage of Income Spent in Categories by Conformance Group and Gender

	Conformance group		Gender	
Variables	F	p <	F	p <
Multivariate analysis (df = 11 and 130)				
Expenditure categories	2.60	.0052	2.07	.0269
Univariate analyses (df = 1 and 140)				
Housing	21.27	.0001	.02	.8901
Food	.04	.8490	.87	.3532
Clothing	3.20	.0757	6.13	.0145
Transportation and automobile	2.60	.1089	11.00	.0012
Education	2.96	.0875	5.05	.0262
Other professional expenses	.24	.6262	1.10	.2962
Leisure activities	.18	.6702	2.97	.0871
Medical, dental, optical expenses	7.72	.0062	1.09	.2978
Religious and charitable contributions	.31	.5790	.12	.7332
Gifts	2.61	.1087	.58	.4457
Other items	.01	.9260	1.28	.2603

Table 22

Summary of Analyses for Time Spent in Activities for Conformance Group and Gender

	Conformance group		Gender	
Variables	F	p <	F	p <
Multivariate analysis (df = 10 and 120)				
Activities	4.28	.0001	6.88	.0001
Univariate analyses (df = 1 and 129)				
Eating	.76	.3860	1.49	.2252
Food preparation, shopping, cleaning	35.28	.0001	12.29	.0006
Exercise	3.86	.0517	.35	.5560
Personal care	4.46	.0365	15.55	.0001
Personal leisure activities	.31	.5795	18.34	.0001
School-related activities	4.71	.0319	.04	.8325
Sleep	.06	.8046	1.10	.2955
Social activities	.46	.5011	.00	.9803
Religious or philosophical activities	.09	.7647	.01	.9195
Work or professional activities	5.35	.0223	3.01	.0849

Food Acceptance Data

The interaction for food frequency was not significant. Conformance groups differed with respect to food consumption (see Table 23). Nonconformists consumed legumes, nuts or seeds, cottage cheese, yogurt, citrus fruits and tomatoes, orange and dark green vegetables, other vegetables, other fruits, vegetable juices, whole grain products, and dietary supplements more often than did conformists (see Table D-16, Appendix D). Foods consumed less frequently by nonconformists than conformists were beef; poultry; cured meats; other meats; ice cream; fruit-flavored drinks; enriched breads and cereals; chip-type snacks; cracker-type snacks, pastries, cakes, and cookies; pudding; gelatin-type desserts; candy; and soft drinks (regular and low-calorie).

Males also were different from females in frequency of food consumption ($p < .0002$) (see Table 23). Males consumed more beef, nuts and seeds, and regular soft drinks than did females. Women used more low-calorie soft drinks (see Table D-16, Appendix D). Means of food frequency data for all 4 groups are reported in Table D-17 (Appendix D).

Comparison of Current Food Consumption with Childhood Dietary Patterns

The interaction of conformance group and gender was not significant. Comparisons with childhood were different for conformance groups and genders (see Table 24). Nonconformists reported decreased consumption of meats, refined foods, and sugar containing foods and increased alternate sources of protein, fruits and vegetables, and whole grain products more than conformists did (see Table D-18, Appendix D). Men reported increased consumption of beef, potatoes, whole grain breads and cereals, and regular soft drinks more than women did. Women reported

Table 23

Summary of Analyses of Food Frequency Data
by Conformance Group and Gender

Variables	Conformance group		Gender	
	F	p <	F	p <
Multivariate analysis (df = 35 and 100)				
All foods	10.23	.0001	2.52	.0002
Univariate analyses (df = 1 and 134)				
Beef	138.51	.0001	7.87	.0058
Pork	174.19	.0001	1.81	.1814
Fish	2.53	.1143	.09	.7700
Shellfish	.44	.5074	.05	.8170
Poultry	45.01	.0001	.45	.5039
Cured meats	91.22	.0001	2.29	.1324
Other meats	35.92	.0001	2.33	.1294
Legumes	22.39	.0001	1.11	.2934
Nuts, seeds	37.83	.0001	4.75	.0310
Eggs	.39	.5342	.36	.5515
Cheese, cottage cheese	6.65	.0110	1.16	.2826
Milk	1.03	.3127	1.19	.2776
Yogurt	33.07	.0001	2.04	.1552
Ice cream	14.64	.0002	2.79	.0970
Citrus fruits, tomatoes	9.47	.0025	1.59	.2094
Orange and dark green vegetables	9.58	.0024	3.87	.0511
Potatoes	2.67	.1049	3.16	.0778
Other vegetables	9.60	.0024	3.25	.0736
Other fruits	32.29	.0001	.11	.7374
Vegetables juices	33.10	.0001	.81	.3705
Fruit juices	2.16	.1440	.08	.7803
Fruit-flavored drinks	23.41	.0001	1.62	.2058
Whole grain breads and cereals	13.50	.0003	.02	.8850
Enriched breads and cereals	16.45	.0001	.03	.8617
Chip-type snack foods	27.06	.0001	2.83	.0950
Cracker-type snack foods	5.39	.0218	.08	.7802

Table 23, continued

Variables	Conformance group F	Conformance group p <	Gender F	Gender p <
Pastries, cakes, cookies	28.67	.0001	.61	.4349
Pudding	27.01	.0001	.28	.5998
Gelatin-type desserts	29.94	.0001	.10	.7520
Candy	30.80	.0001	1.85	.1764
Coffee or tea	.18	.6722	2.31	.1309
Soft drinks, regular	47.63	.0001	7.02	.0091
Soft drinks, low calorie	4.16	.0434	37.82	.0001
Multiple vitamins	4.41	.0377	2.13	.1464
Other dietary supplements	12.96	.0004	.04	.8473

Table 24

Summary of Analyses of Comparison of Current Food Consumption with Childhood Dietary Patterns by Conformance Group and Gender

	Conformance group		Gender	
Variable	F	p <	F	p <
Multivariate analysis (df = 35 and 100)				
All foods	2.53	.0002	1.63	.0320
Univariate analyses (df = 1 and 134)				
Beef	43.84	.0001	13.08	.0004
Pork	34.05	.0001	3.14	.0785
Fish	.09	.7585	.00	.9659
Shellfish	2.31	.1309	.87	.3520
Poultry	14.89	.0002	.24	.6270
Cured meat	23.10	.0001	.27	.6036
Other meats	36.93	.0001	.86	.3568
Legumes	15.22	.0002	.04	.8518
Nuts or seeds	19.25	.0001	.69	.4073
Eggs	.11	.7464	3.26	.0734
Cheese, cottage cheese	4.66	.0327	1.72	.1916
Milk	.05	.8311	.72	.3965
Yogurt	10.92	.0012	2.68	.1041
Ice cream	.463	.0332	.09	.7661
Citrus fruits, tomatoes	3.03	.0841	.52	.4712
Orange and dark green vegetables	5.32	.0226	.20	.6525
Potatoes	4.17	.0431	4.58	.0341
Other vegetables	5.62	.0192	.18	.6701
Other fruits	7.00	.0091	.02	.9023
Vegetables juices	18.15	.0001	.10	.7551
Fruit juices	.96	.3285	.35	.5556
Fruit-flavored drinks	8.80	.0036	.00	.9484
Whole grain breads and cereals	6.35	.0129	7.32	.0077
Enriched breads and cereals	13.34	.0004	.01	.9431
Chip-type snack foods	11.88	.0008	.03	.8620
Cracker-type snack foods	6.42	.0124	1.49	.2249

Table 24, continued

Variable	Conformance group F	Conformance group p <	Gender F	Gender p <
Pastries, cakes, cookies	15.15	.0002	3.79	.0537
Pudding	5.82	.0172	.37	.5422
Gelatin-type desserts	12.80	.0005	.00	.9870
Candy	9.60	.0024	.17	.6802
Coffee or tea	.98	.3239	2.45	.1200
Soft drinks, regular	16.84	.0001	2.09	.1502
Soft drinks, low calorie	14.67	.0002	7.89	.0057
Multiple vitamins	8.26	.0047	4.54	.0348
Other dietary supplements	10.02	.0019	.00	.9889

increased use of low-calorie soft drinks more than men did (see Table D-18, Appendix D). Means for all groups of the comparison of current food consumption with childhood dietary patterns are in Table D-19 (Appendix D).

Univariate Analyses

Two-way analyses of variance with conformance group and gender as the independent variables were used to determine differences in ungrouped variables. Dependent variables for these analyses were nutrition knowledge score, self-rating of nutrition knowledge, perceived health status, perceived nutritional adequacy of diet, and 4 indicators of usage of homegrown vegetables and fruits. To determine whether childhood dietary patterns were different than current food consumption, t tests were used.

Nutrition Knowledge

For the nutrition knowledge score, the interaction and the main effect for gender were not significant. Conformance groups were different, F (1, 155) = 6.30, $p < .05$. The mean score of nonconformists (16.1 ± 3.4) was greater than that of conformists (14.8 ± 3.5), but neither obtained a score greater than 70% of the possible. There were no differences between groups in self-rating of nutrition knowledge. Means and standard deviations for the measures of nutrition knowledge for the 4 groups appear in Table D-20 (Appendix D).

Perceived Well-Being

There were no differences among the groups in perceived health status. For perceived nutritional adequacy of the diet, the interaction

and the gender main effect were not significant. The difference between conformance groups was significant, F (1, 155) = 11.75, $p < .001$. Nonconformists rated their diets as more adequate (75.4 ± 17.5) than did conformists (64.5 ± 21.7). Means and standard deviations for each measure of perceived well-being are reported for each group in Table D-21 (Appendix D).

Usage of Homegrown Vegetables and Fruits

Usage of homegrown vegetables and fruits was derived from data on the number of kinds of vegetables and fruits used, the number of months during which homegrown vegetables and fruits were used, and the percentage of total vegetable and fruit usage provided by homegrown produce. Two-way analyses of variance were used to determine differences for homegrown vegetable and fruit variables. The interaction and the main effects were not significant for any dependent variable except for number of kinds of homegrown fruits used, F (1, 123) = 5.66, $p < .05$. Women used more kinds of homegrown fruit (2.1 ± 2.5) than men did (1.4 ± 1.8). Means and standard deviations for these variables for the 4 groups are reported in Table D-22 (Appendix D).

Perceived Changes in Food Consumption from Childhood

To determine whether current food consumption was different from childhood food consumption, t tests were performed for each group and each food on the perceived change scores. The results are presented in Table 25. Nonconformists reported more changes than did conformists. Female conformists reported more changes than did male conformists. Use of red meats reportedly decreased for all groups except male conformists. Nonconformists reported decreases in their use of poultry. Nonconformists

Table 25

Changes in Food Consumption from Childhood Dietary Practices for Male and Female Conformists and Nonconformists

Food or food group	Conformist		Nonconformist	
	Male[a]	Female[b]	Male[c]	Female[d]
Beef	+***	-**	-***	-***
Pork		-***	-***	-***
Fish				
Shellfish				
Poultry			-***	-**
Cured meats		-**	-***	-***
Other meats		-***	-***	-***
Legumes			+*	+***
Nuts or seeds		-*	+*	+**
Eggs				
Cheese, cottage cheese	+**	+**	+*	+***
Milk				
Yogurt		+**	+*	+***
Ice cream	-***	-***	-***	-***
Citrus fruits, tomatoes			+**	+***
Orange and dark green vegetables	+*		+**	+***
Potatoes				-*
Other vegetables			+*	+***
Other fruits			+**	+***
Vegetable juices			+**	
Fruit juices			+*	
Whole grain breads and cereals	+***		+***	+**
Enriched breads and cereals		-**	-***	-***
Chip-type snack foods		-**	-***	-***
Cracker-type snack foods	-*	-*	-***	-***
Pastries, cakes, cookies		-***	-***	-***
Pudding	-***	-***	-***	-***
Gelatin-type desserts	-***	-***	-***	-***
Candy	-*	-***	-***	-***

Table 25, continued

Food or food group	Conformist		Nonconformist	
	Male[a]	Female[b]	Male[c]	Female[d]
Coffee of tea	+*	+***		+*
Fruit-flavored drinks	-*	-***	-***	-***
Soft drinks, regular		-*	-***	-***
Soft drinkgs, low-calorie		+**	-***	-*
Multiple vitamins	-**	-*		
Other dietary supplements				

Note. Direction of change is indicated by + (increase) and - (decrease).

[a] n = 38.

[b] n = 46.

[c] n = 27.

[d] n = 46.

*$p < .05$.

**$p < .01$.

***$p < .001$.

reported increased use of alternate protein foods, whole grains, and fruits and vegetables. Use of sweets, including sweetened beverages, reportedly decreased for all groups. Items often considered childhood treats or rewards for good behavior, such as candy, ice cream, pudding, gelatin-type desserts, and fruit-flavored drinks, reportedly decreased for all groups. All groups except male nonconformists reported increased use of coffee or tea. The female conformist group was the only one to report increased use of low-calorie soft drinks.

Summary

Differences between conformists and nonconformists were found in food and nutrition attitudes/beliefs, food-related atttitudes and food preferences, instrumental values, allocation of income, allocation of time, food consumption, changes in food consumption since childhood, nutrition knowledge score, and perceived nutritional adequacy of the diet. Differences were found between males and females on all of the above variables except the Energy Value/Weight Consciousness factor of the food-related attitudes, nutrition knowledge, and perceived nutritional adequacy of the diet. Men and women were different in the number of homegrown fruits used.

CHAPTER V

DISCUSSION

The results of this study are consistent with the conceptual framework of the project (see Figure 1, p. 3). Background variables influence food preferences directly and indirectly through internal variables, such as food and nutrition knowledge, attitudes, and beliefs and value systems. The translation of food preferences into food acceptance is affected by situational variables such as resource availability and allocation, economic considerations, social relationships, and other influences. Food acceptance, or food consumption, affects individual well-being. The emphasis of this study was on internal and situational variables.

Background Variables

The background variables considered in this study included sociodemographic characteristics such as age, hours of employment, income, occupation, student status, education, career goal, marital and parenthood status, region of childhood residence, and religious preference. Differences between conformists and nonconformists were observed in age, hours of employment, income, educational level, student status, region of childhood residence, and religious preference. The mean age of nonconformists was 1.4 years more than that of conformists. More of the nonconformists had completed college and were employed full-time, which may account for the larger mean income of nonconformists. The difference in age may be related to length of time away from home or to variations

in the amount of publicity alternative foodways receive. Nonconformists may have lived away from home longer and thus had more time to change from family and childhood dietary patterns. Another possibility is that the older nonconformists may have been exposed to alternative dietary patterns during the time when popularity of these patterns was greatest. With the decline in publicity, vegetarianism and other nonconformist orientations may be attracting fewer adherents. Vegetarians and nonvegetarians studied by Sims (1978b) were the same age, but more nonvegetarians than vegetarians were students.

The difference in region of childhood residence could be explained by the differences in age and educational level. Older individuals, especially those who have completed college, are more likely to accept employment or to enter graduate school in another area. In addition, nonconformists may be more willing to travel and/or to break away from childhood associations. Less than 25% of the health food users studied in Hawaii had lived there all their lives (Anderson & Standal, 1975).

Religious differences between the 2 groups may reflect rejection of traditional cultural mores by nonconformists. It is not known from these data whether the religious preferences expressed by the subjects were acquired during childhood or chosen more recently. In Indiana and Pennsylvania, more vegetarians than nonvegetarians indicated that they had no religious preferences (Sims, 1978b). Other observers have noted a relationship between nonconformist dietary practices and interest in Eastern philosophy and other non-Christian orientations in conjunction with rejection of traditional middle-class mores (Dwyer et al., 1973; Erhard, 1973, 1974; Glyer, 1972; New & Priest, 1967).

Internal Variables

Food and Nutrition Knowledge, Attitudes, and Beliefs

Nutrition knowledge scores were low for both groups. On 24 items, the mean scores were 16.1 for nonconformists and 14.8 for conformists. Although there was a difference between them, both groups are in need of additional nutrition education. Sims (1978b) found that vegetarians and nonvegetarians were not different in knowledge of the 4 food groups. Both groups achieved almost 80% of the possible score in that survey (Sims, 1978b).

