CULTURAL AND SOCIAL CORRELATES OF ADULT OVERWEIGHT AND OBESITY IN UPSTATE NEW YORK

By

STACEY ANN GIROUX

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2012

To Mom and Pop

ACKNOWLEDGMENTS

Many people supported me not only while I worked on this research but also throughout my time in graduate school. My parents, Don and Chris Giroux, never told me I couldn't be or do anything, whether as a young child with aspirations as a leaf-picker or as an idealistic twenty-something who believed she could make a difference in the world as an anthropologist. They also provided help, shelter and money at various difficult points during graduate school. For this and more I thank them. My sister, Carolyn Giroux, has provided comic relief and her excellent proofreading skills. James Wells, who was a close friend when I began graduate school and is now my partner of eight-plus years, I thank especially for emotional support. His is a unique soul, and, having gone through the dissertation process himself, he always seemed to know what to say, what not to say, when to push me, and perhaps most importantly, when to simply listen.

When I was still an undergraduate at the University of Missouri, Gery Ryan's medical anthropology class inspired me to switch from archaeology to cultural anthropology almost overnight. Gery is the person I would call my first mentor, and he showed me that it was possible to pursue anthropology as a career, that I had the right stuff for it, and then helped me to do just that. When asked, he continued to help me throughout graduate school.

In Gainesville, my graduate committee has been one of the most supportive and level-headed that I could have wished for. My chair, Russ Bernard, began mentoring me even from our first meeting, when he came to speak at the University of Missouri. I thank him for his endless energy and guidance. Anita Spring has held me to high standards both in seminar and in this research and dissertation. Della McMillan

continues to encourage me and provide me with advice on every topic under the sun. Elena Andresen's expertise in public health and data analysis has immensely strengthened this and any future work I undertake. I also thank the staff in the anthropology department, especially Karen Jones, for all their help over the years. The students of Russ group (SOR) became friends and allies, and I thank especially Rosalyn Negron, Fatma Soud, Amber Wutich, Mark House, Lance Gravlee, David Kennedy, Elli Sugita and Adam Kis. Fatma Soud was also part of a small group of friends I met in my first statistics class. Without her, Sherri Smith, and the late Cindy Malecki, I would not have mastered the material. Sherri Smith became a close friend, and I thank her and Rodney Housen for their constant and incredible generosity. Other people in Gainesville provided friendship and support, especially Cyrille Guillo.

In upstate New York, I thank all the people who gave me their time and shared parts of their lives with me. I thank Megan Dorr, Dennis Bowen, Kate Dorr, and the rest of their family, who provided good food, friendship, and much needed breaks from research. Megan's friendship during that time was one of the most valuable assets I've ever claimed. I also thank Anamaria Iosif-Ross for her personal and professional friendship. The people at the law firm of Kernan and Kernan, where I was employed on and off during the research and writing phases, encouraged me and were willing to try to work with my strange schedule. Andrew Kinney managed to give me the help I needed when I needed it most.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ANOVA	analysis of variance
BMI	body mass index
BRFSS	Behavioral Risk Factor Surveillance System
BSE	bovine spongiform encephalopathy
CDC	Centers for Disease Control and Prevention
CHD	coronary heart disease
CSA	community-supported agriculture
CVD	cardiovascular disease
FANTA	Food and Nutrition Technical Assistance
FAO	Food and Agriculture Organization
FDA	Food and Drug Administration
GDP	gross domestic product
GMO	genetically modified organism
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
HRAF	Human Relations Area Files
IPDs	infectious and parasitic diseases
IQR	interquartile range
NCDs	non-communicable diseases
NGO	non-governmental organization
NHANES	National Health and Nutrition Examination Survey
NIDDM	non-insulin-dependent diabetes mellitus
NR-NCDs	nutrition-related non-communicable diseases
QALYs	quality-adjusted life years
PEM	protein-energy malnutrition

SES	socioeconomic status
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WHO	World Health Organization

Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

CULTURAL AND SOCIAL CORRELATES OF ADULT OVERWEIGHT AND OBESITY IN UPSTATE NEW YORK

By

Stacey Ann Giroux

May 2012

Chair: H. Russell Bernard
Major: Anthropology

Despite the money and efforts put forth to control obesity in the United States, it remains a serious problem. This research project investigated the correlates of American adult overweight and obesity in the Mohawk Valley region in upstate New York, seeking to understand how cultural models of healthy foods, individuals' eating habits, and the social relationships of people contribute to increased body mass. The project drew on cultural consensus analysis and the related theory of cultural consonance in an attempt to link culture (beliefs about healthiness of foods) to behavior (food intake), and in turn link these to the body (the biological variable of weight). The inclusion of social network data allowed for examination of potential links between network structural or attribute variables and BMI. In total, 139 individuals were interviewed.

The project utilized a combination of quantitative and qualitative methods, with data collection proceeding from participant observation and unstructured interviews to more structured data collection techniques such as freelists, structured surveys, and egocentric social network interviews. Data analysis included parametric and

nonparametric statistical tests social network analysis and text analysis of interview data.

The research project uncovered shared cultural models of healthy foods. While these shared models reproduced much public health information about the healthiness of certain foods, the amount of cultural knowledge individuals possessed about the healthiness of foods was not significantly tied to obesity or to intake of certain healthy foods. Social network data contributed little to predicting obesity in this dataset but did provide support for the possibility that perceptions of what overweight and obese bodies look like have shifted or are shifting for people who are overweight or obese.

The possibilities uncovered by these data pose important public health questions. If people do not make choices based on knowledge of how healthy foods are, how should nutrition education efforts respond? And if overweight or obese people fail to recognize themselves and their friends and family as such, changes to adopt healthier lifestyles are less likely to occur, or less likely even to be perceived as necessary.

CHAPTER 1
INTRODUCTION

The current obesity problem in the United States appears to have taken the nation by surprise. The first release, in 1979, of “Healthy People,” (the Surgeon General's report on health promotion and disease prevention) did not name overweight and obesity as priority areas for work, even though about 15% of the population was obese at the time (Centers for Disease Control and Prevention [CDC] 2005:292–295). The problem entered the Surgeon General’s report, “Healthy People 2010,” in 2000 (United States Department of Health and Human Services 2000), which set targets for increasing the proportion of adults who are at a healthy weight to 60%, reducing the proportion of adults who are obese to 15%, and reducing the proportion of children who are overweight or obese to 5%, among other nutrition-related goals. We as a nation have not met these goals (Sondik et al. 2010). “Healthy People 2020” lays out more moderate objectives of increasing the proportion of adults who are at a healthy weight to 33.9% and reducing the proportion of adults who are obese to 30.6%: 10% improvements (United States Department of Health and Human Services n.d.). Despite efforts, especially in the last decade, to curb obesity’s spread in the United States, the prevalence of obesity has not fallen. In fact, CDC data showed a steady increase culminating in a national prevalence of 27.6% by 2010 (CDC 2010).

Heritability of body mass index (BMI) accounts for 25% to 60% of human variation in obesity, but the shift in obesity rates is far too rapid to be the result of genetics (WHO 2000:134-135). There is a range of potential contributors to obesity; for example, *in utero* effects (Barker 1992), having children at a later age (Keith et al. 2006; Martorell 2001; Martorell et al. 1998), palatability of foods (WHO 2000:110). Factors

such as changing environment, availability of foods, and SES are recognized in the public health ecological model for understanding obesity. Such a model takes into account the links between physical and social environments, individual knowledge, attitudes and behavior, and health (Institute of Medicine 2002).