The differences in food and nutrition attitudes/beliefs in this study were consistent with the findings of Sims (1978b) on three scales: importance of nutrition, belief in health foods, and distrust of food processing and additives. No differences were found for the perceived importance of nutrition in either study. Nonconformists expressed more belief in health foods and less trust of food processing and additives. Results on the weight control scale were the opposite of those observed by Sims; in the present study, nonconformists recognized misconceptions about weight control better than conformists did. Internal reliability of the weight control scale as used in this study was lower than that found by Sims, which may indicate that the selection and/or wording of items for the scale in this study were not as appropriate as those used by Sims. In this study, the respondents' attitudes about vitamin supplements were different than those of vegetarians and nonvegetarians (Sims, 1978b). In Sims' study, nonvegetarians had more belief in vitamin supplements and the same level of distrust of synthetic vitamins as vegetarians; in the present study, nonconformists showed the same belief

in vitamin supplements and less trust of synthetic vitamins than conformists.

The main difference between men and women on the food and nutrition attitude/belief scales was on the misconceptions about weight control scale. Women were better than men at recognizing erroneous statements. Closer association with food, more food and nutrition education background, and greater concern about maintaining body weight may account for the higher scores for women.

Consistent with the findings in other studies of nonconformists (Anderson & Standal, 1975; Erhard, 1973, 1974; Rhee & Stubbs, 1976), nonconformists in the present study indicated less trust of the food production and marketing establishment than conformists did. However, slightly higher scores on the nutrition knowledge test and better recognition of misconceptions about weight control may suggest that nonconformists seek more nutrition information. This would be consistent with other observations that nonconformists distrust scientists and nutrition practitioners but often read books and articles about nutrition by unorthodox authors as suggested by Dwyer et al. (1973) and Sims (1978b).

Food-Related Attitudes

On the Health/Nutrition food-related attitude factor, the nonconformists were consistently more extreme than conformists, rating most foods higher or lower than conformists did. Some foods, such as sweets and snack foods, did not receive positive ratings from any group. All groups rated fruits and vegetables, whole grain products, legumes, dairy products, and peanut butter as healthful/nutritious. Major differences

between groups were observed for meats and for sweet and refined foods. Conformists believed meats were healthful/nutritious and were slightly negative about sweets; nonconformists were moderate in their attitudes toward beef, poultry, and fish and were definitely negative about pork. cured meats, refined grains, and sweets. These differences were expected on the basis of literature directed toward nonconformists and previous studies of nonconformists (Dwyer, Mayer, Dowd, Kandel, & Mayer, 1974; Erhard, 1973). Definition of the groups on the basis of consumption of some of the foods evaluated in the Food Opinion Survey made some of the differences more probable.

The health apprehensions scales (safe-dangerous, will not cure some diseases-will cure some diseases, and promotes health-threatens health) did not form a separate factor as expected. This group of young adults may not differentiate between health apprehensions and general health and nutrition concerns as homemakers did (Fewster et al., 1973). In the study with homemakers, the superior-inferior scale was associated with social status perceptions of food. In the present study, the meaning of the superior-inferior scale was related to health and nutrition. The context created by the predominance of health and nutrition-oriented scales and the type of food items selected for evaluation may have influenced this perception. Additionally, the study of homemakers included respondents from two different income groups, and the questionnnaire consisted of 7 food items scored on 38 scales. These differences could have contributed to the variation in results.

The results for the Energy Value/Weight Consciousness factor were ambiguous. Respondents noted variations in meanings associated with the term "energy." Some interpreted the term to refer to "caloric

value." Others thought in terms of the vitality or vigor thought to be imparted by a diet which is high in protein, vitamins, and minerals and which is characterized by an emphasis on natural foods and/or restriction or absence of refined and processed foods. The magnitude and direction of the factor loadings would suggest that most respondents assigned the "caloric value" meaning to the scale. However, the higher ratings received by legumes and brown rice from nonconformists may indicate that the nonconformists preferred the connotation of vitality or vigor.

Value Systems

Conformists and nonconformists were not different on terminal values taken as a group but did differ on instrumental values. Instrumental values that were ranked higher by nonconformists (broadminded, imaginative, independent, and intellectual) are congruent with the anti-establishment, free-thinker orientation expressed by some nonconformists. Such differences also were consistent with rejection of traditional religious orientations. Hippies in Michigan who took the Value Survey in 1968 also assigned higher rankings to these values. Although nonconformist dietary practices are not associated with the hippie life style as closely now as in 1968, some of the values of nonconformists are still the same as those of hippies. Nonhippies in the 1968 study placed higher values on the value self-control than hippies did (Rokeach, 1973). Conformists in the present study also ranked the value self-control higher than nonconformists did.

The very high ranking assigned to salvation by female conformists is consistent with stereotypic views that religion is more important to women than to men. The differences between men and women in rankings of

the values imaginative and logical (higher for men) are consistent with ideas that men are more concerned with intellectual pursuits than are women. However, a higher proportion of women than men were students. The higher ranking given to the value honest by women is not consistent with the findings of Rokeach (1973), who reported that men and women ranked it the same.

For the total group, values associated with self-realization (e.g., a sense of accomplishment, wisdom, responsible, self-respect, ambitious, and broadminded) were relatively important (see Tables D-10 and D-11, Appendix D). Values such as polite, obedience, a world at peace, and national security, which are related to subordinate and/or impersonal relationships, were relatively unimportant to this study group. Values related to close personal relationships (e.g., true friendship, mature love, family security, and loving) were more important than the more impersonal values. Inner harmony was more important to this group of young adults and national security was less important than for college students surveyed by Rokeach (1973). Otherwise, these patterns of value rankings were similar to the findings of Rokeach (1973).

Food Preference

Food preference was measured with the Preference/Acceptance factor from the Food Opinion Survey. As expected, nonconformists preferred foods associated in the literature with nonconformist dietary practices (Dwyer et al., 1973; Erhard, 1973, 1974; Johnston, 1973; Shimoda, 1973; Sims, 1978b). The close association of food preference with food acceptance is illustrated by the inclusion of the "I frequently use this food-I never use this food" scale and is a reminder that it is

difficult to separate measurement of food acceptance from that of food preference. Although nonconformists had indicated that food yeast and lecithin were healthful/nutritious on the Health/Nutrition factor, they did not differ from conformists in preference/acceptance for these foods. Belief about the nutritive value of a food does not lead necessarily to a preference/acceptance of that food.

Situational Variables

Income and allocation of money, use of time, and social relationships are situational variables that were examined in this study. Major differences between conformance groups in income allocation were in housing and medical, dental, and optical expenses. Nonconformists reported spending a larger proportion of their income for these categories than conformists did. Both differences may be related to age, student status, and employment level. Nonconformists may have more money to spend in all categories. Additionally, many dormitory residents noted that they included housing and other charges made by the university in educational expense. This would distort the reported percentage of income for housing. Medical expenses of students often are met by parents and/or school-provided services, so that out-of-pocket expenditures are lower than for individuals who are independent financially. It also is possible that nonconformists are more concerned about health and spend more to be sure that good health is maintained or acquired.

Women reported spending a higher percentage of their income for education and clothing than men reported. More women were students and were not employed, which could account for the differences in spending for education. The greater interest in personal appearance usually

attributed to women could explain the higher expenditures for clothing. Men spent a higher percentage of their incomes on transportation than women did. Data were not collected on automobile ownership, which may have been related to cost of transportation. Dating is important for this age group, and men usually are expected to provide transportation, which could increase expenditures.

The mean estimated percentage of net income spent on food was 16.7%. This is slightly higher than the data collected in the 1973-74 Consumer Expenditures Survey. For incomes under $5,000, food expenditures were 15.39% of total income; for incomes between $5,000 and $8,000, food expenditures were 13.09% (Gallo & Boehm, 1978). Many of the respondents were single and/or were eating many meals prepared outside the home. Both variables tend to increase total food expenditure (Gifft et al., 1972). Housing and education also accounted for large proportions of net income for all groups.

The data on income allocation may not be reliable. Many of the respondents were students. Most students were receiving some financial assistance as well as assistance in the form of goods and services. Some made an effort to estimate the value of assistance, monetary and material, but others stated that they had reported only personal cash income and estimated percentages spent on that amount. In addition, these were estimated percentages, which were influenced by individual perceptions of expenditures. Money and time allocations have not been evaluated in other studies on nonconformists.

Time Allocation

Other than time spent in sleeping, the activities occupying the most time were school-related activities and work and professional activities. Consistent with the findings that nonconformists worked more hours per week and that conformists were more likely to be students, nonconformists spent more time on work and professional activities and conformists spent more time on school-related activities. Nonconformists spent more than twice as much time as conformists on food preparation, shopping, and cleaning. Although the data on sources of meals indicate that more nonconformists ate meals prepared at home, which increased the time spent in preparation, this does not explain all of the difference. The avoidance of processed and prepared foods by many nonconformists also may increase the time required for food preparation. Other observers have indicated that nonconformists are more interested in food preparation and spend more time in food-related activities (Erhard, 1973; Johnston, 1973). The differences between conformance groups in time spent on personal care may indicate that personal appearance is less important to nonconformists or that nonconformists arrange their lives to allow time for things they consider more important than personal care.

Women spent more time than men in food preparation, shopping, and cleaning and in personal care. This reflects traditional perceptions of women as food preparers and as being more concerned with personal appearance than men. Men spent more time than women in personal leisure activities. The time saved from food preparation and personal care was available for other uses.

Social Relationships

There were no differences between conformance groups or between genders for marital or parenthood status. In addition, the number of married subjects and the number of subjects with children was too small for meaningful comparisons within groups. Studies of vegetarians in Boston (Dwyer, Kandel, Mayer, & Mayer, 1974) indicated that those on more extreme regimes were more likely to associate with others on similar diets. Such data were not obtained in the present study.

Food Acceptance

Differences in food acceptance, or food consumption, were in the expected directions. Nonconformists avoided meats (especially pork and cured meats), sweets, soft drinks, and refined foods. Foods emphasized by nonconformists included alternate sources of protein, vegetables and fruits, and whole grain products. Some of these foods had been used to define the two groups, so differences in use were expected for them. However, differences were not found for coffee or tea and fish, which indicates that consumption of these foods did not serve to differentiate between conformists and nonconformists on the preliminary questionnaire. Consumption of fish and shellfish was low for all groups, which may have made detection of differences between the groups less probable. The low intake of fish and shellfish is to be expected in an inland area.

Differences in food acceptance between men and women were related in part to weight control concerns. Women used more low-calorie soft drinks; men used more regular soft drinks. Men ate more beef. Red meats, especially beef, have masculine connotations for many people (Lowenberg et al., 1979).

Nonconformists reported more changes in food consumption patterns from childhood than conformists reported. In general, nonconformists had changed in the direction of nonconformance, increasing consumption of foods preferred by nonconformists and decreasing intake of foods avoided by nonconformists. Most respondents reported decreases in consumption of sweets, especially those associated with childhood, and of some refined foods. For nonconformists, childhood food consumption would not be a good predictor of adult dietary practices. Observers elsewhere (Anderson & Standal, 1975; Dwyer, Kandel, Mayer, & Mayer, 1974; Erhard, 1973, 1974; Glyer, 1972) also have indicated that nonconformist dietary patterns are different from parental dietary practices and are associated with rejection of traditional middle-class values and lifestyles. However, the time and cause(s) of the change from childhood dietary patterns is undetermined. Some variables, such as value systems, attitudes and beliefs, and lifestyles are associated with differences in dietary practices, but the sequence of change and the predisposing factors have not been isolated.

Individual Well-Being

Indications of individual well-being were obtained by requesting that respondents evaluate their health status and the nutritional adequacy of their diets. There were no differences in perceived health status. Means for perceived health status ranged from 77.4 to 82.6 for the 4 groups on a scale from 0 to 99, indicating that most subjects believed that they were relatively healthy. Nonconformists rated their diets as more adequate nutritionally than conformists rated their diets. Vegetarians studied by Dwyer et al. (1973) and health food users studied

by Anderson and Standal (1975) also believed that their diets were more nutritious than those of others. This conclusion on the part of the nonconformists may be related to the extra attention they give to matters of diet. Because they believe a good diet is important to health and take extra pains to consume a diet they believe to be more nutritious, they would be expected to conclude that their diet is nutritious. Although these results also could indicate that conformists are more realistic in evaluating their diets, when dietary patterns are examined, nonconformists may be justified to some extent in their conclusions.

Nonconformists reported consuming a less refined diet, containing fewer empty calories, less saturated fat and cholesterol, more fiber, and more of some "protective" foods (e.g., orange and dark green vegetables, citrus fruits and tomatoes) than did conformists. Such a diet is similar in some respects to the recommendations for dietary change accompanying the Dietary Goals for the United States (Peterkin, Kerr, & Shore, 1979; Peterkin, Shore, & Kerr, 1979; Select Comm. on Nutr. and Human Needs, 1977). Although the Dietary Goals have been the focus of much debate over their specificity, practicality, and value (Amer. Diet. Assoc., 1979; Hegsted, 1979; Leveille, 1977; Olson, 1979; Simopoulous, 1979), it is important to note that some individuals voluntarily consume diets that may meet the goals.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary

Young adults (18-25 years of age, inclusive) who volunteered for a study about food habits were divided into 2 groups, conformists and nonconformists, on the basis of their consumption of selected foods and food groups. Nonconformists were defined as those who avoided meats and refined and/or sweetened foods; used legumes, nuts, and/or whole grain products; and/or used foods marketed as natural, organic, or health foods.

Data were collected on the sociodemographic characteristics, food and nutrition attitudes/beliefs, nutrition knowledge, value systems, food preferences, time and money allocation, food consumption, and perceived well-being of the respondents with questionnaires. For statistical analysis, 4 groups were identified, male conformists, female conformists, male nonconformists, and female nonconformists.

The mean age of nonconformists (22.2 years) was greater than that of conformists (20.8 years). In addition, more nonconformists had completed college and/or were employed full-time. Mean income of nonconformists ($7,300) was higher than the mean income of conformists ($5,400). More conformists than nonconformists were students. More nonconformists expressed non-Christian religious preferences and had spent their childhood years outside the Southeastern states than conformists. The only gender difference among the sociodemographic

characteristics was that more women than men planned to enter helping professions.

Income and time allocation varied for conformance groups and for gender. Nonconformists spent a larger proportion of their income for housing and medical, dental, and optical expenses than conformists. Women spent more than men for clothing and education. Nonconformists used more time for food preparation, shopping, and cleaning and for work or professional activities, whereas conformists used more time for personal care and school-related activities. Men spent more time in personal leisure activities and women used more time for food preparation, shopping, and cleaning and for personal care.

Differences between conformists and nonconformists were observed on food and nutrition attitudes/beliefs, nutrition knowledge, food-related attitudes, instrumental values, food preferences, food acceptance, and perceived nutritional adequacy of the diet. On food and nutrition attitudes/beliefs, nonconformists demonstrated more belief in health foods; less trust of food processing, additives, and synthetic vitamins; and more recognition of weight control misconceptions. Women showed better recognition of weight control misconceptions than men did. Nutrition knowledge scores of both groups were low: those of nonconformists were slightly higher than those of conformists.

Nonconformists were more extreme than conformists in evaluating foods on the Health/Nutrition food-related attitude factor. Foods usually associated with nonconformists orientations were rated as more healthful/nutritious by nonconformists; foods avoided by nonconformists were rated as less healthful/nutritious. Both groups rated fruits, vegetables, and whole grain products more healthful/nutritious than

sweetened foods. Men and women were different on the Health/Nutrition factor, with women rating bacon, potato chips, and raw milk as less healthful/nutritious and dried fruits and peanut butter as more healthful/nutritious than the men did. On the Energy Value/Weight Consciousness factor, nonconformists rated sweets, hot dogs, white bread, legumes, and brown rice differently than conformists rated them.

Instrumental values were ranked differently by the 2 groups, with nonconformists considering the values broadminded, imaginative, independent, and intellectual more important than conformists did; the values clean and self-control were regarded as less important by nonconformists than by conformists. Women ranked the value honest higher than men did; men ranked imaginative and logical higher than women did.

Food preferences of nonconformists were similar to their ratings of foods on the Health/Nutrition factor. With few exceptions, nonconformists preferred/accepted foods that they regarded as healthful/nutritious. Conformists expressed greater preference/acceptance for meats. Gender differences were for meats, raw milk, and low-calorie soft drinks.

Differences in food acceptance between the groups included differences in consumption of meats, sweets, fruits and vegetables, whole grain products, and legumes. Nonconformists ate more of the foods which they preferred/accepted and regarded as healthful/nutritious. Thus, they avoided meats, refined products, and sweetened foods and ate more fruits and vegetables, whole grain products, and legumes than conformists did. Except for fish and coffee or tea, consumption of foods used to define conformance groups was different. In addition, the groups were different in use of vitamins and other dietary supplements.

Men and women differed in use of beef, nuts and seeds, and low-calorie soft drinks, with men using fewer low-calorie soft drinks and more of the other foods than women used.

Nonconformists had made more changes in dietary patterns since childhood than conformists had. All groups reported decreased use of foods regarded as fattening or high in sugar, especially foods associated with childhood such as pudding, gelatin-type desserts, and fruit-flavored drinks. Women reported more changes than men reported. Nonconformists reported decreased consumption of foods generally avoided by nonconformists and increased consumption of foods emphasized by nonconformists. This may indicate that for some reason nonconformists have changed food consumption patterns more than conformists have. In general, foods for which consumption reportedly increased were vegetables and fruits; foods for which consumption reportedly decreased were those generally perceived as high in fat or sugar, such as meat, candy, and desserts.

Limitations of the Study

The sample was self-selected in that participants volunteered to take part in the study. In addition, the sample was drawn primarily from a university population. The total population of people aged 18-25 years in the Knoxville area could have different characteristics. The interests and backgrounds of individuals in this age group might be different in another location.

Some dependent variables (i.e., food-related attitudes, food preferences, and food acceptance) were known to be related to the independent variable conformance group a priori. That is, some of the foods used for determination of food-related attitudes, food preferences

and food acceptance had been used to define the groups. Thus, identification of differences between the groups on these variables was expected.

The differences in sociodemographic characteristics, especially age, student status, hours of employment, and income may have been related to differences between the groups. Some food items were unfamiliar to some of the respondents, especially to conformists. Attitudes about these foods would be affected by lack of familiarity with them.

Conclusions cannot be made about nutrient status on the basis of self-reported frequency of food intake data. Reliability and validity of respondent recall of time and money allocation have not been established.

Conclusions

As demonstrated in this study, conformists and nonconformists can be differentiated on the basis of frequency of consumption of selected foods and food groups. This differentiation was confirmed with data on food-related attitudes, food preferences, and food acceptance. Differences between the groups were found on food and nutrition attitudes/beliefs. Nonconformists showed less trust of the food industry. Although nonconformists obtained higher scores on the nutrition knowledge test than did conformists, scores for both groups indicated a lack of nutrition information. Except for meat, nonconformists reported consuming more of foods considered important by nutritionists. These differences may indicate positive interest in good nutrition and its benefits for health. Nonconformists and conformists had different value systems; therefore, different educational approaches should be used for each. Nonconformists reported having made more changes in food

consumption patterns since childhood than did conformists. The causes of these reported changes remain to be determined.

Implications for Food and Nutrition Education

In providing nutrition information and dietary counseling to young adults, nutrition educators and health-care personnel should avoid making assumptions about the frame of reference of the client. Although nonconformists showed less trust of the food production and marketing industry and reported avoiding some foods considered important by many nutritionists (e.g., meats), they also demonstrated slightly more nutrition knowledge, increased consumption of other foods considered important nutritionally (e.g., fruits and vegetables), and decreased consumption of foods containing few nutrients (e.g., sugar-containing foods). It is advisable for food and nutrition educators and dietary counselors to ascertain the food and nutrition knowledge, the general dietary pattern, and the frame of reference of the client before attempting to provide services. Awareness of the frame of reference of the client will lead to attempts to provide information in forms that are consistent with the value system of the individual. Commending the positive aspects of the diet advocated by the client and promoting increased use of nutritious foods already acceptable to the client can increase the likelihood of dietary change to improve nutrient status. Because nonconformists consider the values broadminded, intellectual, independent, and imaginative important, appeal to the mental and creative aptitudes of the client may prove more effective than a condemnatory or authoritative attitude. Programs and services for conformists and nonconformists may need to inspire motivation to learn about and follow a

nutritionally adequate diet. Techniques which are effective for one group may not prove as useful for the other.

Recommendations and Plans for Further Research

Prediction of food and nutrition attitudes, food preferences, and food consumption from value system data and sociodemographic information would be useful. Multiple regression analysis of the data from the present study will provide information for predicting food-related behavior patterns. Multidimensional scaling will be helpful in defining and interpreting food consumption patterns and perceptions about foods.

Information about other groups would provide a basis for comparison and further anlysis. Other groups of nonconformists (e.g., Seventh-day Adventist vegetarians) and other age groups might show different patterns of nutrition and food attitudes, food-related attitudes, food preferences, and food consumption as well as further information for explaining the differences. Data from a group of Seventh-day Adventist college students are being collected to compare with the data from this study.

The changes from childhood dietary patterns have not been explained. Understanding of the variables that influenced the changes would improve understanding of food-related behavior. If the change in dietary patterns is related to departure from the parental home or to the length of time since leaving the parental home, investigation of psychological factors, such as values and needs, may provide clues to understanding why some individuals choose nonconformist dietary patterns after a childhood of conformist practices. Knowledge of childhood and

adulthood socialization, especially in regard to food, would help explain these changes.

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APPENDICES

APPENDIX A

QUESTIONNAIRES

YOUNG ADULTS FOOD HABITS STUDY

Number:_____

Name:_____ Address:_____

Phone:_____ _____

Please give the following information about yourself and your food habits. Then sign the form on the reverse side, fold and staple or tape sheet, and mail it. Thank you for your help.

No._____ Age:_____ Country of birth:_____

Male ____ Are you a student? No_____
Female____ Yes____ Where?_____

Check the term(s) that you would use to describe your preferred food practices.

____convenience or fast food eater
____health food user
____natural or organic foods user
_____traditional American diet
_____vegetarian
_____other (specify): _____

If you make an effort to exclude specific foods or groups of foods from your diet please list the foods and your reasons for excluding them below. If the reason is medical, please give the specific medical condition.

FOOD EXCLUDED REASON

_____

_____

_____

_____

Where do you obtain most of your meals? Please mark the place where you get most of your meals 1, then use 2 for the next most frequent source. Go on and use 3 and 4 if they apply to your situation.

_____campus cafeterias
_____fraternity house
_____home
_____homes of friends and relatives
_____snack shops/fast food restaurants
_____sit-down restaurants
_____other (specify): _____
_____

If most of your food is prepared at home, where do you or the person responsible for preparation of your food get your food? Mark the place where you get most of your food 1, then use 2, 3, and 4 in order for the places where you buy less of your foods.

_____convenience market
_____delicatessen
_____food co-op
_____farmer's market
_____garden
_____health food store
_____supermarket
_____other (specify): _____
_____

Please make a mark (/) across the line at the place that best represents how often you use each of the following items.

	NEVER	WEEKLY	DAILY
Beef			
Pork			
Poultry			
Fish			
Cured meats			
Legumes (dry beans and peas)			
White sugar or white sugar products			
Nuts, seeds, sprouts			
Whole grain breads and cereals			
Refined grain breads and cereals			
Soft drinks			
Coffee or tea (not herb tea)			
Foods labeled or sold as natural			
Foods labeled or sold as organic			
Foods sold mainly in health food stores			

3 Staple or Tape

The directors of the study are Dr. Marjorie P. Penfield, Associate Professor, and Alice E. Calkins, Research Assistant.

For further information, call 974-6604, Extension 16, between 8 and 5 o'clock, Monday through Friday.

2 Fold Here

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Dr. Marjorie P. Penfield
Project Director, Hatch 519
FSNFSA
University of Tennessee
Knoxville, TN 37916

1 Fold Here

EXPLANATION OF STUDY

Volunteers are needed to supply information for a study about factors affecting the food habits of young adults (18 to 25 years of age) being conducted by the Agricultural Experiment Station and the College of Home Economics at The University of Tennessee. Participants will be selected from those who respond to this questionnaire. Participants will be asked to complete questionnaires about their attitudes about food and nutrition, current and past food consumption, value systems, and general socioeconomic information. The questionnaires will take about 2 hours to complete.

All information given will be kept confidential. The data will be processed by computer using only a code number for identification. The results of the study will be reported in summary form. Individuals will not be identified at any time.

If you would like to participate, please fill out the questionnaire, sign the consent statement below, fold and staple or tape the sheet, and mail it. Postage is not required. You will be notified in January or February if you are selected to participate in the study. The questionnaires will be mailed or delivered to you in February to be completed and returned.

I, _____, am willing to supply the information on the reverse side of this page for use in a study of the food habits of young adults. I understand that on the basis of the information provided here I may be selected to participate in an in-depth study of factors which may be related to the food habits of young adults. I understand that if I am selected to participate in the in-depth study and agree to do so, I will be asked to complete a series of questionnaires regarding my dietary habits and nutrition knowledge, ideas about food, attitudes and values, and sociodemographic characteristics. I understand that all information obtained in these studies will be strictly confidential, will be used for statistical purposes only, and will be published in summary form only. I understand that any questions I may have about the study will be answered and that I may withdraw at any time.

Signed: _____ Date: _____

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APPENDIX A-2

Food Habits of Young Adults

Please provide the following information about yourself. Remember that all information will be kept confidential.

1. Marital status: _____
2. Number of children: _____
3. Religious preference (specific): _____
4. National or ethnic background: _____
5. State or region where you spent most of your elementary and high school years: _____
6. Hours/week paid employment: _____
7. Occupation (specific): _____
8. Career goal (specific): _____
9. Highest educational level (grade or degree) reached: _____
10. Approximate gross income for 1978: $_____(to nearest thousand)
    (Please include educational loans or grants, gifts of money, and the approximate value of expenses paid for you and of gifts such as clothing or travel. Use family income if married.)

For the following two questions, we would like to get some idea about how you use your resources of money and time. Don't worry about being exact. Just give your best estimate of what you do.

11. During 1978, approximately what percentage of your net income (after taxes) did you spend on each of the following categories? Include loan and installment payments under the category of the original purchase.

Housing (including utilities, furniture, and insurance)	_____%
Food	_____%
Clothing	_____%
Transportation and automobile (include auto insurance)	_____%
Education (include textbooks)	_____%
Other professional expenses	_____%
Leisure activities	_____%
Medical, dental, optical expenses (include medical insurance)	_____%
Religious and charitable contributions	_____%
Gifts	_____%
Other: _____	_____%
Total	100%

12. During an average week, about how much time do you spend in each of the following types of activities? If you do two or more things at the same time, please include the time under the activity that takes priority. (These do not have to add up to 168 hours.)

Activity	Hours
Eating	_____
Food preparation, shopping, cleaning	_____
Exercise	_____
Personal care	_____
Personal leisure activities	_____
School related activities	_____
Sleeping	_____
Social activities	_____
Religious or philosophical activities	_____
Work or professional activities	_____

13. Indicate your present state of health by making a mark (/) across the line at the appropriate place.

poor——————————————————————————excellent

14. Indicate your evaluation of the nutritional adequacy of your diet by making a mark (/) across the line at the appropriate place.

poor——————————————————————————excellent

15. During 1978, did you use any home-grown fruits or vegetables (fresh, canned, or frozen)?

No _____, go to question 16

Yes _____

	grown by you	grown by friends or relatives
a. How many different kinds of home-grown fruits and vegetables did you use?		
Vegetables	_____	_____
Fruits	_____	_____
b. For how many months did you use home-grown fruits and vegetables?	_____	_____
c. For those months, approximately what percentage of your fruit and vegetable consumption was home-grown?	_____%	_____%

16. Please indicate how often you eat each of the foods on the following page by making a mark (/) across the line at the appropriate place. Do not use the boxes in the right hand column.

Examples:

1. If you eat beef in some form 3-4 times a week, mark somewhere between the middle of the line and DAILY.

NEVER ——————————/—————— DAILY

2. If you eat shellfish (e.g. oysters, lobster) once a month or so, make a mark somewhere between NEVER and the middle of the line.

NEVER ——/—————————————— DAILY

3. If you usually eat ice cream about once a week, make a mark in about the middle of the line.

NEVER ——————————/—————— DAILY

Please be sure to cross the line with your mark.

WRONG ——————/——————

WRONG ——————✓——————

RIGHT ——————/——————

FOOD	NEVER ——— DAILY	
Beef		
Pork		
Fish		
Shellfish		
Poultry		
Cured meats (e.g. bacon)		
Other meats		
Legumes (dried beans and peas)		
Nuts or seeds		
Eggs		
Cheese, cottage cheese		
Milk		
Yogurt		
Ice cream		
Citrus fruits, tomatoes		
Orange and dark green vegetables		
Potatoes (white)		
Other vegetables		
Other fruits		
Vegetable juices		
Fruit juices		
Fruit-flavored drinks		
Whole grain breads and cereals		
Enriched breads and cereals		
Chip-type snack foods		
Cracker-type snack foods		
Pastries, cakes, cookies		
Pudding		
Gelatin-type desserts		
Candy		
Coffee or tea (not herb teas)		
Soft drinks, regular		
Soft drinks, low calorie		
Multiple vitamins (one-a-day)		
Other dietary supplements		

17. Now we would like for you to compare your current diet with your eating patterns while you were growing up. On the following page, please make a mark across the line at the place that indicates how much more or less often you eat each food now then while you were growing up.

    If you have never eaten the food, please write NEVER above the line.

    Examples:

    1. If you drink milk just as often now as when you were growing up, mark the line close to the middle.

    LESS OFTEN ——/—— MORE OFTEN

    2. If you drank milk 3 times a day while you were growing up, but now you drink it once or twice a week, mark somewhere close to the LESS OFTEN side of the line.

    LESS OFTEN —/—— MORE OFTEN

    3. If you drank milk 3 times a day while you were growing up, but now you drink it twice a day, mark somewhere closer to the middle of the line, but still on the LESS OFTEN side.

    LESS OFTEN ——/—— MORE OFTEN

Again, please be sure that your mark crosses the line.

FOOD	LESS OFTEN	MORE OFTEN	
Beef			
Pork			
Fish			
Shellfish			
Poultry			
Cured meats (e.g. bacon)			
Other meats			
Legumes (dried beans and peas)			
Nuts or seeds			
Eggs			
Cheese, cottage cheese			
Milk			
Yogurt			
Ice cream			
Citrus fruits, tomatoes			
Orange and dark green vegetables			
Potatoes (white)			
Other vegetables			
Other fruits			
Vegetable juices			
Fruit juices			
Fruit-flavored drinks			
Whole grain breads and cereals			
Enriched breads and cereals			
Chip-type snack foods			
Cracker-type snack foods			
Pastries, cakes, cookies			
Pudding			
Gelatin-type desserts			
Candy			
Coffee or tea (not herb teas)			
Soft drinks, regular			
Soft drinks, low calorie			
Multiple vitamins (one-a-day)			
Other dietary supplements			

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APPENDIX A-3

(1-4)

NUTRITION QUESTIONNAIRE

Rate your knowledge about nutrition by making a mark (/) across the line at the appropriate place on the scale.

know nothing——————————————————————expert | | 6-7 |

Please mark the following statements true or false by circling the appropriate letter. If you do not know the answer, make an "educated guess".