Social scientists, and anthropologists in particular, have long held an interest in the linkages among culture and food and nutrition. Anthropological work has focused on the meaning of foods (Bennett 1943; Counihan 1999; Douglas 1972); malnutrition and food insecurity (Backstrand et al. 1997; Gross and Underwood 1971; Pottier 1999; Whiteford 1982); theoretical perspectives on food (Goody 1982; Harris 1985; Lévi-Strauss 1969; Mintz 1985); and methods and applied work (McMillan and Harlow 1991; Mead 1964; Pelto, Pelto and Messer 1989). In the case of obesity, there has been work in biological anthropology (Brown 1991; Eaton and Konner 1985; Lieberman 1991, 2006) and also in cultural anthropology, where the focus has most often been on the meaning and symbolism of fatness (de Garine and Pollack 1995; Kulick and Meneley 2005).

Though not alone in its effort to understand the sociocultural determinants of the biological problem of obesity, this research positions itself at the intersection of biological and cultural approaches by seeking to understand the interface between food intake and the socio-behavioral variables that contribute to obesity. This research also works toward an anthropological theory of culture within biocultural research (Dressler 2001, 2005; Goodman and Leatherman 1998). Dressler (2001) called for a synthesis of two different views of human life, the constructivist (e.g., what people believe about illness) and structuralist (e.g., the distribution of disease and what influences that, such

as capitalism). These views are based on those of Bourdieu (1990), for whom individuals construct culture and meaning for the world within certain objective constraints of society. Anthropologists and other social scientists must figure out how to "link cultural construction to behavior to the body" (Dressler 2001:457). That is, they must figure out how to link human biology to both meaning and behavior.

The overall objective of the research project was to investigate the correlates of adult overweight and obesity in Oneida and Herkimer counties in the Mohawk Valley in upstate New York. There were four specific objectives for this research project:

- **O1** Testing the extent to which there is a shared cultural model of healthy and unhealthy foods and measuring the extent to which the behavior of individuals deviates from such a model.
- **O2** Examining whether models of healthy and unhealthy foods vary by age, income, education, sex and weight status.
- **O3** Examining the social networks of individuals and testing their significance for obesity.
- **O4** Documenting eating habits in this community in upstate New York.

There are four related hypotheses for the project:

- **H1** There are some shared models of healthy and unhealthy foods in this population. These models will vary by age, income, education, sex and weight status.
- **H2** The degree of individual behavior consonance in terms of aspects of a shared cultural model will vary inversely with BMI.
- **H3** People whose family members figure centrally (measured by the percent of network alters who are family members, and activities with family members such as eating together and talking about food, eating and health) in their social networks will have lower BMI.
- **H4** Density of social networks will vary inversely with BMI.

The theoretical and methodological pathways used in this research include cultural consensus analysis and the related theory of cultural consonance. Herein lies the unique contribution to the anthropology of food and obesity that is possible with this research: I attempt to link culture (in terms of judged healthiness of foods) to behavior (in terms of food intake) to the body (in terms of the biological variable of weight). In the tradition of medical anthropology as an applied field, such research will provide new ideas for individuals managing their weight as well as for communities aiming to implement local, community-level health promotion programs by focusing not only on the balance of calories in the body but also on social and cultural factors relevant to daily life.

The assumption in this research is that obesity is a problematic state of the human body and is to be remedied if individuals are to live the healthiest lives they can. That said, I assumed that my informants viewed obesity as a situation to be remedied, and that they strove to be healthy in their lives. Their definitions of healthiness varied, and the minimum level of health a given individual wishes or feels compelled to maintain varied. But I assumed, for instance, that no one was trying to become obese or was conducting experiments with themselves to eat as poorly as possible.

The dissertation is organized into eight additional chapters. Chapters 2, 3, and 4 provide literature reviews which cover the anthropology of food and nutrition (Chapter 2), diseases of affluence (Chapter 3), and some of the literature on obesity and provides statistics for the geographical area under study relative to the United States (Chapter 4). Chapters 5 and 6 provide overviews of the ethnographic setting (Chapter 5) and the research plan and project, including hypotheses (Chapter 6). Chapters 7 and 8 are the

data analysis chapters, and Chapter 9 concludes and summarizes the dissertation and provides some directions for future research.

CHAPTER 2
CULTURE, FOOD AND NUTRITION

Chapter 2 traces a history of research in culture and nutrition, illustrating a wide range of issues surrounding the relationship of culture to food and nutrition. It is arranged chronologically and draws primarily on work by anthropologists. The outline begins with Audrey Richards's landmark study of the Bemba of Northern Rhodesia (Zambia) (1932, 1939), and continues up to current research on topics such as genetically modified foods and community-supported agriculture (CSA) programs. The idea that I think best illustrates why the study of culture, food and nutrition is important is that, in the words of Messer, "people choose foods, not energy or other nutrients, in their dietary selections" (1984:213). Chapter 2 sets the stage for this research project on diet and obesity by examining the anthropological literature which highlights the ways in which food choices are determined by culture but also by factors like biology, ecology, and politics. Cultural knowledge and ideas shape rules surrounding food, such as whether an item is edible, the distribution of food (who eats what and in what amounts), who eats with whom, and when certain foods are or are not eaten, as in ritual settings or celebrations. What food means to people and how people imbue foods with meaning and value are also important: foods serve as markers of identity and define people, and the exchange or sharing of foods matters in different ways in different cultures.

Early Work

Although there were a few works in the late 18th and early 19th centuries which addressed nutrition and culture, such as those of Mallery (1888), a chapter in Smith (1889), and Boas (1921), Richards's work was pioneering. She focused on nutritional aspects of African culture, examining in particular social organization in relationship to

nutrition. Richards's work (especially 1939) served as a "definitive functionalist study" (Montgomery and Bennett 1979:128) of food and nutrition, following in the footsteps of her mentor Malinowski and in the traditions of British anthropology of the time. Richards's 1932 work was completed prior to any fieldwork in Africa and developed into the 1939 volume. In the earlier work she laid out her development of the concept of a "nutritional system," or a culture's entire constellation of complex food-related activities which included food preparation, distribution and consumption, farming, and crafting cooking utensils. It also included the social relationships and economics surrounding food. Here she also formulated her research foci: How nutritional needs determine relationships within a "primitive"(pre-literate and traditional) society, and how hunger binds together members of a social group (1932:23). Certain months of the year were months of hunger, and she sought to understand how people coped with this, both physically and psychologically. She felt sure that food and nutrition were tied to more than biological needs. She established links between agricultural production and ritual authority, and addressed gender relations, the division of labor, and labor migration.

Firth (1934) outlined an ambitious plan for nutrition research in the interest of regulating the diet of the people who inhabited the British colonies. Although he saw the task of European civilization as "maintaining or providing for large sections of the native population diets which shall be adequate in quality as well as in quantity" (Firth 1934:401), he recognized that there were numerous aspects of food and nutrition that needed to be addressed, including availability of local natural resources, production processes, food preparation, and consumption. He also noted that increased availability of imported or Western foods and money contributed to "the abandonment of useful

native elements" (Firth 1934:402) that led to decreased diversity of diets and therefore nutritional problems. Also around this time, Bell (1931) studied the place of food in the lives of Polynesians, and Meyer and Sonia Fortes analyzed food and the economy among the Tallensi (1936).

In the 1940s, Cora Du Bois (1941, 1944) found a psychological link between food and behavior in her study of the people of Alor. In Du Bois's view, food served as an indicator of cultural drives and personality among the Alorese. Du Bois characterized the people and culture of Alor as distrustful or suspicious, and traced this to experiences of food-related neglect that people experienced as children. She documented this dynamic between the food-seeking child and adult with photographs in her 1944 ethnography. She also found that hunger was a pervasive theme in Alorese mythology, and concluded that hunger was a highly motivating factor for the people of Alor, who were constantly anxious about having enough food.

During this decade anthropologists also became concerned with applying their skills and knowledge as advocates for humanitarian causes. Research into food and nutrition was often tied to recognition of inadequate nutrition among poorer people and the desire to try to remedy this situation. However, the study of food, nutrition, and culture at this time was not accompanied by any major theoretical ideas or paradigms. Food habits had become an interest, but it would not be sustained as an area of study until a resurgence of concern over nutritional habits in the 1970s. Instead, in the United States in the 1940s studies of food habits were conducted partly because of wartime rationing and partly because of Depression-era reforms in rural welfare, which spawned government-sponsored studies on the consequences of the food habits of ethnic groups

in the United States. In addition, nutrition education in terms of public health was beginning to take shape, with the publication in the 1940s of the National Food Guide, better known as the “Basic 7” (Welsh 1994).

Cussler and DeGive (1942, 1943; DeGive and Cussler 1941) studied food habits of communities in North and South Carolina with a view toward policy recommendations. The Culture and Foodways Project of Southern Illinois involved researchers such as Margaret Mead and Herbert Passin and examined food habits in relation to socioeconomic status, solidarity, and change in social and economic status (Bennett, Smith, and Passin 1942). Changes in local diets over time were deemed to be due to social and economic shifts related to urbanization. One result of these government-directed, applied studies was a series of National Research Council Bulletins with titles such as *The Problem of Changing Food Habits* (1943) and *Manual for the Study of Food Habits* (1945), authored by the recently formed Committee on Food Habits.

Bennett (1943) studied food and social status among river bottom dwellers in southern Illinois as part of the Culture and Foodways project. Bennett distinguished five groups of rural dwellers, ranked by socioeconomic status and for whom that status was a primary concern. Bennett hypothesized that food was an important symbol for portraying status and noted that these groups were “governed in their tastes by standards based upon food-prestige of various sorts,” and that “food is more important as a symbol than as nutriment” (1943:563, 569). Food prestige varied with what it was attached to: status, urban positive values, symbols of in-group or out-group attitudes, or

ceremonial function. Ultimately, in Bennett's analysis, food functioned as an indicator of basic social structure among the river bottom dwellers.

Post World War II

After World War II, work in food and nutrition by American anthropologists declined until the late 1950s. Works by Cassel (1957), an epidemiologist and physician, and by Fischer et al. (1959) marked the beginning of interdisciplinary work on culture and nutrition. Cassel addressed social and cultural factors to consider when implementing a program to change food habits. He illustrated this with a case study of a program designed to change food-related behavior of some Zulu mothers and children. He recommended, for example, that health workers have intimate knowledge of existing cultural beliefs and subcultures before attempting to implement a program. The work of Fischer et al. (1959) on totemism and allergies discussed similarities seen between allergy symptoms of westerners in the United States and symptoms experienced by Caroline Islanders, which included death. Islanders believed their symptoms resulted from violation of totemic food taboos. To violate a totemic food taboo was akin to "forbidden behaviour toward a blood relative or close family" (Fischer et al. 1959:155). The symptoms the violator experienced were often similar to some characteristic of the totem in question: for example, eating a certain fish could cause the eater to have sores similar to the fish's spots. The authors believed that in some cases totemic beliefs were called upon after the fact as explanations of symptoms or other misfortune, noting that some individuals did not even know their totemic taboos. The authors theorized a relationship between psychological factors and physiological ones: violating food taboos expressed hostility toward matrilineal relatives and parents, and guilt about violating taboos was associated with the appearance of symptoms that often resembled what

Western biomedicine would judge to be allergic reactions. Physical allergy did seem to account for many of the symptoms seen: most taboos were against fish or shellfish, which are highly allergenic. Yet physical allergy was not enough to fully explain the Islanders' symptoms.

Scrimshaw (Scrimshaw and Béhar 1961; Scrimshaw, Taylor, and Gordon 1959), a clinical and public health nutritionist, made a landmark discovery at the end of the 1950s: evidence for both synergistic and antagonistic relationships between nutritional status and infection. He documented the relationship between malnutrition and infection through his clinical and field research with the center he founded in Guatemala, the Instituto de Nutrición de Centro América y Panamá. In synergistic associations, the overall detriment to the child as a result of both malnutrition plus infection was worse than that due to either malnutrition or infection alone. Antagonistic relationships were less common, but appeared when the incidence of malnutrition in a child seemed to lessen the effect of an infectious disease. A more fully developed thesis was published again in 1968, as a (now renowned) monograph of the WHO (Scrimshaw, Taylor, and Gordon 1968). It was clear that to help these children become healthy, interventions were necessary not only in terms of disease but also nutrition. Scrimshaw served as a consultant in efforts in the 1980s by the United Nations to foster behavior change in nutrition (Andersen and Valyasevi 1989). Prior to this work by Scrimshaw and colleagues, it was assumed that what was then referred to as protein-calorie malnutrition (now protein-energy malnutrition, or PEM) was due solely to dietary deficiency and therefore preventable by dietary change alone. In fact, it turned out that

"*any* infection worsens nutritional status" (Scrimshaw 2003:316S), as infection itself causes loss of protein, vitamins, and minerals.

Scrimshaw's work helped reignite interest in nutritional research for not only nutritionists and infectious disease specialists but also anthropologists and other social and public health scientists. In 1962 an edited volume by Burgess and Dean was published, which contained chapters with titles such as "Malnutrition in India: The Malnourished Mother." This volume was the result of a conference held in Cuernavaca, Mexico that included attendees from the social sciences as well as other nutrition professionals. Mead (1964) authored a chapter in this conference volume and a National Research Council work entitled *Food Habits Research: Problems of the 1960s*. The 1960s was also an important time for anthropology in general. 1968 saw works published that are now considered classics in anthropology, including Rappaport's *Pigs for the Ancestors*, an ethnography that illuminated the role of ritual in the management of resources, including food, among the Maring people of New Guinea. Lee and DeVore (1968) worked toward an understanding of hunter-gatherer groups from the perspective of all four fields of anthropology, proving that hunter-gatherers did not starve, and Harris (1968) set the bar for a comprehensive book of theory. This decade also saw the English translation of *The Raw and the Cooked* (Lévi-Strauss 1964), and fellow structuralist Mary Douglas's *Purity and Danger* (1966). She has gone on to contribute even more widely to food studies, and Lévi-Strauss continued to influence food studies for decades.

A Critical Mass

By this time the subdiscipline of medical anthropology was also taking shape. Counihan and Van Esterik (1997:2) asserted that "Nutritional anthropology grew out of

the subfield of medical anthropology in the mid-seventies." The Committee on Nutritional Anthropology within the Society for Medical Anthropology was formed in 1974 at the American Anthropological Association annual meeting. 1977 saw the publication of one of the first edited texts devoted to culture and nutrition (Fitzgerald 1977). The volume was prefaced by Audrey Richards, wherein she noted that "the authors of this book claim, at least implicitly, that there is now a new subject—'nutritional anthropology'" (1977:X). Contributors to Fitzgerald's volume included Christine Wilson, Ellen Messer, Shirley Lindenbaum, Kathleen DeWalt, and Gretel Pelto, all of whom had done and would go on to offer more significant work not only in nutritional anthropology but also in the wider field of medical anthropology. This volume covered aspects of theory; methods specific to nutritional anthropology; ethnographically applied work, including research into the ecology of diets in Mexico; and research in Jamaica, Senegal, Asia, and among the Maring. Other similar edited volumes appeared at this time, including Arnott's (1976) and Greene's (1977).

It is difficult to sort the research focusing on culture and nutrition from the 1970s on solely in terms of chronology. Work can be classified better in terms of the central problems addressed. In the late 1960s and the 1970s research focused on ecology and nutrition, energy flow and systems, and studies of the links between particular illnesses and nutrition. There was an increased range of ethnographic location, and more compiled volumes and reviews of food and anthropology. Gross and Underwood (1971) showed how some northeastern Brazilians' shift from subsistence agriculture to farming sisal for export resulted in the unforeseen consequence of undernourished children. The extreme energy requirements of the wage laborers, along with the poor wages paid to

them for work in harvesting the sisal, combined to create a situation for many families in which all money coming to the household had to be spent on food, yet the children in the family frequently received only half of their required daily calories. After the wage earner consumed all the calories he needed to perform his strenuous work, there were not enough left over for those who were non-producers in the household: the children. The families were trapped in this cycle, since to farm sisal meant to no longer practice traditional subsistence farming, so all food had to be purchased, which forced the worker to keep working. In Kemp's study (1971) of energy expenditure in modern Eskimos, he measured energy inputs and outputs of two households, one deemed to be more "traditional," the other more "modern," and showed how energy use changed as Eskimos moved from their traditional hunter-gatherer lifestyle to modern ways of living. Overall calorie intake remained stable, but as hunting declined, the fraction of calories consumed from carbohydrates increased while the fraction from protein decreased.