1.	Vitamins and minerals provide no calories.	T	F		11
2.	Grapefruit will reduce body weight.	T	F		12
3.	Inexpensive meats can be as nutritious as expensive meats.	T	F		13
4.	Head lettuce is an important dietary source of Vitamin A.	T	F		14
5.	Pantothenic acid will prevent the graying of human hair.	T	F		15
6.	Adding baking soda to green vegetables during preparation tends to reduce the Vitamin C content.	T	F		16
7.	Citrus fruits increase the acidity of the body.	T	F		17
8.	A food with a high percentage of polyunsaturated fats is better for one's health than a food high in saturated fats.	T	F		18
9.	The body can make fat tissue from protein or carbohydrate foods.	T	F		19
10.	The mineral and protein content of skim milk is almost identical to that of whole milk.	T	F		20
11.	Scientists have demonstrated that Vitamin E reduces the severity of many chronic diseases.	T	F		21
12.	Extra protein in the form of amino acids is stored in the body until needed for tissue building or maintenance.	T	F		22
13.	Alcoholic beverages can be a source of energy.	T	F		23
14.	Butter has a lower concentration of polyunsaturated fats than vegetable oil margarines.	T	F		24
15.	Organically grown foods are higher in nutritional value than foods grown with chemical fertilizers.	T	F		25
16.	Taking calcium pills can substitute for a poor milk intake.	T	F		26
17.	Iodized salt helps prevent goiter.	T	F		27

18. Most people should take vitamin pills or food supplements to ensure having all the nutrients necessary for good nutrition. T F [ ] 28

For the following questions, circle the number beside the phrase which you feel best answers the question.

19. Basal metabolism is
    1. the total energy needs of any normally active person.
    2. the amount of energy used by a person who is lying quietly at rest.
    3. the basal number of calories needed to feed an active adult.

    [ ] 30

20. Saturated fats are fats which are usually
    1. solid at room temperature and which are found in greatest amounts in meats and dairy products.
    2. saturated with cholesterol and found in greatest amounts in vegetable oils.
    3. liquid at room temperature and are found largely in vegetable oils, fish, and poultry.

    [ ] 31

21. "Empty" calories are
    1. found in foods such as sugar which contain only calories and few essential nutrients.
    2. calories which do not count because they are from protein.
    3. found in foods high in protein or fat which lack carbohydrate.

    [ ] 32

22. An essential amino acid is an amino acid which
    1. is essential for the breakdown of protein in the stomach.
    2. acts as a vitamin and aids in keeping the blood sugar high.
    3. the body cannot synthesize so that it is necessary to supply it "ready-made" in foods.

    [ ] 33

23. "Enriched" bread
    1. has extra sugar added to it.
    2. has had certain B vitamins and minerals added to it.
    3. is higher in protein than unenriched bread.

    [ ] 34

24. A piece of cake with 150 calories will give your body
    1. more energy than a bowl of soup with 150 calories.
    2. the same amount of energy as a bowl of soup with 150 calories.
    3. less energy than a bowl of soup with 150 calories.

    [ ] 35

25. A complete protein food
    1. contains all of the essential amino acids.
    2. is completely protein, containing no fat.
    3. contains all of the non-essential amino acids.

    [ ] 36

For the following questions, please indicate the extent of your agreement or disagreement by circling the appropriate number.	strongly disagree	disagree	no opinion	agree	strongly agree	
1. The taste, quality, and aesthetic appeal of "natural" and "organic" foods are better than of "regular foods".	1	2	3	4	5	(41)
2. Manufacturers of "health foods" are more concerned about consumer safety than those who manufacture "regular foods".	1	2	3	4	5	(42)
3. Organically grown foods have better flavor and appearance than the same products grown for the supermarket.	1	2	3	4	5	(43)
4. Today food has so many vitamins added that people don't have to worry about their nutrition.	1	2	3	4	5	(44)
5. Most food additives are safe when used according to government regulations.	1	2	3	4	5	(45)
6. People who eat a variety of foods every day can usually get all the vitamins and minerals they need.	1	2	3	4	5	(46)
7. Modern processing removes most of the vitamins and minerals in our foods.	1	2	3	4	5	(47)
8. "Health foods" give a person more energy than "regular foods".	1	2	3	4	5	(48)
9. Body cells do not differentiate between manufactured and "natural" vitamins.	1	2	3	4	5	(49)
10. The manufacturers of "health foods" are more concerned about the nutritional quality of foods than those who manufacture "regular foods".	1	2	3	4	5	(50)
11. People who drink milk don't have to worry about their nutrition.	1	2	3	4	5	(51)
12. High protein foods such as meat and fish contain practically no calories.	1	2	3	4	5	(52)
13. Manufactured vitamins are nutritionally inferior to "natural" vitamins.	1	2	3	4	5	(53)
14. People should eat nutritious foods whenever they eat a meal or snack.	1	2	3	4	5	(54)
15. Organically grown foods have more health-enhancing properties than products grown with chemical fertilizers.	1	2	3	4	5	(55)

		strongly disagree	disagree	no opinion	agree	strongly agree	
16.	Most food producers are more interested in profit than in the nutritional quality of the food they produce.	1	2	3	4	5	(56)
17.	Everyone should take vitamins just to be sure of good nutrition.	1	2	3	4	5	(57)
18.	People who consume "health foods" live longer than those who do not.	1	2	3	4	5	(58)
19.	Because they are such fattening foods, bread and potatoes should be avoided on weight reduction diets.	1	2	3	4	5	(59)
20.	"Health foods" maintain and improve health better than "regular foods".	1	2	3	4	5	(60)
21.	No vitamin or mineral supplements are needed by normal, healthy people who are eating a varied diet.	1	2	3	4	5	(61)
22.	"Natural foods" contain more nutrients than "regular foods" because they are less refined and processed.	1	2	3	4	5	(62)
23.	Manufactured vitamins are just as useful to the body as "natural" vitamins extracted from foods.	1	2	3	4	5	(63)
24.	A calorie is a fatty substance in food which causes weight gain.	1	2	3	4	5	(64)
25.	The foods eaten now will affect the future health of an individual.	1	2	3	4	5	(65)
26.	Water should be restricted on a weight reduction diet.	1	2	3	4	5	(66)
27.	Even when eating a wide variety of foods, it is a good idea to take a vitamin supplement at least every other day.	1	2	3	4	5	(67)
28.	Nutrition is important and a person should not be careless about it.	1	2	3	4	5	(68)
29.	As long as proper weight is maintained, a person doesn't have to worry about nutrition.	1	2	3	4	5	(69)
30.	Food additives are necessary to ensure a varied, safe food supply.	1	2	3	4	5	(70)

APPENDIX A-4

(cover page)

FOOD OPINION SURVEY

On the following pages you will find the names of foods, each followed by a list of pairs of adjectives or adjective phrases. For each food decide where it belongs on each line and make a mark (/) across the line at the appropriate place. Where a comparison is implied (e.g., superior--inferior), rate that food in relation to all other foods.

Example:

CHOCOLATE CAKE

appetizing———————————————————————unappetizing

not nutritious———————————————————————nutritious

If you think that cake is more appetizing than unappetizing, you would make a mark toward the appetizing end of the line. If you think that chocolate cake is slightly nutritious, make a mark on the nutritious side of the middle of the line. If you have no opinion or think the food is neutral, mark the middle of the line.

It is important that you work rapidly as we want to know your first impression. If you have never heard of a food, skip it and go on to the next one. Be sure to do as many foods as possible, even if you have not eaten them yourself. Please mark all lines for each food that you do.

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(sample page)

YOGURT

unimportant	important		11-12
superior	inferior		13-14
needed for general health	not needed for general health		15-16
I never use this food	I frequently use this food		17-18
bad	good		19-20
I like this food	I dislike this food		21-22
dangerous	safe		23-24
slimming	fattening		25-26
will cure some diseases	will not cure disease		27-28
high energy	low energy		29-30
threatens health	promotes health		31-32
appetizing	unappetizing		33-34
liked by almost everybody	disliked by almost everybody		35-36
not nutritious	nutritious		37-38

CORN OIL

unimportant	important		45-46
superior	inferior		47-48
needed for general health	not needed for general health		49-50
I never use this food	I frequently use this food		51-52
bad	good		53-54
I like this food	I dislike this food		55-56
dangerous	safe		57-58
slimming	fattening		59-60
will cure some diseases	will not cure disease		61-62
high energy	low energy		63-64
threatens health	promotes health		65-66
appetizing	unappetizing		67-68
liked by almost everybody	disliked by almost everybody		69-70
not nutritious	nutritious		71-72

APPENDIX B

FOOD AND NUTRITION ATTITUDE/BELIEF SCALES

FOOD AND NUTRITION ATTITUDE/BELIEF SCALES

Item Number

Importance of Nutrition Attitude

*4. Today food has so many vitamins added that people don't have to worry about their nutrition.

*11. People who drink milk don't have to worry about their nutrition.

14. People should eat nutritious foods whenever they eat a meal or snack.

25. The foods eaten will not affect the future health of an individual.

28. Nutrition is important and a person should not be careless about it.

*29. As long as proper weight is maintained, a person doesn't have to worry about nutrition.

Belief in Health Foods

1. The taste, quality, and aesthetic appeal of "natural" and "organic" foods are better than of "regular foods."

3. Organically grown foods have better flavor and appearance than the same products grown for the supermarket.

8. "Health foods" give a person more energy than "regular foods."

15. Organically grown foods have more health-enhancing properties than products grown with chemical fertilizers.

18. People who consume "health foods" live longer than those who do not.

20. "Health foods" maintain and improve health better than "regular foods."

22. "Natural foods" contain more nutrients than "regular foods" because they are less refined and processed.

Distrust of Food Processing and Additives

2. Manufacturers of "health foods" are more concerned about consumer safety than those who manufacture "regular foods."

*5. Most food additives are safe when used according to government regulations.

7. Modern processing removes most of the vitamins and minerals in our foods.

10. The manufacturers of "health foods" are more concerned about the nutritional quality of foods than those who manufacture "regular foods."

16. Most food producers are more interested in profit than in the nutritional quality of the food they produce.

*30. Food additives are necessary to ensure a varied, safe food supply.

Belief in Vitamin Supplements

6. People who eat a variety of foods every day can usually get all the vitamins and minerals they need.

*17. Everyone should take vitamins just to be sure of good nutrition.

21. No vitamin or mineral supplements are needed by normal, healthy people who are eating a varied diet.

*27. Even when eating a wide variety of foods, it is a good idea to take a vitamin supplement at least every other day.

Distrust of Synthetic Vitamins

9. Body cells do not differentiate between manufactured and "natural" vitamins.

*13. Manufactured vitamins are nutritionally inferior to "natural" vitamins.

23. Manufactured vitamins are just as useful to the body as "natural" vitamins extracted from foods.

Weight Control Misconceptions

12. High protein foods such as meat and fish contain practically no calories.

19. Because they are such fattening foods, bread and potatoes should be avoided on weight reduction diets.

24. A calorie is a fatty substance in food which causes weight gain.

26. Water should be restricted on a weight reduction diet.

*Items for which scoring was reversed before scale means were computed.

APPENDIX C

COMMUNICATIONS WITH RESPONDENTS

THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
COLLEGE OF HOME ECONOMICS

DEPARTMENT OF FOOD SCIENCE, NUTRITION,
AND FOOD SYSTEMS ADMINISTRATION

FOOD SCIENCE (615) 974-5445
NUTRITION (615) 974-3491
FOOD SYSTEMS
ADMINISTRATION (615) 974-5445

C-1

(cover letter)

Thank-you for your interest in the study of factors affecting the food habits of young adults. You have been selected to participate in the follow-up study. Enclosed are the questionnaires for you to complete and return to us. If you are a UTK student, please use the enclosed intercampus mail envelope to return the questionnaires to us. Each department has a place to deposit intercampus mail. If convenient, you may bring the packet to Room 212A, Home Economics Building. If you are not a UTK student, we have enclosed a postage-paid envelope for your convenience.

Please complete and return the questionnaires as soon as possible. Although you do not have to do all of the questionnaires at one time, please try to complete a whole section before taking an extended break. If we have not received the questionnaires within two weeks, we will send you a reminder.

Work as fast as you can, especially on the Food Opinion Survey, as we are interested in your first impression. If you do not know the answer to a question, just do the best you can. We are interested in your ideas, so feel free to write in comments and explanations. Please read directions carefully and follow them. If you do not understand something, please call and ask about it at 974-6694, Extension 16.

All information will be kept confidential. Individuals will not be identified in study reports. The report of the study will be in summary form only. If you would like a copy of the results of this study, give your name and summer address at the bottom of this page and send it in when you return your questionnaires. Results will not be distributed until summer.

Sincerely yours,

Alice E. Calkins
Research Assistant

Marjorie P. Penfield
Associate Professor

THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
COLLEGE OF HOME ECONOMICS

DEPARTMENT OF FOOD SCIENCE, NUTRITION,
AND FOOD SYSTEMS ADMINISTRATION

FOOD SCIENCE (615) 974-5445
NUTRITION (615) 974-3491
FOOD SYSTEMS
ADMINISTRATION (615) 974-5445

C-2

(reminder letter 1)

Two weeks ago we sent you a packet containing the questionnaires for the study of factors affecting the food habits of young adults. As of this date, we have not received your completed questionnaires. Would you please complete and return your questionnaires this week. If you are having any difficulty with the questionnaires, call us at 974-6694, Extension 16.

We appreciate your interest in this study. With your help, this study will contribute to understanding the current food habits of young adults in the Knoxville area.

If you have already returned the questionnaires, thank you for your help.

Sincerely,

Alice E. Calkins
Research Assistant

Marjorie P. Penfield
Associate Professor

AEC:MPP:lgt

THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
COLLEGE OF HOME ECONOMICS

DEPARTMENT OF FOOD SCIENCE, NUTRITION,
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FOOD SYSTEMS
ADMINISTRATION (615) 974-5445

C-3

(reminder letter 2)

The study of factors affecting the food habits of young adults still needs your help. We have not yet received the questionnaires which were sent to you about six weeks ago. Would you please try to complete and return the questionnaires as soon as possible.

If you have any questions about the study or problems with the questionnaires, please call us at 974-6694, Extension 16, between 8 and 5 Monday through Friday. If you have decided not to finish the questionnaires, please return them to us in the envelope we provided. Then we will know that you would rather not participate at this time.

If you have already returned your completed questionnaires, we appreciate your help. The information you provide will contribute to a better understanding of factors affecting the food habits of young adults, especially in the Knoxville area.

Sincerely,

Alice E. Calkins
Research Assistant

Marjorie P. Penfield
Associate Professor

MPP:AEC:smb

THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
COLLEGE OF HOME ECONOMICS

DEPARTMENT OF FOOD SCIENCE, NUTRITION,
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NUTRITION (615) 974-3491
FOOD SYSTEMS
ADMINISTRATION (615) 974-5445

C-4

(acknowledgement letter)

We have received your completed questionnaires and appreciate your participation in the study of food habits of young adults.

The opportunity is available for additional participants. If you have friends who would be willing to participate in the study, please have them contact us at 974-6694, Extension 16.

We are interested in conducting an indepth study of family and social influences on food habits. That study would include a series of interviews to discuss childhood experiences related to food. If you think you would be interested in participating in such a study this summer, please fill out and return the form below.

Sincerely yours,

Alice E. Calkins
Research Assistant

Marjorie P. Penfield
Associate Professor

AEC:MPP:lgt

Yes, I might be interested in participating in a study of childhood experiences related to food. Please let me know when you are ready to conduct the study.

Name_____

Address_____
(summer)_____

Phone_____

THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
COLLEGE OF HOME ECONOMICS

DEPARTMENT OF FOOD SCIENCE, NUTRITION,
AND FOOD SYSTEMS ADMINISTRATION

FOOD SCIENCE (615) 974-5445
NUTRITION (615) 974-3491
FOOD SYSTEMS
ADMINISTRATION (615) 974-5445

C-5

(notice of nonacceptance)

Thank you for expressing an interest in the study of factors affecting the food habits of young adults. Although you were not selected to participate in the follow-up study, we appreciate your prompt return of the short questionnaire. The information you provided will remain confidential.