Theoretical and methodological contributions included continuing work in structuralist perspectives on food by Douglas (1972, 1974) and materialist approaches by Harris (1979). In 1979, Montgomery and Bennett documented three reemergent or renewed concerns in anthropological research on food habits: "food-related human problems;" attempts at interdisciplinary work with those in the medical fields, ecology, agriculture, and others; and a "return to an interest in policy questions" (1979:133). The authors closed the chapter with the observation that the study of nutrition was "in a state of rapid flux" (Montgomery and Bennett 1979:136). As the subfields of nutritional anthropology and medical anthropology continued to grow, research on specific diseases such as obesity and diabetes (e.g., Bennett 1979 et al.; Eaton 1977)

appeared, in addition to increasing focus on poor nutritional status and the links between nutritional status, food beliefs, and health (Kolasa 1978; Pelto and Pelto 1983).

Prior to the 1970s, the question of how food beliefs may or may not affect health and nutritional status had not received much attention, as Wilson (1971) noted. Wilson showed how traditional beliefs surrounding food affected the nutritional status of a group of Malays. She found that this group of Malays was less concerned with food causing illness or disease, but instead took great care to make sure certain foods were or were not eaten at appropriate times. She explored the concept of *bisa*, or what could be translated as poisonousness, and which foods took on this characteristic in which situations. For example, she cited one of her young male informants, recently circumcised, who said that boys in his state should refrain from consuming pineapple or sour fruits until healed (Wilson 1971:96). Wilson also discovered that a restricted diet after childbirth is one of the ways in which food beliefs affected nutritional status for these Malays. Dietary changes during and after pregnancy are common but vary cross-culturally. Wilson (1973) found that the diet for a pregnant Malay woman was normal during pregnancy, but that upon giving birth it changed, with many food taboos observed. Postpartum women were careful not to eat cold foods, such as fruits and vegetables, or toxic fish, in order to maintain a hot body and keep toxic substances out of the child.

Cosminsky (1977; see also 1975) examined local nutritional concepts of *fresco* and *alimento* (translated as “fresh or cool” and “a highly nutritive substance” [1977:203] respectively) in Guatemala. A hot-cold classification system of illnesses, foods, plants, medicines, and other items is found there and in many parts of the world. In such a

system hotness or coldness are innate characteristics of items, and determine which foods can be consumed, for example, when a person is ill. Hot and cold must be in balance at all times in the body, and this classification system helps explain why in some instances of illness patients are restricted foods that might medically be in their best interest to eat. In Guatemala, Cosminsky found that the category of *fresco* meant neither hot nor cold, but was a third category in addition to these two. *Fresco* fell between hot and cold, and she found that it had often been collapsed into the cold category of foods by other investigators. *Alimento* foods were nutritious foods classed as hot, cold, or *fresco*. It turned out that most *alimento* foods were *fresco*, but not all foods classed as *fresco* were *alimento*. The concept of *alimento* foods was mainly used when speaking of illness: an *alimento* was a food that would keep a person strong and help prevent illness. In fact, she found that 21% of respondents said that "lack of *alimentos*" was the reason "why people get sick" (1977:205).

"A turning point"

By the early 1980s the field of nutritional anthropology was firmly established, and anthropologists were broadening their scope of research in food and eating. Mintz and Du Bois (2002) stated that Goody's (1982) book, *Cooking, Cuisine, and Class: A Study in Comparative Sociology*, "seemed to mark a turning point" (Mintz and Du Bois 2002:100) in the study of diet, and that anthropologists' work on food was different from that point forward. Food studies had "matured enough to serve as a vehicle for examining large and varied problems of theory and research methods" (Mintz and Du Bois 2002:100).

Harris (1985) took a step toward filling the theoretical lacuna with his analysis of foods in terms of preferences or avoidances. He attempted to explain food preferences

or avoidances in terms of biological or ecological restraints, opportunities, costs or benefits. Although his introductory chapter, titled “Good to Think or Good to Eat,” was a nod to Lévi-Strauss, he stated that whether foods were good or bad to think “depends on whether they are good or bad to eat. Food must nourish the collective stomach before it can feed the collective mind” (Harris 1985:15). In this volume he used his cultural materialist perspective to explain meat hunger among the Polish; why genetics is only part of the reason some groups do not drink milk; Americans’ aversion to horsemeat; and other cases. A volume edited by Harris and Ross (1987) examined evolution and food in working toward a theory of food habits. The book brought together contributors from all four fields of anthropology, plus those in fields such as agriculture and psychology, and covered a range of topics, including difficulties in assessing human nutritional status and analyses of primate and hunter-gatherer diets.

Mintz’s (1985) political economic analysis of sugar and its history illustrated how sugar, as a commodity, fueled the slave trade triangle between Western Europe, Africa, and the Caribbean islands. Sugar was known to Western Europeans well before 1000 A.D. through Arab influence and subsequent production of the crop in the Mediterranean, but for centuries was a luxury item for most and was used mainly as a spice or medicine. But as production in the Mediterranean declined in the fifteenth and sixteenth centuries, the taste for sugar was growing in Europe. In the seventeenth century, the Dutch, British, and French began establishing Caribbean plantations for growing sugar. Finished goods were brought from Europe (especially Britain) to Africa, for slaves, which were brought to the islands to work on sugar plantations, whence sugar was shipped to Britain. European wealth created the plantations, and profits in the

form of money and sugar went back to Europe and contributed to the accumulation of capital there. Humans, as commodities, played a fundamental role in this process. Mintz described how slaves, who consumed those products of Britain in the first leg of the slave trade triangle, “were themselves consumed in the creation of wealth” in sugar (Mintz 1985:43; see also Mintz 1996). Mintz also showed how the growing demand for sugar among the working classes in England in the eighteenth and nineteenth centuries was driven not by desire to emulate the upper classes but by workers’ physical need for more calories.

In 1989 a volume on methods in nutritional anthropology appeared (Pelto, Pelto, and Messer 1989). The volume aimed to address those issues in methodology in nutrition which had received little attention up to that time; for example, research design in nutrition studies, ethnographic methods to improve measures of consumption, and turning qualitative data about food and social behavior into data that could be statistically analyzed. This edited book, however, also reflected a more general concern for methods in anthropology at this time, which saw the publication of the first edition of Bernard’s *Research Methods in Anthropology* (1988), the start (1989) of the *Cultural Anthropology Methods Newsletter* (now known as *Field Methods*), the *Sage Qualitative Research Methods Series* (begins 1985) and works from Weller (1984 a, b) and Romney et al. (1986) which described the formal mathematical model and methods for cultural consensus analysis.

A renewed concern for malnutrition and its causes and effects emerged in the 1980s (and not only among anthropologists), as did increased activity on the part of anthropologists in the area of development. For example, economist David Seckler

(1980) made the now-infamous proposition that undernourished children were not in danger health-wise but instead were “small but healthy,” with no concomitant or resulting functional insults. He attempted to show that decreased stature was an adaptation to inadequate calorie or nutrient intake, applying “the economic theory of optimality” (Seckler 1980:219) to come to his conclusions. His ideas would have appealed to donors and policy makers: if people are small but healthy, they do not require as much aid to help feed them. Pelto and Pelto, Martorell, Scrimshaw and Young, Beaton, and Messer refuted his theory in a group of articles that appeared in *Human Organization* (1989:11-52). Messer (1986) addressed this topic in an earlier article, which also raised the issue of appropriateness of applying one nutritional standard, derived from measurement of Western populations, to other groups, a problem researchers still grapple with today. Fleuret and Fleuret (1980) pointed out that development schemes tended to ignore the possibility of associated nutritional impacts on populations and noted that, as had long been established, a switch from traditional methods and foods to commercial foods and production tended to produce poor nutritional outcomes.

Whiteford (1982:221) also addressed the complexity of malnourishment and undernourishment by examining “the sociocultural etiology of malnutrition” in Moroceli, Honduras. Children were weighed and measured, and ethnographic data were collected from mothers. Children’s weight- and height-for-age both decreased as the child got older. Children whose parents were better educated were better nourished, as were children whose mothers more frequently interacted outside of the community. These findings illustrated the complicated etiology of malnutrition and showed that malnutrition

was due to a *combination* of factors influencing consumption patterns. The cause was not simply how much food a family was able to buy, nor was it true that all families within a community experienced malnutrition.

Ritenbaugh (1982) and Cassidy (1982) addressed the problem of failed nutritional interventions, and believed that one reason behind such failures was the idea that both obesity and PEM could be culture-bound syndromes, that is, bound to Western biomedical culture, which, Cassidy stated, treats science and biomedicine as if they were “culture-free and universally comprehensible” (1982:325). Cassidy noted that most Western researchers considered culture-bound syndromes to occur only outside of their own cultures, and Ritenbaugh explained that anthropologists and other researchers exhibit an ethnocentric bias because they automatically attach this label to illnesses or symptoms which do not clearly correspond to biomedically defined diseases. The model of PEM or obesity on which an intervention should be based must be accurate to begin with, that is, it must take into account competing explanatory models. The authors outlined a definition of culture-bound which accounted for all illnesses in all cultures. Their work also reflected the emergence of critical medical anthropology as an area and method of inquiry in the 1980s (Baer et al. 1986; Singer 1989).

Eaton and Konner (1985) also addressed questions of PEM and obesity in their work on paleolithic nutrition. They noted that contemporary diets, especially Western ones, differed vastly from those of our human paleolithic ancestors, and that this had implications for nutrition-related disease today. Diseases such as coronary heart disease (CHD), diabetes, hypertension, and cancer have only emerged as major health

problems in the last 100-150 years, and remain almost unknown among any remaining hunter-gatherers. However, for almost all of human history people also were not living long enough to acquire such diseases (see Chapter 3 for more discussion). Human ancestors ate more meat, got most of their fiber from fruits and vegetables rather than grains, and consumed far less fat than most people do in the twentieth century, a diet they recommended as a "model for defense against certain 'diseases of civilization'" (1985:288). Lieberman also noted the evolutionary tendencies that contribute to the obesity epidemic today, noting that "in obesogenic environments, the foraging costs are low (minimized) and the benefits in caloric intake are high (maximized) relative to prehistoric and historic feeding patterns" (2006:7).

In terms of more interpretive work, Appadurai argued that food in South Asia served two kinds of semiotic functions: food could "*indicate* and *construct* social relations characterized by equality, intimacy, or solidarity; or, it could serve to *sustain* relations characterized by rank, distance, or segmentation" (Appadurai 1981:496, emphasis added). He identified conflicts over resources that arose from transactions around food as a kind of "gastro-politics" and illustrated these dynamics using examples in the household, at the wedding feast, and in the south Indian temple.

French sociologist Fischler (1979, 1980) discussed changes in food habits and whether culture determines dietary changes or tastes induce cultural change. He described two kinds of nutritional wisdom, biological (which all animals, including humans, have) and cultural (specific to humans). Biological wisdom, or wisdom of the body, is a kind of inherent physiological ability of bodies to regulate and maintain good function and balanced diets. He recognized cultural nutritional wisdom as "a set of

culturally transmitted practices – culinary or other – which tend to correct some nutritional imbalance" (Fischler 1980:938); for example, processing manioc to remove toxins. Fischler stated that people could not entirely depend on biology to explain habits, nor solely on culture, to tell them what they should eat in their modern industrial urban habitats. He cited the Western world as an example of how "our food preferences, our 'tastes', are totally unable to give us any good, sound, reasonable cues as to what we should decide to eat and, above all, as to when we should stop eating" (Fischler 1980:941). He believed that contemporary industrial societies were experiencing nothing less than a crisis which had led to anomy and was evidenced by the rising rates of obesity in these societies, and that there had been a "breakdown of the 'fit' between human biology and the environment" (Fischler 1980:942).

Recent Work

In the last twenty years, processes of globalization and delocalization, development projects, food insecurity (which has provided grounding for related work in areas such as household allocation of resources and gender and food), and the contemporary global food crisis with its own particular impact on global food insecurity have been major areas of work. Diseases related to overnutrition such as obesity, heart disease, hypertension, and diabetes, in both Western and non-Western cultures, have become important topics of focus for anthropologists. There has also been an increase in the number of instructional works and textbooks (Counihan and Van Esterik 1997, updated in 2008; Goodman, Dufour, and Pelto 2000). Researchers have explored foods as symbols of political resistance, change, and vehicles for political critique, as well as topics relating to fatness and meaning, the body, and Western cultures' obsession with thinness. Women's role in food procurement, production, processing, and distribution,

as well as within the contexts of work, agriculture, economic power, and domesticity have also continued to be dominant topics. In light of recent crises in food processing and distribution chains (such as bovine spongiform encephalopathy, or BSE, and E. *coli* O157), anthropologists and others have delved deeper into areas such as risk and genetically modified foods, sustainability, and what has been termed the locavore movement.

Pelto and Pelto (1983:510) described delocalization as “one major aspect of all the historical changes to which people give various labels such as modernization, development, progress, acculturation, and so on.” This process involves increased dependence on an international market, which is reflected in local price sensitivity and fluctuation; worldwide dissemination of plants and animals; more commercial food distribution networks; increased migration in general and to urban areas in particular; and changing consumption patterns. The drawback for those living in less industrialized cultures is that joining the global community by doing something like cultivating a new crop for export leads to a decrease or even complete disappearance of local food production. People become dependent on one or a few cash crops, and no longer locally grow their food. For these people, this leads to a less diverse diet and nutritional problems.

DeWalt et al. (1990) and Leatherman and Goodman (2005) studied the nutritional effects of the shift from maize to sorghum production in Mexico. DeWalt et al., unlike what Gross and Underwood (1971) discovered in Brazil, found that switching from maize farming as subsistence to sorghum production as a cash crop made no difference in nutritional status of people in the four Mexican communities they studied.

What was more important in predicting nutritional status in their study was “the economic, ecological and infrastructural characteristics of these four communities” (1990:407); that is, factors such as income, access to land, and the state of agricultural policy. Leatherman and Goodman (2005) found that increased tourism, rather than a switch to cash cropping, changed the economy and thus the nutritional status of adults and children in the Yucatán. Tourism disrupted subsistence farming activities because wage labor in the tourism industry became more attractive to farmers, which in turn led to greater economic and social differentiation between those who participated in the tourism-based economy and those who remained subsistence farmers with only intermittent wage work. Those living and working in coastal areas, where tourism thrived, consumed significantly fewer tortillas, more soda, snack food, dairy, fruit, and meat, but also met more of their daily nutrient requirements than those living inland, who were far less or not at all involved in the tourism economy. Child growth improved over the last decade, but chronic, mild-to-moderate malnutrition remained high while increasing numbers of children were above average in weight for height measurements (though none were obese). For adults, overweight, obesity, and diabetes were prevalent.