Sincerely,

Alice E. Calkins

Alice E. Calkins
Research Assistant

Marjorie P. Penfield

Marjorie P. Penfield, Ph.D.
Associate Professor

/bh

APPENDIX D

TABLES

Table D-1

Means and Standard Deviations for Food and Nutrition Attitude/Belief Scales by Conformance Group and Gender

Scale	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Importance of nutrition	81	2.92	.24	75	2.96	.25	64	2.92	.22	92	2.95	.26
Belief in health foods	81	2.40	.71	75	3.08	.84	64	2.77	.79	92	2.70	.88
Distrust of food processing and additives	82	2.65	.49	75	2.96	.49	65	2.81	.54	92	2.79	.50
Belief in vitamin supplements	81	2.82	.40	74	2.69	.59	64	2.77	.51	91	2.74	.50
Distrust of synthetic vitamins	81	3.08	.49	75	2.88	.66	64	3.01	.59	92	2.97	.58
Weight control misconceptions	80	2.07	.64	75	1.66	.50	64	2.11	.66	91	1.70	.51

Note. Range of values: 1 (strongly disagree) to 5 (strongly agree).

Table D-2

Means and Standard Deviations for Food and Nutrition Attitude/Belief Scales for Male and Female Conformists and Nonconformists

Scale	Conformist						Nonconformist					
	Male			Female			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Importance of nutrition	36	2.93	.20	45	2.91	.27	28	2.92	.25	47	2.99	.25
Belief in health foods	36	2.42	.67	45	2.39	.74	28	3.22	.70	47	2.99	.91
Distrust of food processing and additives	37	2.64	.50	45	2.67	.49	28	3.04	.50	47	2.91	.48
Belief in vitamin supplements	36	2.85	.38	45	2.79	.42	28	2.68	.63	46	2.70	.57
Distrust of synthetic vitamins	36	3.10	.45	45	3.07	.52	28	2.89	.72	47	2.87	.63
Weight control beliefs	36	2.28	.68	44	1.89	.55	28	1.88	.57	47	1.52	.41

Note. Range of values: 1 (strongly disagree) to 5 (strongly agree).

Table D-3

Means and Standard Deviations for Food-Related Attitude Scores on Health/Nutrition Factor by Conformance Group and Gender

	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
Food	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	83	75.15	11.12	75	47.66	21.18	66	65.77	20.06	92	59.47	22.34
Chicken	82	76.63	9.72	73	61.15	19.70	65	69.75	15.50	90	69.05	18.19
Fish	83	75.12	11.02	69	69.70	16.02	63	72.80	13.32	89	72.55	14.11
Pork	81	59.04	16.36	71	38.13	16.50	68	51.58	18.64	89	47.64	19.92
Hot dogs	82	51.23	14.35	75	26.88	13.20	65	42.50	19.34	92	37.55	17.52
Bacon	82	55.00	15.82	74	31.56	15.94	66	46.91	18.55	90	41.66	20.32
Peanut butter	83	69.31	9.94	75	74.04	12.80	66	70.32	11.27	92	72.44	11.81
Soybeans	75	67.96	13.23	75	76.97	11.87	61	72.40	13.07	89	72.51	13.55
Legumes	81	73.33	11.78	73	79.53	12.51	65	75.25	12.51	89	77.01	12.49
Eggs	83	71.06	13.88	75	73.27	14.75	66	68.16	13.42	92	74.94	14.31
Cheese	79	76.87	10.26	74	77.95	12.98	63	75.26	13.16	90	78.88	10.24
Yogurt	79	64.84	13.29	74	76.29	11.43	63	66.53	14.92	90	73.07	12.05
Pasteurized milk	82	79.23	10.35	74	75.15	14.31	65	77.15	11.93	91	77.40	12.98
Raw milk	82	55.67	18.18	66	61.12	18.45	64	63.11	18.09	84	54.28	17.88
Leafy green vegetables	82	79.36	9.96	73	83.40	7.17	64	80.36	9.42	91	81.90	8.63
Sprouts	72	65.77	13.50	74	76.36	12.63	59	70.93	14.94	87	71.29	13.52
Carrot juice	75	60.50	11.41	71	68.83	13.79	60	62.83	13.15	86	65.76	13.27
Dried fruits	76	66.11	12.69	75	72.78	13.17	61	66.76	14.58	90	71.23	12.14

Table D-3, continued

Food	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole wheat bread	80	76.37	9.75	75	82.97	9.65	65	77.50	10.90	90	81.05	9.49
White bread	82	64.75	16.97	74	36.82	18.94	65	54.02	23.40	91	49.70	22.14
Wheat germ	74	65.76	11.12	73	78.33	10.78	59	70.67	13.05	88	72.89	12.29
Bran	76	69.49	11.07	75	76.27	11.18	62	71.16	11.09	89	74.04	11.86
Presweetened cereals	83	45.66	16.77	75	25.49	12.12	66	38.70	20.01	92	34.20	15.95
Granola	79	67.27	10.29	72	74.86	12.48	62	68.07	12.80	89	72.85	11.00
Brown rice	79	66.24	10.71	74	76.50	14.20	62	69.73	13.18	91	72.21	13.69
Potato chips	81	41.68	13.01	73	29.66	12.10	65	38.98	15.04	89	33.79	12.68
Corn chips	82	43.68	10.13	74	34.07	12.13	66	41.60	13.00	90	37.30	11.10
Candy	82	39.05	12.86	74	22.81	9.48	66	33.78	15.00	90	29.56	12.93
Chocolate	82	51.20	11.74	75	31.94	12.88	66	45.14	16.31	91	39.72	14.74
White sugar	81	53.64	17.08	73	28.55	17.24	66	45.59	23.00	88	38.86	19.42
Brown sugar	82	56.05	11.51	73	41.55	16.17	65	51.28	15.03	90	47.73	15.98
Raw sugar	76	53.52	14.34	74	42.01	19.86	61	49.28	18.91	89	46.85	17.68
Honey	82	63.83	13.11	75	66.29	14.82	65	65.91	12.07	92	64.37	15.18
Soft drinks, regular	82	38.06	12.90	73	22.94	9.88	65	35.39	15.83	90	27.72	11.17
Soft drinks, low-calorie	81	40.62	13.77	75	26.60	14.99	65	34.93	13.95	91	33.13	17.28
Coffee	82	37.11	15.53	75	32.11	14.19	66	37.24	15.33	91	32.90	14.69
Herb teas	79	50.57	9.74	73	58.50	13.88	61	52.88	12.45	91	55.38	12.53
Wine	78	46.20	14.67	73	47.67	18.01	62	46.56	16.03	89	47.16	16.62

Table D-3, continued

Food	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Sunflower seeds	80	60.77	11.73	71	70.20	15.85	61	63.26	13.82	90	66.52	14.98
Lecithin	43	60.44	13.06	66	65.26	16.64	42	63.21	14.51	67	63.46	16.10
Food yeast	62	59.32	13.35	73	67.71	15.19	52	60.76	14.57	83	65.79	14.90
Corn oil	81	56.86	13.03	74	60.75	15.39	65	59.11	13.17	90	58.44	15.11

Note. Range of values: 0 (most negative opinion) to 99 (most positive opinion).

Table D-4

Means and Standard Deviations for Food-Related Attitude Scores on Health/Nutrition Factor for Male and Female Conformists and Nonconformists

	Conformist						Nonconformist					
	Male			Female			Male			Female		
Food	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	38	77.20	8.25	45	73.42	12.90	28	50.25	21.02	47	46.11	21.35
Chicken	37	76.41	9.26	45	76.81	10.19	28	60.93	17.71	45	61.29	21.04
Fish	38	75.43	10.79	45	74.86	11.32	25	68.81	15.84	44	70.20	16.28
Pork	37	60.14	14.93	44	58.12	17.59	26	39.39	16.66	45	37.40	16.56
Hot dogs	37	53.90	14.77	45	49.03	13.78	28	27.43	13.48	47	26.55	13.17
Bacon	38	55.28	15.37	44	54.76	16.36	28	35.54	16.51	46	29.14	15.26
Peanut butter	38	70.40	10.35	45	68.38	9.61	28	70.21	12.61	47	76.32	12.49
Soy beans	33	70.05	13.76	42	66.32	12.72	28	75.17	11.86	47	78.05	11.86
Legumes	37	74.76	11.05	44	72.12	12.36	28	75.90	14.39	45	81.79	10.75
Eggs	38	68.47	12.27	45	73.25	14.89	28	67.74	15.06	47	76.56	13.69
Cheese	35	75.32	10.22	44	78.09	10.24	28	75.18	16.32	46	79.64	10.29
Yogurt	36	61.66	15.01	43	67.50	11.14	27	73.02	12.29	47	78.17	10.59
Pasteurized milk	37	80.11	7.73	45	78.51	12.13	28	73.25	15.17	46	76.31	13.80
Raw milk	38	60.27	19.15	44	51.70	16.49	26	67.26	15.87	40	57.13	19.09
Leafy green vegetables	37	78.60	10.02	45	79.97	9.99	27	82.76	8.09	46	83.78	6.64
Sprouts	32	65.93	15.66	40	65.65	11.70	27	76.85	11.76	47	76.08	13.21
Carrot juice	33	59.70	11.15	42	61.14	11.69	27	66.65	14.54	44	70.18	13.31
Dried fruits	33	65.08	14.73	43	66.90	10.99	28	68.74	14.41	47	75.19	11.89

Table D-4, continued

Food	Conformist						Nonconformist					
	Male			Female			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole wheat bread	37	74.96	10.09	43	77.59	9.40	28	80.87	11.20	47	84.22	8.49
White bread	37	65.74	18.28	45	63.93	15.97	28	38.52	20.36	46	35.78	18.18
Wheat germ	33	67.39	12.35	41	64.44	9.99	26	74.82	12.95	47	80.26	8.94
Bran	34	69.98	9.90	42	69.09	12.04	28	72.60	12.41	47	78.46	9.88
Presweetened cereals	38	47.21	19.01	45	44.35	14.71	28	27.16	15.12	47	24.49	9.97
Granola	35	64.74	12.25	44	69.27	8.01	27	72.39	12.42	45	76.35	12.41
Brown rice	35	64.75	12.12	44	67.43	9.43	27	76.19	11.78	47	76.68	15.54
Potato chips	37	44.48	13.99	44	39.33	11.78	28	31.72	13.37	45	28.38	11.20
Corn chips	38	45.84	10.65	44	41.81	9.38	28	35.84	13.84	46	32.98	10.97
Candy	38	41.46	13.85	44	36.96	11.69	28	23.36	9.13	46	22.48	9.77
Chocolate	38	54.29	12.06	44	48.53	10.90	28	32.73	12.79	47	31.47	13.04
White sugar	38	57.54	18.31	43	50.19	15.32	28	29.37	18.45	45	28.04	16.63
Brown sugar	37	57.86	10.25	45	54.56	12.36	28	42.58	16.05	45	40.91	16.39
Raw sugar	34	58.41	12.96	42	49.55	14.33	27	37.79	19.14	47	44.44	20.06
Honey	37	64.41	12.08	45	63.35	14.01	28	67.90	11.98	47	65.34	16.32
Soft drinks, regular	38	43.80	13.35	44	33.11	10.30	27	23.55	10.68	46	22.58	9.49
Soft drinks, low-calorie	37	41.51	11.70	44	39.87	15.40	28	26.23	11.88	47	26.82	16.69
Coffee	38	38.89	16.65	44	35.57	14.51	28	34.99	13.30	47	30.40	14.56
Herb teas	35	49.25	10.10	44	51.62	9.44	26	57.77	13.80	47	58.90	14.06
Wine	35	46.35	15.96	43	46.08	13.72	27	46.82	16.41	46	48.17	19.04

Table D-4, continued

Food	Conformist						Nonconformist					
	Male			Female			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Sunflower seeds	36	60.02	14.17	44	61.38	9.41	25	67.94	12.08	46	71.44	17.56
Lecithin	18	57.26	15.47	25	62.74	10.75	24	67.68	12.24	42	63.88	18.69
Food yeast	25	56.39	12.75	37	61.30	13.55	27	64.81	15.19	46	69.40	15.10
Corn oil	37	60.24	12.47	44	54.02	12.95	28	57.61	14.14	46	62.66	15.95

Note. Range of values: 0 (most negative opinion) to 99 (most positive opinion).

Table D-5

Means and Standard Deviations for Food-Related Attitude Scores
on Energy Value/Weight Consciousness Factor
by Conformance Group and Gender

	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
Food	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	83	53.66	13.87	75	46.88	12.98	66	50.89	14.97	92	50.12	13.03
Chicken	83	58.92	13.84	75	59.32	17.46	66	54.02	13.00	92	62.76	16.35
Fish	83	66.22	15.08	73	66.27	16.52	64	63.63	15.44	92	68.06	15.74
Pork	83	43.98	12.05	74	40.34	15.01	65	44.18	13.74	92	40.91	13.41
Hot dogs	82	45.38	10.08	75	36.02	19.26	65	41.47	15.78	92	40.51	15.95
Bacon	83	43.05	13.18	75	37.97	16.46	66	42.11	16.29	92	39.59	14.00
Peanut butter	83	53.23	11.61	75	52.93	10.94	66	53.33	9.36	92	52.92	12.50
Soybeans	77	61.16	13.81	75	63.20	14.11	62	62.14	15.37	90	62.18	12.98
Legumes	82	54.98	14.90	75	62.78	15.01	65	58.05	15.46	92	59.17	15.43
Eggs	83	54.43	15.56	75	60.67	15.91	66	53.83	14.89	92	59.95	16.33
Cheese	82	50.93	13.07	75	52.23	12.45	65	49.61	12.19	92	52.92	13.03
Yogurt	82	61.11	16.20	75	61.76	14.69	65	60.12	15.86	92	62.34	15.18
Pasteurized milk	83	54.15	14.99	74	53.82	14.17	66	53.43	15.19	91	54.41	14.16
Raw milk	80	45.71	13.31	67	51.22	12.82	64	46.37	12.19	83	49.65	14.06
Leafy green vegetables	82	64.00	13.69	75	65.64	16.89	65	61.52	16.17	92	67.09	14.25
Sprouts	77	59.52	16.08	74	62.62	17.22	60	61.35	17.17	91	60.84	16.41
Carrot juice	77	63.14	14.18	72	63.54	15.44	60	61.70	14.12	89	64.43	15.14
Dried fruits	78	61.62	15.66	75	63.01	13.57	62	62.97	15.71	91	61.85	13.94

Table D-5, continued

Food	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole wheat bread	82	55.87	15.80	75	60.88	13.73	66	57.14	15.37	91	59.08	14.77
White bread	83	44.61	15.15	74	37.67	17.30	65	40.18	17.51	92	42.15	15.82
Wheat germ	76	59.38	12.02	74	62.31	14.60	62	61.72	12.34	88	60.19	14.12
Bran	76	58.06	12.59	75	61.84	15.19	61	59.64	14.07	90	60.14	14.07
Presweetened cereals	83	49.62	11.97	75	40.91	17.13	66	47.27	13.68	92	44.21	16.22
Granola	79	60.83	13.12	73	60.18	12.31	62	61.98	14.23	90	59.51	11.50
Brown rice	80	51.28	12.71	75	57.46	13.66	64	54.55	14.71	91	54.08	12.65
Potato chips	83	33.45	15.11	74	33.08	16.67	66	35.07	14.89	91	31.98	16.41
Corn chips	82	37.57	14.15	75	36.74	18.46	66	39.67	16.35	91	35.36	16.11
Candy	83	49.66	11.03	75	43.27	14.53	66	48.49	12.30	92	45.29	13.66
Chocolate	83	49.54	7.68	74	45.72	11.97	66	49.08	11.31	91	46.77	9.03
White sugar	83	53.06	7.38	75	46.05	15.15	66	51.70	13.68	92	48.32	10.88
Brown sugar	82	53.25	7.18	75	48.48	12.56	65	52.44	9.49	92	49.93	10.86
Raw sugar	75	53.99	7.83	74	49.47	12.39	60	53.76	9.95	89	50.39	10.80
Honey	81	56.01	8.99	75	56.11	10.27	64	57.71	7.37	92	54.91	10.77
Soft drinks, regular	83	44.20	14.13	75	41.55	16.65	66	44.94	13.57	92	41.51	16.49
Soft drinks, low-calorie	83	59.86	16.29	75	53.82	18.02	66	55.31	17.87	92	58.20	16.95
Coffee	83	53.28	16.61	74	53.49	17.52	66	51.11	14.96	91	55.02	18.23
Herb teas	79	55.63	14.53	72	52.41	16.24	61	54.43	16.17	90	53.87	14.95
Wine	81	42.49	15.12	74	43.24	16.21	63	44.06	13.08	92	42.03	17.14

Table D-5, continued

Food	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Sunflower seeds	80	56.05	12.25	73	54.90	15.53	62	54.97	14.66	91	55.86	13.39
Lecithin	43	50.73	10.01	66	56.63	15.32	42	52.65	15.61	67	55.34	12.43
Food yeast	64	51.97	12.43	73	56.74	15.23	53	52.55	11.22	84	55.75	15.65
Corn oil	82	42.68	16.08	75	42.49	15.81	65	44.72	14.52	92	41.09	16.73

Note. Range of values: 0 (most negative connotation) to 99 (most positive connotation).