Anthropologists had also become more concerned about intra-household food and resource distribution and food insecurity. The 1992 International Conference on Nutrition broadened the definitions of nutrition and nutritional security: both food quantity and quality were recognized as important, and nutrition now included “food, health, and care” (FAO/WHO 1992). A section in a 1997 issue of *Social Science and Medicine* covered this area well (44(11):1675-1759). The introduction by Messer (1997) stressed

the point of a broader idea of nutrition and related policies, and noted that anthropologists have a vital role to play in uncovering, predicting, and helping to change less-than-optimal nutritional states. For example, Backstrand et al. (1997) measured food and nutrient intake of boys and girls in the Mexican Nutrition Collaborative Research Support Program to find out whether there were gender-based differences in diet quality and quantity. Differential feeding of girls and women is a phenomenon that has been documented in many places, usually in favor of boys and men (Messer 1997). Gender discrimination could happen in two ways: channeling certain (better quality, higher protein) foods to men or boys, or allotting them larger portions. In Mexico, Backstrand et al. found that for infants and preschoolers, there were no significant differences in diet between girls and boys. This finding held when taking economic and family structure into account. When children reached school age, however, the dietary quality was similar for boys and girls, but girls consumed significantly fewer calories.

Pottier's (1999) review of anthropological work in food insecurity included discussions of intra-household resource distribution, gender inequality, the Green Revolution, issues of land and labor, famine, and the role of women. Pottier stressed that anthropologists must do relevant research, that is, research that is multi-sited (also McMillan personal communication 2006; McMillan and Harlow 1991) and that produces ethnographic data that are both useful and accessible. Anthropologists must challenge the policies and policy-makers, the dogma, and myopic planning. Anthropologists must also challenge their own views, and "ask uncomfortable questions about how they themselves are positioned" (Pottier 1999:10).

Anthropologists such as McMillan have been involved in Africare's work in implementing food security initiatives in Africa under Title II (Emergency and Private Assistance) of the Food for Peace Act, administered by the United States Agency for International Development (USAID). The Food and Nutrition Technical Assistance (FANTA) activities also provide technical support to USAID and its partners, including Title II awardees, for a wide range of projects to better the food security and nutrition of international populations (www.fantaproject.org). They partner with program governments, non-governmental organizations (NGOs), and other international organizations to build partnerships, support national nutrition and food security programs and policies, and perform monitoring and evaluation of such programs and policies. In the current project (2008-2013) special foci include infant/child/women's nutrition, HIV/AIDS, and emergency nutrition.

More recently, the global food crisis of the first decade of the twenty-first century has spurred anthropological research into food insecurity directly related to this crisis. The United Nations Food and Agriculture Organization (FAO) recorded how the spike in global food prices in 2007/2008 affected rates of global food insecurity. Prior to the spike the estimated number of food insecure people was 923 million. In the first half of 2008, that number increased by 40 million (FAO 2009). For example, Hadley et al. (2009) studied food insecurity among youth in Ethiopia. Comparing baseline data from 2005/2006 to follow-up data from 2007, researchers found statistically significant changes in food insecurity levels among youth. The changes varied with whether children were urban, semi-urban, or rural dwellers, with rural and semi-urban dwellers being most affected by higher food prices. Those who became food insecure also

reported poorer health. Boys were more likely to become food insecure than girls, yet girls were more food insecure at the baseline measure of this study than boys. Finally, the authors also found that social capital had lost its protective feature with regard to food insecurity during 2007 and 2008.

As for overnutrition, the body of work on this topic has grown as the dynamics of globalization continue to contribute to changing food patterns throughout the world. Modern societies are consuming a diet high in fat, sugar, and refined foods, and low in fiber, and rates of chronic disease have risen to levels never before seen. The increasing convergence of world diets, with resulting diet-related diseases, has been termed the nutrition transition (Popkin 1993, 1999, 2004; see also Drewnowski 2000; Drewnowski and Popkin 1997; Popkin and Larsen 2004) (see Chapter 3 for more discussion on this topic). Researchers have also identified what have been called dual burden households (Doak et al. 2005), that is, households which contain both undernourished and overnourished members. Ramesh and Jareena (2009) found that the number of overweight and obese adults in Kerala, India exceeds the number of those who are underweight, and concluded that "both underweight and overweight or obesity are equally present in Kerala and there is a need for public health programs that are able to address both simultaneously" (2009:93). This dual burden appears to be due to the way the nutrition transition is occurring in developing countries: the transition is happening much more quickly and at earlier stages of economic and social development than it did in developed countries (Popkin 2002).

In terms of food as symbol and meaning, Klumbytė (2010) documented the emergence of so-called "Soviet" sausages in post-Soviet Lithuania, and argued that

both the marketing and consumption of these sausages is a “form of political engagement wherein contemporary Lithuanians negotiate current power relations and inequalities” (2010:24). In Lithuania, the term “Soviet” symbolizes colonization and resistance to the Soviet empire, and consumption of such sausages in a post-Soviet, neoliberal state is a metaphor for citizens’ reclamation of Lithuanian recognition and way for them to construct new identities. Ries (2009) explored the myriad meanings and uses of the potato in Russia, as not only the main source of sustenance for physical survival but also as an “axis of practice” and a “complex system of knowledge” (2009:205).

The role of women in many food-related contexts has been a strong focus for research. Spring (e.g., 1995, 2000, 2001) has built a body of work on agricultural development, women farmers, and economic development of women in Africa, having worked as an applied anthropologist directing women’s agricultural research and development in multiple capacities. Counihan (1999, 2004, 2009) has been at the forefront of work in food, gender, meaning, and identity, investigating the lives of women cross-culturally from Mexicanas in Colorado (2009) to Florentine family settings (2004).

With regard to issues of the global food system in developed nations, Heller (2001, 2002) examined the ways in which competing parties have framed the debate over genetically modified organisms (GMOs) in France. She showed how a union of small-scale farmers shifted the focus of discourse surrounding GMOs from that of science and health risks to a political one which addressed globalization and the loss of lifestyle and culture for those farmers. She noted that once outside the language of science and risk, an array of socially vital issues emerges. Janssen (2010) provided an

ethnography of CSA programs in Iowa, illustrating the complexities and difficulties of the work of these farmers and their relationships with consumers, media, and other local organizations. Farmers saw the cost of labor and infrastructure as their main challenges to growth in the face of the domination of the industrial food system. Paxson (2008), in documenting the culture of raw milk cheese artisans and their products in the United States, developed the idea of microbiopolitics to explore the ways producers and consumers of raw-milk cheeses in the United States are at odds with regulatory bodies such as the Food and Drug Administration (FDA), and how the debate over microorganisms in raw milk and raw milk cheeses reflects debate over how individuals should live with one another.

Summary

Chapter 2 has not covered every area of anthropological research in culture and nutrition. I have concentrated more on highlighting research that is strongly empirical in nature, as opposed to, for example, interpretive studies on the semiotics and meaning of foods. Work examining the meaning of food is not less important or useful—in fact, what foods mean to people and how they facilitate social interactions is essential to a fuller understanding of culture. Nor do I mean to say that such work cannot be empirical. The work I have referenced outlines the constant existence of the subfield of nutrition and food studies in anthropology. Chapter 3 provides a literature review for so-called diseases of affluence, such as cardiovascular disease, and aspects of human history and behavior which have contributed to their prevalence today, as a way to relate nutrition and disease.

CHAPTER 3
DISEASES OF AFFLUENCE

Chapter 3 discusses the so-called “diseases of affluence”, which includes obesity. Diseases of affluence are those chronic, sometimes degenerative diseases whose incidence is generally thought to correlate with a higher standard of living and higher income levels, as well as increasing longevity. Also referred to as diseases of civilization or non-communicable diseases, these include, in addition to obesity, various forms of cardiovascular disease, some cancers, non-insulin dependent diabetes mellitus (NIDDM), hypertension, and stroke, and are the leading causes of death for individuals in many nations today. Obesity can worsen many of these illnesses. Chapter 3 outlines the changes that have taken place in human history and health in helping to bring the population to its present state regarding these diseases, and includes discussion of the theory of epidemiologic transition, demographics, the nutrition transition, and anthropological models of human evolution and change in terms of these diseases. This longer view is useful to understand where this research fits among medical and anthropological approaches to obesity, and provides some information which helps explain the current state of these diseases in the United States. Throughout, I continue to use the term “diseases of affluence,” but I will also examine some problems with this term. I draw on sources primarily from the fields of public health and anthropology. Overweight and obesity will be addressed more extensively in Chapter 4. Together, Chapters 3 and 4 link directly to this research project by providing some of the major demographic and historical background to the modern obesity epidemic in the United States. In the United States, chronic diseases account for 70% of all deaths each year, with diabetes, cardiovascular disease, chronic obstructive pulmonary disease (chronic

bronchitis and emphysema) (COPD) and asthma as four of the six leading causes of death (Institute of Medicine 2009). Chronic diseases account for 75% of the nation's health spending (United States Department of Health and Human Services 2010). In addition to tobacco use, major contributing factors in these illnesses are diet and nutrition, in combination with decreased energy expenditure. Overweight and obesity have been found to act as important risk factors in the etiology of cardiovascular disease, diabetes, and hypertension (WHO 2002; WHO/FAO 2003), and food, nutrition and physical activity have been linked with certain cancers (American Institute for Cancer Research 2007). Even gout, which many today may think of as only having afflicted the wealthy elite hundreds of years ago (Ball 1971), is in fact a kind of inflammatory arthritis which affects over 1% of adults in the United States today (Saag and Choi 2006). Risk factors for gout include obesity and a diet high in purine and purine-rich alcoholic beverages such as beer. Researchers have found gout to be responsible for lost work days and that it can negatively impact productivity on the job (Kleinman et al. 2007).

Aging populations have also contributed to the picture of chronic disease. Within the span of the twentieth century, the majority of deaths in developed countries have shifted to those of older age, and life expectancy has increased by over twenty-five years. The tradeoff for this increase in life expectancy, however, has been a higher incidence of chronic disease in old age (Olshansky et al. 1991). Three theories have been put forth to account for the recent and future aging and chronic disease burden: compression of morbidity, expansion of morbidity, and dynamic equilibrium. It should be noted that these theories were conceived in terms of morbidity, which is different from

disability, or difficulty performing typical tasks. Compression of morbidity is the idea that as time goes on and health-related technology improves, the onset of morbidity (chronic, irreversible illness) will be postponed. The time frame of such postponement will exceed increases in life expectancy, thereby compressing the time period during which an individual would experience morbid conditions into fewer years before death. This in turn means an increase in the number of active years of life a person has (Fries 1980). The expansion of morbidity theory states that the longer people live, the longer the period of morbidity will be suffered (Gruenberg 1977; Olshansky et al. 1991). Medical advances will extend life expectancy, but will not change the age of onset of morbid conditions, therefore people will have to live longer with such conditions. The number of years of active life will not change. The dynamic equilibrium theory states that morbidity and mortality are not independent, so those medical and health advances that reduce mortality also reduce the severity and rate of chronic conditions (Manton 1982). The number of active years of life and years lived with chronic conditions both increase.

Support for all three theories has been found. For example, Robine et al. (2003) found support for the theory of dynamic equilibrium in developed countries in the 1980s; Cai and Lubitz (2007), examining active and disabled years of life in the United States, found support for compression of morbidity and dynamic equilibrium; Rosén and Haglund (2005) found that their Swedish data challenged the compression of morbidity theory; and in research on the oldest-old, Christensen et al. (2008) found that exceptional longevity (Danish men and women aged 92-100) did not result in excessive rates of disability.

This is only the tip of the iceberg of the literature on aging and chronic disease. I will not take it up further here, though Chapter 4 discusses some related issues such as quality-adjusted life years (QALYs). I reference these theories and research to make the point that longer life affects the pattern and distribution of chronic disease, and does so in complex ways. As such, this fact must be taken into account when considering the impact of lifestyle factors such as diet and exercise on these diseases.

The Theory of Epidemiologic Transition

One major concern for epidemiologists is the pattern and distribution of morbidity and mortality, and the causes and effects of such patterns. Figuring out the distribution of illness and death also contributes to the theory and prediction of demographic change. My starting point to discuss the diseases of affluence is the theory of epidemiologic transition outlined by Omran (1971). Limitations of demographic transition theory encouraged his epidemiologic transition theory. Broadly speaking, the epidemiologic transition is one from acute, infectious diseases to chronic, degenerative ones. In outlining his theory Omran focused not only on change through time in human illness and death, but also on the complex interactions between mortality and morbidity patterns and the attendant "demographic, economic, and sociologic determinants and consequences" (1971:510). For developed countries, the epidemiologic transition occurred in tandem with demographic and technologic transitions, but in some developing countries, the picture is different.

Omran outlined five major points in his theory:

Point 1. "The theory of epidemiologic transition begins with the major premise that mortality is a fundamental factor in population dynamics" (1971:511). Population growth and decline was cyclical until about 1650. After that population growth became

exponential, mortality fluctuations were smaller and less frequent, and mortality continued to decline and then stabilized in the early twentieth century.

Point 2. “During the transition, a long-term shift occurs in mortality and disease patterns whereby pandemics of infection are gradually displaced by degenerative and man-made disease as the chief form of morbidity and primary cause of death” (1971:516). Mortality patterns framed three stages of the transition: the age of pestilence and famine (17th century), the age of receding pandemics, and the age of degenerative and man-made diseases (begins around 1920) (1971:516-517).There were three major categories of determinants of the shift from infectious to degenerative diseases: ecobiologic, related to interactions among the environment, pathogens, and hosts, such as those which occurred to promote the end of the plague; socioeconomic, political, and cultural, which included hygiene, health practices, and nutrition; and medical and public health advancements, such as sanitation measures and immunizations (1971:520).

Point 3. “During the epidemiologic transition the most profound changes in health and disease patterns obtain among children and young women” (1971:521). As the transition progressed and living standards, nutrition, hygiene, and sanitation improved, these two populations enjoyed improvements in health most.

Point 4. “The shifts in health and disease patterns that characterize the epidemiologic transition are closely associated with the demographic and socioeconomic transitions that constitute the modernization complex” (1971:527). Socioeconomic transitions included increased economic productivity due to lower mortality and infectious disease rates, which produced a healthier and larger labor

force, and demographic associations included a widening gap between birth and death rates, which supported population growth.

Point 5. “Peculiar variations in the pattern, the pace, the determinants and the consequences of population change differentiate three basic models of the epidemiologic transition: the classical or western model, the accelerated model and the contemporary or delayed model” (1971:532-533). The classical model accounted for the transition as has occurred in most Western European nations, the accelerated model is exemplified by Japan, and the contemporary or delayed model describes the recent and not yet complete transition in most developing countries.

In 1977 Omran examined his theory as it applied to data from Massachusetts, New York City and North Carolina. Figure 3-1 (1977:41) shows that mortality declined in the second half of the nineteenth century, as infectious diseases receded and degenerative and man-made diseases came to prominence. As Omran made clear, this decline in mortality was due less to medical advances but instead to better living standards, hygiene, nutrition, and an ecologic recession of some diseases. Fertility decline began at the end of the nineteenth century, due mainly to social forces such as urbanization, modernization, and improved status of women.

Omran updated his theory in 1983. The basic propositions remained the same, but he added a fourth model of the epidemiologic transition: the transitional variant of the delayed model. This transitional variant model, as in the contemporary or delayed model, showed mortality decline retarded until nearly the middle of the twentieth century. The difference was that for those countries experiencing the transitional variant of the delayed model (he gave Korea, Mauritius, Jamaica, and others as examples),

their fertility declined, and the falling mortality rates did not trail off in the same manner as in the delayed model. Figure 3-2, reprinted from Omran (1983:312), shows a graphic of all four models.