Table D-6

Means and Standard Deviations for Food-Related Attitude Scores on Energy Value/Weight Consciousness Factor for Male and Female Conformists and Nonconformists

	Conformist						Nonconformist					
	Male			Female			Male			Female		
Food	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	38	54.80	15.15	45	52.69	12.78	28	45.57	13.20	47	47.66	12.92
Chicken	38	55.55	12.75	45	61.77	14.21	28	51.95	13.28	47	63.71	18.27
Fish	38	65.92	15.45	45	66.47	14.94	26	60.27	15.10	47	69.59	16.48
Pork	38	44.75	12.38	45	43.33	11.86	27	43.39	15.68	47	38.59	14.49
Hot dogs	37	44.82	11.11	45	45.83	9.26	28	37.04	19.74	47	35.41	19.15
Bacon	38	44.63	15.38	45	41.72	11.00	28	38.68	17.14	47	37.54	16.22
Peanut butter	38	53.57	9.86	45	52.96	13.01	28	53.00	8.80	47	52.89	12.13
Soy beans	34	62.46	15.69	43	60.13	12.22	28	61.75	15.24	47	64.06	13.49
Legumes	37	56.43	17.84	45	53.79	12.04	28	60.18	11.59	47	64.33	16.65
Eggs	38	51.09	15.71	45	57.26	15.02	28	57.54	13.07	47	62.53	17.25
Cheese	37	48.62	12.40	45	52.82	13.43	28	50.91	12.00	47	53.02	12.78
Yogurt	37	59.27	17.61	45	62.62	14.97	28	61.23	13.43	47	62.07	15.53
Pasteurized milk	38	53.38	15.54	45	54.80	14.65	28	53.50	15.00	46	54.02	13.82
Raw milk	37	43.01	12.90	43	48.02	13.38	27	50.96	9.59	40	51.40	14.72
Leafy green vegetables	37	60.99	14.84	45	66.48	12.28	28	62.23	18.03	47	67.67	16.02
Sprouts	33	59.67	17.87	44	59.41	14.80	27	63.41	16.37	47	62.17	17.85
Carrot juice	33	63.09	13.46	44	63.17	14.85	27	60.00	14.96	45	65.67	15.49
Dried fruits	34	60.28	15.99	44	62.65	15.51	28	66.23	15.00	47	61.10	12.41

Table D-6, continued

Food	Conformist						Nonconformist					
	Male			Female			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole wheat bread	38	54.39	13.88	44	57.15	17.35	28	60.86	16.74	47	60.89	11.77
White bread	38	43.08	17.42	45	45.90	12.99	27	36.11	17.13	47	38.56	17.51
Wheat germ	35	60.74	11.16	41	58.21	12.73	27	62.98	13.83	47	61.93	15.15
Bran	33	57.71	12.75	43	58.33	12.62	28	61.91	15.40	47	61.80	15.23
Presweetened cereals	38	50.21	10.60	45	49.12	13.12	28	43.29	16.37	47	39.50	17.60
Granola	35	61.97	15.39	44	59.92	11.09	27	61.98	12.87	46	59.12	11.98
Brown rice	36	51.44	13.94	44	51.15	11.77	28	58.54	14.95	47	56.82	12.95
Potato chips	38	33.11	13.76	45	33.74	16.31	28	37.73	16.17	46	30.25	16.51
Corn chips	38	38.13	12.69	44	37.08	15.43	28	41.77	20.38	47	33.74	16.73
Candy	38	48.91	11.47	45	50.30	10.74	28	47.93	13.54	47	40.49	14.52
Chocolate	38	48.93	9.43	45	50.04	5.89	28	49.27	13.65	46	43.57	10.39
White sugar	38	54.67	8.65	45	51.70	5.86	28	47.68	17.85	47	45.09	13.40
Brown sugar	37	53.99	6.37	45	52.64	7.80	28	50.39	12.33	47	47.34	12.69
Raw sugar	33	54.80	9.51	42	53.36	6.24	27	52.48	10.50	47	47.73	13.15
Honey	36	56.08	7.89	45	55.96	9.88	28	59.80	6.17	47	53.90	11.58
Soft drinks, regular	38	44.58	14.05	45	43.88	14.35	28	45.53	13.13	47	39.24	18.18
Soft drinks, low calorie	38	59.45	13.90	45	60.20	18.22	28	49.70	21.15	47	56.28	15.59
Coffee	38	51.16	14.23	45	55.08	18.34	28	51.05	16.17	46	54.97	18.31
Herb teas	35	56.24	16.87	44	55.15	12.54	26	52.00	15.16	46	52.64	16.99
Wine	36	42.71	13.30	45	42.32	16.57	27	45.85	13.81	47	41.74	17.84

Table D-6, continued

Food	Conformist						Nonconformist					
	Male			Female			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Sunflower seeds	36	54.33	12.22	44	57.45	12.22	26	55.85	17.71	47	54.37	14.36
Lecithin	18	51.69	11.52	25	50.04	8.95	24	53.38	18.31	42	58.49	13.21
Food yeast	26	50.10	9.43	38	53.25	14.10	27	54.91	12.43	46	57.82	16.69
Corn oil	37	43.81	14.69	45	41.76	17.25	28	45.91	14.47	47	40.46	16.37

Note. Range of values: 0 (most negative connotation) to 99 (most positive connotation).

Table D-7

Means and Standard Deviations for Food Preference Scores on Preference/Acceptance Factor by Conformance Group and Gender

	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
Food	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	83	87.14	11.90	75	46.91	31.80	66	76.86	24.21	92	61.72	33.69
Chicken	83	85.65	11.46	75	61.96	31.11	66	77.07	21.78	92	72.49	28.30
Fish	82	75.33	19.90	73	67.86	27.25	64	72.33	20.04	91	71.45	26.32
Pork	83	74.78	15.51	73	34.89	27.41	64	61.87	27.61	92	52.11	30.38
Hot dogs	82	62.81	21.95	74	25.18	24.96	65	50.60	28.49	91	40.93	30.57
Bacon	83	73.31	17.40	74	37.33	28.76	65	63.05	28.36	92	51.62	29.54
Legumes	82	70.61	22.25	75	82.69	18.00	65	73.99	20.77	92	78.07	21.37
Soybeans	75	46.46	21.60	75	64.70	20.86	60	57.36	19.72	90	54.40	25.07
Peanut butter	83	77.52	17.97	75	80.78	21.42	66	78.35	17.85	92	79.59	20.99
Eggs	83	77.78	19.52	75	81.71	18.37	66	77.32	19.46	92	81.32	18.64
Cheese	80	86.86	11.06	73	88.57	13.56	62	85.86	11.24	91	88.91	12.90
Yogurt	81	58.08	31.77	75	78.15	27.70	64	55.78	35.02	92	76.05	25.77
Pasteurized milk	83	78.72	22.35	73	73.57	27.40	66	78.93	20.68	90	74.38	27.53
Raw milk	79	40.67	27.49	65	46.22	25.61	64	51.21	27.40	80	36.75	24.46
Leafy green vegetables	82	72.46	26.45	73	85.17	16.99	64	74.53	22.34	91	81.21	23.70
Sprouts	76	55.65	24.84	73	79.85	19.39	59	63.92	26.29	90	69.86	24.58
Carrot juice	76	27.66	16.60	70	47.99	24.55	60	36.02	21.06	86	38.36	24.49
Dried fruits	78	61.67	21.45	75	78.06	18.22	62	66.32	20.57	91	72.00	21.92

Table D-7, continued

Food	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole wheat bread	82	78.92	18.32	75	89.78	11.66	66	80.59	18.18	91	86.66	14.52
White bread	83	72.05	21.97	75	28.12	28.68	66	57.03	31.95	92	47.01	34.18
Wheat germ	76	47.55	20.54	73	71.99	24.19	61	54.87	24.90	88	62.75	25.50
Bran	75	62.69	22.05	75	68.31	23.74	61	62.43	20.92	89	67.60	24.23
Presweetened cereals	82	56.55	22.35	75	28.70	23.25	65	47.78	27.79	92	40.04	25.49
Granola	79	61.25	25.95	73	78.82	18.41	62	62.02	26.70	90	74.97	20.93
Brown rice	80	63.18	19.99	75	78.40	18.14	64	64.71	21.89	91	74.65	18.56
Potato chips	83	69.30	17.86	74	47.76	26.93	66	62.18	25.87	91	56.95	24.19
Corn chips	81	68.62	17.32	74	48.21	24.10	65	61.22	22.65	90	57.19	23.48
Candy	83	73.43	15.51	74	49.39	25.00	66	63.09	24.75	91	61.38	23.10
Chocolate	83	79.53	14.51	75	62.42	25.64	66	71.87	20.99	92	71.08	23.15
White sugar	81	74.07	16.95	75	45.10	29.45	66	64.49	26.57	90	56.95	28.40
Brown sugar	82	68.84	13.03	75	58.39	21.47	65	61.99	17.47	92	65.15	18.82
Raw sugar	75	57.00	21.98	73	49.05	26.08	60	56.37	22.39	88	50.83	25.45
Honey	80	73.71	18.49	74	81.72	16.69	63	76.06	20.54	91	78.59	16.14
Soft drinks, regular	83	70.73	22.38	75	37.81	31.81	66	62.57	29.81	92	49.75	32.24
Soft drinks, low-calorie	82	45.15	32.06	75	31.60	31.11	65	25.92	21.28	92	47.70	35.55
Coffee	83	48.11	34.60	75	60.45	32.96	66	53.26	35.00	92	54.47	33.95
Herb teas	78	53.20	23.73	72	76.86	24.64	60	58.46	26.52	90	68.62	26.45
Wine	81	60.00	28.40	73	65.85	26.68	62	61.44	25.77	92	63.67	28.98

Table D-7, continued

Food	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Sunflower seeds	80	60.69	21.69	72	74.56	20.44	61	63.89	22.68	91	69.52	21.64
Lecithin	43	47.78	16.89	64	47.38	20.80	42	46.70	16.61	65	48.08	20.87
Food yeast	63	47.80	21.49	73	48.59	24.60	52	45.56	21.00	84	49.87	24.33
Corn oil	82	56.64	18.78	75	58.52	17.82	65	55.08	17.87	92	59.27	18.48

Note. Range of values: 0 (low preference/acceptance) to 99 (high preference/acceptance).

Table D-8

Means and Standard Deviations for Food Preference Scores on Preference/Acceptance Factor for Male and Female Conformists and Nonconformists

	Conformist						Nonconformist					
	Male			Female			Male			Female		
Food	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	38	90.82	5.74	45	84.03	14.65	28	57.90	26.82	47	40.36	32.97
Chicken	38	85.85	8.86	45	85.48	13.37	28	65.15	27.90	47	60.06	33.01
Fish	38	74.64	18.25	44	75.92	21.42	26	68.95	22.35	47	67.26	29.82
Pork	38	77.57	14.75	45	72.42	15.90	26	38.92	26.01	47	32.65	28.18
Hot dogs	37	64.87	20.68	45	61.12	23.04	28	31.74	26.57	46	21.18	23.33
Bacon	38	75.46	19.22	45	71.49	15.69	27	45.57	30.20	47	32.60	27.10
Peanut butter	38	80.36	12.62	45	75.13	21.33	28	75.62	23.14	47	83.86	19.96
Soy beans	32	54.77	18.94	43	40.27	21.57	28	60.31	20.53	47	67.32	20.82
Legumes	37	71.07	21.75	45	70.24	22.89	28	77.86	19.10	47	85.57	16.87
Eggs	38	79.28	16.57	45	76.52	21.81	28	74.65	22.86	47	85.91	13.71
Cheese	36	86.07	10.57	44	87.50	11.52	26	85.56	12.32	47	90.23	14.05
Yogurt	36	48.94	34.70	45	65.40	27.47	28	64.57	34.03	47	86.24	19.37
Pasteurized milk	38	81.50	19.43	45	76.37	24.51	28	75.45	22.14	45	72.39	30.40
Raw milk	38	46.26	29.71	41	35.49	24.49	26	58.44	22.24	39	38.08	24.68
Leafy green vegetables	37	69.77	24.90	45	74.68	27.73	27	81.06	16.57	46	87.59	16.95
Sprouts	33	56.00	26.48	43	55.39	23.81	26	73.97	22.77	47	83.11	16.62
Carrot juice	33	26.90	15.42	43	28.22	17.61	27	47.16	21.90	43	48.50	26.32
Dried fruits	34	58.52	22.00	44	64.10	20.94	28	75.80	13.96	47	79.40	20.36

Table D-8, continued

Food	Conformist						Nonconformist					
	Male			Female			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole wheat bread	38	76.66	20.16	44	80.88	16.56	28	85.93	13.68	47	92.07	9.71
White bread	38	73.23	23.86	45	71.05	20.47	28	35.05	28.41	47	23.99	28.34
Wheat germ	35	48.31	23.15	41	46.89	18.29	26	63.69	24.87	47	76.57	22.80
Bran	33	61.48	19.86	42	63.63	23.83	28	63.54	22.42	47	71.15	24.28
Presweetened cereals	37	59.15	24.00	45	54.41	20.92	28	32.76	25.54	47	26.28	21.70
Granola	35	52.30	28.05	44	68.36	21.97	27	74.60	18.77	46	81.30	17.93
Brown rice	36	57.84	21.80	44	67.55	17.43	28	73.55	18.92	47	81.29	17.22
Potato chips	38	71.14	18.68	45	67.74	17.20	28	50.01	29.44	46	46.38	25.51
Corn chips	37	70.38	16.70	44	67.14	17.88	28	49.11	24.01	46	47.66	24.40
Candy	38	74.95	15.46	45	72.15	15.61	28	47.00	26.09	46	50.85	24.49
Chocolate	38	80.35	13.65	45	78.84	15.32	28	60.36	23.81	47	63.65	26.84
White sugar	38	77.81	16.62	43	70.77	16.73	28	46.42	27.07	47	44.31	31.03
Brown sugar	37	66.74	12.57	45	70.56	13.28	28	55.73	21.00	47	59.97	21.81
Raw sugar	34	62.41	19.87	41	52.50	22.85	26	48.47	23.39	47	49.36	27.69
Honey	35	71.61	22.14	45	75.35	15.14	28	81.63	17.14	46	81.77	16.61
Soft drinks, regular	38	76.26	19.71	45	66.07	23.63	28	43.99	31.39	47	34.13	31.82
Soft drinks, low-calorie	37	28.63	22.87	45	58.74	32.33	28	22.35	18.79	47	37.12	35.59
Coffee	38	48.96	35.65	45	47.39	34.09	28	59.11	33.86	47	61.26	32.75
Herb teas	34	49.25	25.13	44	56.24	22.40	26	70.50	23.65	46	80.46	24.71
Wine	36	59.50	26.97	45	60.39	29.80	26	64.13	24.27	47	66.81	28.13

Table D-8, continued

Food	Conformist						Nonconformist					
	Male			Female			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Sunflower seeds	36	59.34	23.60	44	61.79	20.21	25	70.43	19.95	47	76.77	20.57
Lecithin	18	45.98	18.66	25	49.07	15.77	24	47.24	15.29	40	47.46	23.68
Food yeast	25	43.19	19.85	38	50.84	22.23	27	47.77	22.16	46	49.07	26.15
Corn oil	37	55.68	19.30	45	57.43	18.52	28	54.30	16.12	47	61.04	18.47

Note. Range of values: 0 (least preferred/accepted) to 99 (most preferred/accepted).

Table D-9

Means and Standard Deviations for Instrumental Values
by Conformance Group and Gender

	Conformance group				Gender			
	Conformist[a]		Nonconformist[b]		Male[c]		Female[d]	
Value	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Ambitious	8.4	5.0	9.6	4.8	9.3	5.4	8.6	4.6
Broadminded	8.3	5.2	6.6	5.1	7.7	5.7	7.4	4.9
Capable	8.8	4.3	8.8	3.8	8.2	4.5	9.2	3.7
Cheerful	9.4	4.4	10.3	4.9	10.2	4.4	9.5	4.8
Clean	12.3	5.0	14.0	4.2	13.7	4.3	12.6	4.9
Courageous	10.3	4.4	9.6	4.6	9.2	4.2	10.5	4.7
Forgiving	8.5	5.0	8.8	4.7	9.0	5.0	8.4	4.8
Helpful	8.8	4.6	9.2	4.5	9.1	4.7	8.8	4.5
Honest	4.6	3.7	4.7	3.6	5.4	3.8	4.2	3.3
Imaginative	12.2	4.3	9.1	4.8	9.9	4.7	11.4	4.7
Independent	9.5	5.1	7.4	4.9	8.7	5.1	8.4	5.1
Intellectual	11.0	4.9	9.1	4.8	10.0	4.5	10.2	5.2
Logical	11.3	4.8	11.2	4.6	9.9	4.6	12.3	4.5
Loving	6.4	5.1	6.3	4.6	7.1	5.2	5.8	4.5
Obedient	14.4	4.4	15.6	3.9	15.2	4.3	14.8	4.1
Polite	11.8	4.6	12.9	3.9	11.8	4.5	12.7	4.1
Responsible	6.0	3.6	7.0	3.9	6.8	3.9	6.2	3.6
Self-control	9.1	4.8	10.7	4.9	9.5	5.3	10.1	4.7

Note. Range of values: 1 (most important) to 18 (least important).

[a] $n = 84$. [b] $n = 75$. [c] $n = 66$. [d] $n = 93$.

Table D-10

Median Ranks for Instrumental Values for Male and Female Conformists and Nonconformists

Value	Conformist		Nonconformist	
	Male[a]	Female[b]	Male[c]	Female[d]
Ambitious	7.0	7.0	11.5	9.0
Broadminded	7.0	8.0	5.5	5.0
Capable	7.5	9.0	8.0	10.0
Cheerful	9.0	9.0	11.5	10.0
Clean	16.0	11.5	15.0	6.0
Courage	9.5	11.0	8.0	11.0
Forgiving	8.5	7.0	8.0	9.0
Helpful	8.5	8.0	9.5	9.0
Honest	4.0	3.0	4.5	3.0
Imaginative	10.0	14.0	8.5	9.0
Independent	10.5	9.0	8.0	7.0
Intellectual	11.0	12.0	8.0	9.0
Logical	11.0	14.0	9.5	13.0
Loving	5.5	4.0	7.0	4.0
Obedient	16.5	15.5	17.0	17.0
Polite	12.0	13.0	14.0	15.0
Responsible	6.0	5.0	6.5	6.0
Self-control	7.5	10.0	11.5	11.0

Note. Range of values: 1 (most important) to 18 (least important).

[a] n = 38.

[b] n = 46.

[c] n = 28.

[d] n = 47.

Table D-11

Median Ranks for Terminal Values for Male and Female Conformists and Nonconformists

Value	Conformist		Nonconformist	
	Male[a]	Female[b]	Male[c]	Female[d]
A comfortable life	10.5	12.0	13.0	13.0
An exciting life	10.0	12.0	10.0	10.0
A sense of accomplishment	7.0	10.0	8.0	8.0
A world at peace	13.0	13.0	11.0	12.0
A world of beauty	12.0	13.0	9.0	10.0
Equality	13.0	13.0	10.0	12.0
Family security	7.0	8.0	9.5	7.0
Freedom	7.5	9.5	8.0	7.0
Happiness	5.5	5.0	8.0	5.0
Inner harmony	4.0	4.0	6.0	4.0
Mature love	7.5	6.5	7.0	6.0
National security	14.0	15.0	17.0	17.0
Pleasure	14.0	12.0	14.5	12.0
Salvation	12.0	3.5	16.0	14.0
Self-respect	6.0	5.0	6.5	5.0
Social recognition	15.0	14.5	15.0	15.0
True friendship	7.0	6.0	5.0	7.0
Wisdom	7.0	6.0	4.5	6.0

Note. Range of values: 1 (most important) to 18 (least important).

[a] n = 38.

[b] n = 46.

[c] n = 28.

[d] n = 47.

Table D-12

Means and Standard Deviations for Reported Percentage of Income Spent on Various Categories by Conformance Group and Gender

Scale	Conformance group				Gender			
	Conformist[a]		Nonconformist[b]		Male[c]		Female[d]	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Housing	15.7	13.8	26.0	12.4	19.9	14.7	20.8	13.6
Food	16.8	9.1	16.5	8.1	17.5	8.7	16.1	8.6
Clothing	8.2	8.6	6.2	4.8	5.7	3.8	8.5	8.7
Transportation and automobile	14.2	14.9	11.0	8.5	16.6	16.0	9.9	8.0
Education	19.2	20.9	14.0	14.5	13.1	16.1	19.6	19.5
Other professional expenses	2.1	5.2	1.7	3.0	1.5	2.8	2.2	5.1
Leisure activities	8.6	6.9	9.1	7.6	10.0	7.9	8.0	6.5
Medical, dental, optical expenses	2.2	3.2	4.1	5.0	2.6	4.1	3.4	4.3
Religious and charitable contributions	3.1	5.0	2.6	5.0	2.7	5.1	3.0	4.9
Gifts	4.6	6.0	3.2	3.1	3.6	4.3	4.2	5.3
Other	5.6	13.7	5.8	12.1	7.1	15.6	4.7	10.7

Note. Includes all respondents whose total reported percentage of income spent was greater than 95% and less than 105% for all categories.

[a] $n = 78$.

[b] $n = 66$.

[c] $n = 61$.

[d] $n = 83$.

Table D-13

Means and Standard Deviations for Reported Percentage of Income Spent on Various Categories for Male and Female Conformists and Nonconformists

	Conformist				Nonconformist			
	Male[a]		Female[b]		Male[c]		Female[d]	
Category	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Housing	15.5	14.5	15.9	13.3	25.8	13.1	26.0	12.1
Food	17.5	9.1	16.3	9.2	17.5	8.4	15.9	8.0
Clothing	5.9	3.7	10.2	10.8	5.4	4.1	6.6	5.3
Transportation and automobile expenses	20.5	18.4	9.1	8.7	11.5	10.5	10.7	7.1
Education	13.4	16.7	23.9	22.9	12.6	15.5	14.9	14.0
Other professional expenses	1.5	3.3	2.5	6.3	1.4	2.2	1.9	3.4
Leisure activities	10.8	8.6	6.8	4.4	8.9	6.8	9.3	8.1
Medical, dental, optical expenses	2.0	2.7	2.3	3.6	3.3	5.5	4.6	4.6
Religious and charitable contributions	2.7	5.0	3.4	5.0	2.7	5.2	2.6	4.8
Gifts	4.1	4.9	4.9	6.8	2.9	3.5	3.4	3.0
Other	6.3	16.5	5.0	11.2	8.2	14.5	4.3	10.2

Note. Includes all respondents whose total was greater than 95% and less than 105%.

[a] $n = 35$.

[b] $n = 43$.

[c] $n = 26$.

[d] $n = 40$.

Table D-14

Means and Standard Deviations for Reported Hours Per Week Spent in Various Activities by Conformance Group and Gender

Activity	Conformance group				Gender			
	Conformist[a]		Nonconformist[b]		Male[c]		Female[d]	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Eating	12.6	6.6	11.7	4.6	13.0	6.3	11.7	5.4
Food preparation, shopping, cleaning	5.4	5.4	12.3	8.6	5.8	5.5	10.5	8.7
Exercise	5.2	5.0	6.6	3.4	6.1	5.1	5.7	3.8
Personal care	8.9	4.4	7.5	3.8	6.7	3.0	9.3	4.5
Personal leisure activities	14.1	10.1	15.1	10.2	18.8	11.7	11.7	7.8
School-related activities	29.1	18.5	21.8	20.1	25.5	19.0	25.7	20.0
Sleeping	49.1	9.5	49.5	7.7	48.3	8.3	49.9	8.9
Social activities	8.6	7.7	9.5	6.4	9.0	7.6	9.0	6.8
Religious or philosophical activities	3.0	3.8	3.2	3.4	3.1	3.9	3.0	3.4
Work or professional activities	14.5	15.8	21.1	17.5	20.3	17.4	15.7	16.4

Note. Includes all respondents whose total hours per week was greater than 30 hours and less than 175 hours.

[a] $n = 71$.

[b] $n = 62$.

[c] $n = 54$.

[d] $n = 79$.

Table D-15

Means and Standard Deviations for Reported Hours Per Week Spent in Various Activities for Male and Female Conformists and Nonconformists

	Conformist				Nonconformist			
	Male[a]		Female[b]		Male[c]		Female[d]	
Activity	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Eating	13.7	7.4	11.8	5.9	12.0	4.2	11.6	4.9
Food preparation, shopping, cleaning	3.9	4.1	6.5	6.0	8.4	6.1	14.6	9.1
Exercise	5.6	5.9	4.8	4.1	6.7	3.8	6.6	3.2
Personal care	7.5	3.4	10.0	4.9	5.5	1.9	8.6	4.1
Personal leisure activities	17.8	11.3	11.3	8.2	20.2	12.2	12.1	7.4
School-related activities	30.3	20.9	28.1	16.7	19.1	14.0	23.3	22.9
Sleeping	47.7	9.3	50.2	9.6	49.1	6.7	49.7	8.3
Social activities	9.4	8.8	8.1	6.9	8.5	6.0	10.1	6.7
Religious or philosophical activities	2.8	4.2	3.1	3.5	3.4	3.5	3.0	3.3
Work or professional activities	17.5	18.3	12.1	13.3	24.1	15.7	19.4	18.5

Note. Includes all respondents whose total hours per week was greater than 30 hours and less than 175 hours.

[a] n = 31.

[b] n = 40.

[c] n = 23.

[d] n = 39.

Table D-16

Means and Standard Deviations for Food and Food Group Consumption
by Conformance Group and Gender

Food group	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	84	71.9	16.2	75	28.5	28.1	66	59.8	30.8	93	45.5	30.4
Pork	84	45.5	19.0	75	11.7	12.2	66	33.8	24.4	93	26.5	22.3
Fish	84	40.9	20.2	75	33.0	25.8	66	36.5	21.1	93	37.7	24.8
Shellfish	84	19.3	16.4	75	18.3	18.4	66	18.8	16.6	93	18.9	17.9
Poultry	84	54.2	17.6	75	30.2	27.2	66	45.6	22.3	93	41.0	27.6
Cured meats	83	46.7	27.2	75	11.1	17.5	66	36.9	30.8	92	24.6	26.8
Other meats	82	33.8	24.0	73	13.2	16.8	65	27.9	25.0	90	21.3	21.6
Legumes	84	41.3	24.9	74	60.3	25.9	65	51.9	26.1	93	49.0	27.7
Nuts or seeds	84	33.5	21.4	75	58.0	29.1	66	48.4	28.9	93	42.7	27.4
Eggs	84	58.0	28.4	75	61.4	27.3	66	58.5	28.2	93	60.3	27.8
Cheese, cottage cheese	84	65.2	23.5	75	76.3	23.5	66	66.8	25.3	93	73.0	22.9
Milk	84	74.2	28.8	75	70.6	30.7	66	76.4	25.9	93	69.7	31.9
Yogurt	84	26.0	24.9	75	54.0	33.2	66	32.4	33.5	93	44.0	30.6
Ice cream	84	40.3	23.7	75	26.0	19.0	66	37.8	23.0	93	30.5	22.1
Citrus fruits and tomatoes	84	69.7	23.0	73	79.2	19.0	66	70.1	23.7	91	77.0	19.7
Orange and dark green vegetables	84	70.8	21.6	75	80.4	16.5	66	71.2	20.4	93	78.3	19.0
Potatoes	84	61.4	19.2	75	54.4	24.9	66	62.6	20.2	93	54.9	23.2
Other vegetables	82	67.5	23.1	75	79.1	18.6	65	68.1	23.5	92	76.5	19.9
Other fruits	83	61.4	22.3	74	79.3	18.5	64	66.5	22.9	93	72.2	21.9
Vegetable juices	84	23.3	22.9	74	48.8	28.2	65	31.1	26.6	93	38.1	29.5
Fruit juices	84	70.2	25.6	75	73.3	25.0	66	68.2	27.1	93	74.0	23.8
Fruit flavored drinks	84	41.3	32.4	75	16.9	24.1	66	33.3	30.6	93	27.2	31.5

Table D-16, continued

Food group	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole grain breads and cereals	83	63.3	29.6	74	81.3	22.4	66	70.8	28.2	91	72.5	27.8
Enriched breads and cereals	84	56.0	29.5	73	34.5	33.1	65	46.0	33.5	92	46.0	32.7
Chip-type snack foods	84	41.7	24.6	75	20.8	24.8	66	38.6	29.1	93	27.1	24.0
Cracker-type snack foods	83	40.9	24.3	75	29.6	26.8	65	37.0	26.0	93	34.5	26.2
Pastries, cakes, cookies	84	56.0	25.3	75	32.5	25.3	66	48.6	30.1	93	42.3	25.9
Pudding	84	24.6	18.4	75	10.4	11.7	66	19.5	17.1	93	16.8	17.1
Gelatin-type desserts	84	29.2	24.2	75	10.0	12.0	66	21.7	21.9	93	19.1	21.4
Candy	84	38.1	25.7	75	16.9	17.3	66	33.3	28.3	93	24.4	20.7
Coffee or tea	83	65.8	32.0	75	64.3	36.7	66	61.1	33.0	92	68.0	34.9
Soft drinks, regular	82	54.8	34.4	74	19.2	27.1	64	49.1	37.7	92	30.1	32.4
Soft drinks, low calorie	83	31.2	35.2	75	17.8	28.3	65	8.6	18.1	92	36.2	35.8
Multiple vitamins	84	31.2	37.7	75	40.6	40.3	66	30.1	38.1	93	39.6	39.5
Other dietary supplements	81	16.9	25.6	75	38.3	39.6	66	25.1	34.1	90	28.7	35.1

Note. Range of values: 0 (never) to 99 (daily).

Table D-17

Means and Standard Deviations for Food and Food Group Consumption
for Male and Female Conformists and Nonconformists

	Conformist						Nonconformist					
	Male			Female			Male			Female		
Food group	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	38	77.7	13.6	46	67.2	16.7	28	35.5	31.1	47	24.4	25.5
Pork	38	49.5	19.0	46	42.2	18.5	28	12.6	10.9	47	11.1	13.0
Fish	38	39.9	19.0	46	41.7	21.4	28	31.9	23.3	47	33.7	27.3
Shellfish	38	20.7	17.3	46	18.2	15.6	28	16.3	15.5	47	19.5	20.0
Poultry	38	54.3	15.9	46	54.1	19.1	28	33.8	24.4	47	28.1	28.8
Cured meats	38	55.4	25.7	45	39.2	26.4	28	11.8	15.8	47	10.7	18.6
Other meats	37	37.1	26.4	45	31.0	21.8	28	15.7	16.9	45	11.6	16.7
Legumes	38	45.3	25.3	46	38.0	24.3	27	61.2	24.7	47	59.7	26.8
Nuts or seeds	38	38.3	22.9	46	29.6	19.5	28	62.1	30.8	47	55.5	28.0
Eggs	38	62.8	26.3	46	54.0	29.7	28	52.7	30.1	47	66.6	24.4
Cheese, cottage cheese	38	64.4	25.2	46	65.8	22.2	28	70.1	25.5	47	79.9	21.6
Milk	38	79.3	24.3	46	70.0	31.7	28	72.5	27.9	47	69.4	32.4
Yogurt	38	23.7	28.7	46	27.8	21.4	28	44.3	36.2	47	59.7	30.2
Ice cream	38	44.6	23.3	46	36.7	23.6	28	28.6	19.4	47	24.4	18.8
Citrus fruits and tomatoes	38	65.8	24.7	46	72.9	21.2	28	76.0	21.3	45	81.2	17.4
Orange and dark green vegetables	38	66.9	22.1	46	74.0	20.8	28	77.0	16.6	47	82.4	16.2
Potatoes	38	65.7	17.9	46	57.8	19.8	28	58.4	22.6	47	52.1	26.1
Other vegetables	37	65.9	24.5	45	68.8	22.1	28	71.0	22.1	47	83.9	14.2
Other fruits	37	59.9	22.7	46	62.6	22.2	27	75.5	20.5	47	81.5	17.0
Vegetable juices	38	21.2	20.3	46	25.1	25.0	27	45.1	28.5	47	50.9	28.2
Fruit juices	38	66.8	26.9	46	73.0	24.5	28	70.2	27.8	47	75.1	23.3
Fruit-flavored drinks	38	43.6	31.4	46	39.3	33.4	28	19.3	23.6	47	15.4	24.5

Table D-17, continued

Food group	Conformist						Nonconformist					
	Male			Female			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole grain breads and cereals	38	63.2	30.5	45	63.4	29.1	28	81.3	21.0	46	81.3	23.5
Enriched breads and cereals	38	55.7	31.9	46	56.2	27.7	27	32.2	31.4	46	35.9	34.4
Chip-type snack foods	38	47.1	27.5	46	37.3	21.2	28	27.1	27.7	47	17.0	22.3
Cracker-type snack foods	37	44.6	25.5	46	37.8	23.1	28	26.8	23.4	47	31.3	28.8
Pastries, cakes, cookies	38	61.2	25.1	46	51.7	24.9	28	31.6	28.1	47	33.0	23.7
Pudding	38	25.5	18.5	46	23.9	18.5	28	11.2	10.5	47	9.9	12.4
Gelatin-type desserts	38	29.5	25.0	46	29.0	23.7	28	11.1	9.9	47	9.4	13.1
Candy	38	45.7	27.8	46	31.9	22.1	28	16.5	19.0	47	17.1	16.5
Coffee or tea	38	58.3	32.7	45	72.2	30.3	28	64.9	33.8	47	63.9	38.7
Soft drinks, regular	37	68.0	30.3	45	43.9	34.1	27	23.3	31.2	47	16.9	24.4
Soft drinks, low-calorie	37	12.4	23.0	45	46.6	36.1	28	3.6	4.8	47	26.3	32.9
Multiple vitamins	38	28.6	38.0	46	33.4	37.7	28	32.1	38.9	47	45.7	40.7
Other dietary supplements	38	20.4	29.6	43	13.8	21.3	28	31.4	39.1	47	42.3	39.7

Note. Range of values: 0 (never) to 99 (daily).

Table D-18

Means and Standard Deviations for Comparison of Present Consumption of Foods and Food Groups with Childhood Food Consumption by Conformance Group and Gender

Food group	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	84	49.3	22.2	73	22.9	26.1	65	45.3	27.4	92	31.1	26.0
Pork	84	41.4	21.4	73	19.0	24.1	65	35.4	27.3	92	27.6	23.2
Fish	84	47.9	24.0	73	43.8	31.6	65	45.8	26.6	92	46.1	28.7
Shellfish	84	49.5	22.3	73	40.5	30.3	65	47.5	27.9	92	43.8	25.8
Poultry	84	49.5	21.1	73	31.4	30.4	65	43.4	27.0	92	39.5	27.5
Cured meats	84	42.3	25.9	73	20.4	26.0	65	34.0	28.9	92	30.8	27.6
Other meats	81	42.0	20.5	73	19.4	24.0	64	34.3	24.1	90	29.2	25.4
Legumes	84	47.7	26.5	73	64.4	28.1	65	54.9	26.2	92	55.9	30.1
Nuts or seeds	83	46.8	22.4	73	64.1	28.8	65	56.4	25.1	91	53.8	28.3
Eggs	84	49.4	26.4	73	51.5	23.6	65	46.5	24.4	92	53.1	25.3
Cheese, cottage cheese	83	60.6	23.3	73	67.1	24.9	65	60.8	24.0	91	65.7	24.2
Milk	84	43.7	23.6	73	45.3	28.0	65	45.8	25.2	92	43.5	26.1
Yogurt	83	58.3	24.3	72	70.2	31.0	64	59.4	29.1	91	67.0	27.2
Ice cream	84	36.2	22.8	73	27.9	24.8	65	31.4	22.1	92	33.0	25.4
Citrus fruits, tomatoes	83	56.1	23.5	73	61.7	19.2	64	60.5	22.6	92	57.5	21.1
Orange and dark green vegetables	84	55.0	22.7	73	62.9	22.0	65	59.8	21.7	92	57.9	23.4
Potatoes	84	49.0	23.9	73	41.5	23.8	65	49.4	21.2	92	42.7	25.6
Other vegetables	83	55.5	23.2	72	63.9	22.1	64	58.2	23.3	91	60.2	22.9
Other fruits	83	53.0	23.6	73	63.0	21.9	64	58.3	24.3	92	57.2	22.8
Vegetable juices	83	44.9	22.5	72	59.2	24.3	64	51.8	22.3	91	51.4	25.8
Fruit juices	84	53.8	26.1	73	57.3	24.4	65	57.2	25.3	92	54.1	25.4
Fruit-flavored drinks	84	38.5	25.0	73	26.0	25.1	65	32.4	27.4	92	32.9	24.7

Table D-18, continued

Food group	Conformance group						Gender					
	Conformist			Nonconformist			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole grain breads and cereals	84	59.4	25.6	73	69.8	28.2	65	71.3	24.6	92	59.2	28.1
Enriched breads and cereals	84	42.4	24.1	72	27.0	27.2	64	35.7	26.7	92	35.1	26.8
Chip-type snack foods	84	39.7	26.9	72	24.7	26.0	64	32.0	27.1	92	33.3	27.8
Cracker-type snack foods	84	40.5	26.1	73	30.5	27.4	65	33.3	26.3	92	37.7	27.6
Pastries, cakes, cookies	84	43.1	25.9	73	26.6	26.3	65	39.9	28.4	92	32.3	26.1
Pudding	83	30.7	18.4	73	23.8	23.2	65	26.2	18.0	91	28.4	22.9
Gelatin-type desserts	84	35.0	21.9	73	21.3	22.0	65	28.7	21.0	92	28.6	24.3
Candy	84	34.6	23.7	73	22.2	24.7	65	30.4	25.0	92	27.7	24.9
Coffee or tea	84	65.4	27.4	72	60.8	32.4	64	60.2	28.9	92	65.4	30.4
Soft drinks, regular	84	48.3	30.5	72	27.3	26.7	64	43.3	32.3	92	35.3	29.1
Soft drinks, low-calorie	82	53.9	28.1	71	33.3	30.1	62	36.0	26.3	91	50.1	32.4
Multiple vitamins	84	39.4	27.3	72	51.5	29.2	64	41.3	27.9	92	47.6	29.2
Other dietary supplements	80	43.2	23.4	70	56.2	29.0	64	47.4	26.7	86	50.7	27.1

Note. Range of values: 0 (less often) to 99 (more often) with 45-55 meaning "about the same."

Table D-19

Means and Standard Deviations for Comparison of Present Consumption of Foods and Food Groups With Childhood Food Consumption for Male and Female Conformists and Nonconformists

	Conformist						Nonconformist					
	Male			Female			Male			Female		
Food group	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Beef	38	60.6	16.4	46	39.9	22.1	27	23.9	25.4	46	22.3	26.8
Pork	38	48.5	22.6	46	35.0	18.3	27	17.0	22.4	46	20.2	25.2
Fish	38	49.0	24.4	46	47.1	23.8	27	41.3	29.3	46	45.2	33.1
Shellfish	38	54.5	23.3	46	45.4	20.9	27	37.7	31.2	46	42.2	30.1
Poultry	38	54.9	19.8	46	45.1	21.2	27	27.3	27.8	46	33.8	31.9
Cured meats	38	46.6	26.4	46	38.7	25.2	27	16.2	22.5	46	22.8	27.8
Other meats	37	47.5	17.4	44	37.5	21.9	27	16.1	19.7	46	21.3	26.2
Legumes	38	49.1	24.6	46	46.6	28.2	27	63.0	26.7	46	65.2	29.2
Nuts or seeds	38	51.1	22.2	45	43.2	22.2	27	64.0	27.5	46	64.2	29.9
Eggs	28	48.3	25.8	46	50.3	27.1	27	43.9	22.6	46	55.9	23.4
Cheese, cottage cheese	38	60.9	23.8	45	60.4	23.1	27	60.6	24.7	46	70.8	24.4
Milk	38	44.1	23.7	46	43.3	23.9	27	48.2	27.4	46	43.6	28.5
Yogurt	38	55.5	25.6	45	60.8	23.3	26	65.1	33.3	46	73.1	29.6
Ice cream	38	36.1	21.7	46	36.2	23.9	27	24.7	21.2	46	29.8	26.8
Citrus fruits, tomatoes	37	58.0	24.4	46	54.6	23.0	27	63.9	19.8	46	60.3	18.9
Orange and dark green vegetables	38	58.6	22.2	46	52.0	22.9	27	61.4	21.3	46	63.8	22.6
Potatoes	38	54.5	20.1	46	44.4	25.9	27	42.3	21.1	46	41.0	25.5
Other vegetables	37	57.1	24.0	46	54.2	22.7	27	59.7	22.7	45	66.4	21.7
Other fruits	37	54.9	26.2	46	51.4	21.5	27	62.9	21.0	46	63.0	22.7
Vegetable juices	38	45.1	22.1	45	44.8	23.0	26	61.5	18.9	46	57.8	26.9
Fruit juices	38	55.5	26.5	46	52.3	25.9	27	59.6	23.7	46	55.9	24.9
Fruit-flavored drinks	38	39.3	28.2	46	37.9	22.4	27	22.6	23.6	46	28.0	26.0

Table D-19, continued

Food group	Conformist						Nonconformist					
	Male			Female			Male			Female		
	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.	n	Mean	S.D.
Whole grain breads and cereals	38	66.2	25.0	46	53.7	25.0	27	78.5	22.4	46	64.6	30.1
Enriched breads and cereals	38	45.7	26.1	46	39.8	22.2	26	21.0	20.3	46	30.4	30.2
Chip-type snack foods	38	41.8	27.1	46	38.0	26.9	26	17.8	20.3	46	28.6	28.1
Cracker-type snack foods	38	40.2	25.9	46	40.8	26.5	27	23.5	24.0	46	34.7	28.6
Pastries, cakes, cookies	38	51.6	26.2	46	36.1	23.6	27	23.4	22.9	46	28.5	28.1
Pudding	38	30.7	17.4	45	30.7	19.4	27	19.9	17.3	46	26.2	25.9
Gelatin-type desserts	38	33.7	21.8	46	36.1	22.1	27	21.7	17.8	46	21.1	24.3
Candy	38	40.5	26.1	46	29.7	20.5	27	16.1	14.4	46	25.7	28.7
Coffee or tea	38	61.0	29.8	46	69.1	25.0	26	59.1	28.1	46	61.8	34.8
Soft drinks, regular	38	57.4	29.8	46	40.8	29.4	26	22.8	24.0	46	29.9	28.1
Soft drinks, low-calorie	36	44.3	25.5	46	61.5	28.0	26	24.5	23.3	45	38.4	32.6
Multiple vitamins	38	36.6	27.3	46	41.7	27.5	26	48.1	27.9	46	53.4	30.1
Other dietary supplements	37	43.0	23.3	43	43.4	23.8	27	53.4	30.1	43	58.0	28.5

Note. Range of values: 0 (less often) to 99 (more often) with 45-55 meaning "about the same."

Table D-20

Means and Standard Deviations for Nutrition Knowledge Score and Self-Rating of Nutrition Knowledge for Male and Female Conformists and Nonconformists

Variable	Conformist		Nonconformist	
	Male	Female	Male	Female
Nutrition knowledge score				
Mean	14.7	14.8	16.1	16.2
Standard deviation	3.9	3.2	2.9	3.7
n	38	46	28	47
Self-rating of nutrition knowledge				
Mean	48.3	51.4	51.7	56.9
Standard deviation	17.6	19.7	15.8	15.9
n	37	40	26	42

Notes. Range of values for nutrition knowledge score: 0 (none correct) to 24 (24 items correct).

Range of values for self-rating of nutrition knowledge: 0 (know nothing) to 99 (expert).

Table D-21

Means and Standard Deviations for Perceived Health Status and Perceived Nutritional Adequacy of Diet for Male and Female Conformists and Nonconformists

Variable	Conformist		Nonconformist	
	Male[a]	Female[b]	Male[c]	Female[d]
Perceived health status				
Mean	82.6	77.4	79.8	82.2
Standard deviation	16.6	16.7	14.7	13.8
Perceived nutritional adequacy of diet				
Mean	65.0	64.2	73.1	76.7
Standard deviation	22.9	20.8	17.8	17.3

Note. Range of values for both measures: 0 (poor) to 99 (excellent).

[a] $n = 38$.

[b] $n = 46$.

[c] $n = 28$.

[d] $n = 47$.

Table D-22

Means and Standard Deviations for Reported Use of Homegrown Vegetables and Fruits for Male and Female Conformists and Nonconformists

	Conformist				Nonconformist			
	Male[a]		Female[b]		Male[c]		Female[d]	
Variable	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Kinds of vegetables used	6.0	5.4	7.4	5.4	7.5	6.0	9.1	6.4
Kinds of fruits used	1.6	2.0	2.4	1.8	1.9	1.7	3.1	3.0
Months of use of homegrown fruits and vegetables	3.1	2.0	3.6	2.5	3.1	2.3	4.0	3.0
Percentage of total fruit and vegetable usage	20.2%	21.5	26.1%	16.1	19.8%	25.3	24.9%	19.3

Note. Includes only those subjects who reported use of homegrown vegetables and fruits.

[a] $n = 33$.

[b] $n = 36$.

[c] $n = 22$.

[d] $n = 36$.

VITA

Alice Elaine Calkins was born in Cadillac, Michigan, on November 4, 1947. She is the daughter of James and LaFern Calkins. Her childhood years were spent on a farm near Tustin, Michigan. She attended Tustin Elementary School and Adelphian Academy, Holly, Michigan. She received the Bachelor of Arts degree in Home Economics from Andrews University, Berrien Springs, Michigan, in June 1969. In August 1970 she completed a dietetics internship at Loma Linda University. The Master of Science degree in Food Service Administration was completed at Loma Linda University in 1973.

In September 1972, she accepted a position as Food Service Director at Takoma Hospital, Greeneville, Tennessee. She joined the faculty of the Home Economics Department at Southern Missionary College, Collegedale, Tennessee, in August 1974.

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She is a member of the American Dietetic Association, the Seventh-day Adventist Dietetic Association, Phi Kappa Phi, and Omicron Nu. She is returning to Southern Missionary College as a member of the newly formed Division of Behavioral and Family Sciences, where she will teach nutrition, food science, and food service administration courses.