Although some believe that Omran has been proven correct for the most part (e.g., Leeder 2005), anthropologists and others have disagreed with points of his model, and some have fine-tuned it, added to it, or expanded its scope. Lewontin and Levins asked, “What made the idea of the epidemiologic transition seem so plausible to the theorists and practitioners of health?” (1996:104). Lewontin and Levins noted that some public health leaders believed that many infectious diseases were on their way to eradication and were surprised by the emergence, reemergence, or reversal of downward trends in incidence rates of infectious diseases such as cholera, malaria, and tuberculosis. Armelagos cited the Surgeon General William T. Stewart who, in 1969, stated that it was “time to close the book on infectious disease as a major health threat” (2004:7). Lewontin and Levins noted three main reasons the epidemiologic theory seemed probable: there was evidence that infectious diseases were disappearing—smallpox, tuberculosis, polio, tetanus, and others were all causing fewer deaths; technology in health was ever-improving; and it was thought that the whole world was developing, and soon all countries would finish passing through all stages of the transition and then only be pressed by degenerative diseases.

Lewontin and Levins stated that these reasons were barely plausible and downright wrong. The problem with them was the fact that they did not take history into account or examine how the past influenced the present. Each major change in human history (population, climate, migration, nutrition, and others) altered future disease

patterns, and the theory of epidemiologic transition did not recognize this. The authors also believed that public health at the time took too narrow a view by focusing just on people. Any other organisms with which humans interact make up an ecosystem. Thus public health needed to look at interactions among both humans and other species.

Other authors postulated additional stages of the epidemiologic transition. Olshansky and Ault (1986) found a distinct stage wherein degenerative diseases remain the leading killers but the risk of dying of these diseases shifts to the more aged. They termed this “the age of delayed degenerative diseases” (1986:361). In support of their idea, the authors noted a significant and unexpected decline in death rates from degenerative diseases beginning just before Omran first published his theory, and that this decline occurred after mortality rates appeared to have bottomed out. Such decline was attributed to factors such as a shift in the age structure of the population, advances in medical technology and public health which favored older adults, and federal health care programs that favored the elderly and poor. Those in the older age groups began surviving degenerative and man-made diseases. While Omran’s three stages were characterized by changes from one set of diseases to another, Olshansky and Ault’s fourth stage was characterized by a change in the age at which degenerative diseases kill.

Rogers and Hackenberg (1987), both social scientists, critiqued Omran’s theory for masking disease interactions, for its inability to explain recent declines in some chronic diseases (as Olshansky and Ault also noted), and for ignoring deaths due to “social pathologies”, such as suicide, homicide, accidents, or alcoholism (1987:235). Rogers and Hackenberg found that although the major contemporary causes of death

were degenerative diseases, when and from which one(s) a person died was increasingly influenced by individual behavior and lifestyle. The additional stage they proposed was that in which the decline in mortality rates was due to prevention and individual behavior. They termed this stage the hybristic stage and, focusing on the United States, located its start in the 1970s. They noted that, while they saw environmentally-based infectious diseases disappearing at this stage, some infectious diseases became more important or prominent because of human behavior, and cited HIV/AIDS as an example.

In the last fifteen years a fifth stage of the epidemiologic transition has been suggested. Yusuf et al. (2001) named an Age of Health Regression and Social Upheaval in which situations like war break down existing social and health structures, which leads to a reemergence or resurgence of diseases more commonly seen in the first two stages of Omran's transition. This fifth stage sees higher mortality rates from both non-communicable diseases (especially cardiovascular disease) and infectious diseases. The authors gave Russia as an example of a nation currently experiencing this fifth stage. Olshansky et al. (1998) also named a fifth stage, the Re-emergence of Infectious and Parasitic Diseases (IPDs) stage. Diseases such as dengue, yellow fever, influenza, and tuberculosis are reemerging and spreading, and new infectious diseases such as HIV are making those infections worse. The authors stated that "an unique set of demographic and health conditions has now made the human population more vulnerable to IPDs than at any previous time in history" (1998:216).

An Anthropological Theory of Epidemiologic Transition

Anthropologists have also expanded the model of epidemiologic transition. Armelagos et al. (1996) and Barrett et al. (1998) identified three separate transitions. A

key aspect of their formulation is that they reached further back in history in their examination of patterns of health and disease. In criticism of Omran, Barrett et al. (1998) noted that his model implied a linear evolution, with improvement at each stage of the transition and the implicit notion that each stage is more desirable than the previous.

The three transitions are tied to modes of subsistence and social structure, and began with the advent of agriculture which, contrary to what had been theorized earlier in the twentieth century (e.g., Childe 1951), did not cause net gains in health and nutrition for the human population (Armelagos 2003; Armelagos et al. 1991). Boserup's (1965) economic models and Lee and others' work with the !Kung San (Lee 1968; Lee and Devore 1976) inspired this alternative view of prehistory, and Cohen and Armelagos' (1984) edited volume was important at the time in that it provided paleopathological data that supported the idea that the shift from hunting and gathering to agriculture did not result in improved health. Prior to agriculture, hominids lived in small, mobile groups, and therefore were not able to support those communicable diseases such as smallpox or measles. What these populations may have experienced were pathogens with low virulence or long latency periods, perhaps chicken pox or herpes.

The first transition then took place when people shifted from a primarily hunting and gathering lifestyle to one of horticulture and agriculture, animal husbandry, and increased sedentarism. Concomitant changes in human behavior included living in larger groups, interacting more, and more frequent contact with animals, which harbor pathogens and are implicated in disease cycles such as that of trypanosomiasis.

Skeletal remains from this time indicate an increase in infectious and nutritional disease and load- and labor-related bodily injury or overuse.

Both agriculture (including animal husbandry) and living in larger, less mobile groups caused separate problems. Buikstra et al. (1986:539) pointed out that when considering population growth, agriculture and sedentarism must be considered as distinct phenomena, and found for example that sedentarism was not directly associated with increased fertility in their samples from Illinois (150 B.C. – A.D. 1300). High-yield staple crops may have offered sufficient calories, but often fell short in nutrients, and dietary deficiencies like anemia appeared more frequently as a result of a less diverse diet. For example, Buikstra (1992) documented nutritional stress and related disease among Late Prehistoric North American groups due to maize dependence.

Living in groups caused problems indirectly. Waste was not well managed, leading to contaminated drinking water. As group size grew, populations became able to sustain diseases, allowing pathogens to evolve or diseases to become endemic. Large group living, combined with surplus agricultural output, gave rise to food storage areas—but therefore also encouraged food poisoning when stored food spoiled. The shift from hunting and gathering to agriculture “involved major changes in human social organization, diet, demographics, and behavior that created conditions favorable for zoonotic infections to make the transition to human hosts, and for preexisting human pathogens to evolve to more virulent forms” (Barrett et al. 1998:252).

As time went on, population grew and groups migrated, bringing disease with them to previously unaffected populations. Armelagos (2003) explained that *Homo*

sapiens' economic change from food gathering to food production both allowed and required population growth, and thus increased social stratification and inequality, thereby creating a system which continues today to be a major determinant of health, on global and local scales.

Anthropological research on the acquisition and consequences of agriculture has also undermined the theory of the thrifty gene. Neel first proposed the concept of the "thrifty genotype" in 1962 as an explanation for diabetes. The thrifty gene, in human history, granted the individual a metabolism adapted to cycles of food surplus and scarcity, efficiently storing food during surpluses to survive periods of resource shortage or famine. In the modern environment, however, the thrifty gene works against the individual, who no longer suffers these same cycles of surplus and famine. The body stores calories unnecessarily, leading to overweight, obesity, and their associated diseases.

Despite some refinement (e.g., Neel, Weder and Julius 1998), the theory has since fallen out of favor and been discredited by anthropologists and those in the medical fields. Some medical researchers believed they had located the thrifty gene in Native American populations, which have experienced a sharp rise in the rates of NIDDM in the last fifty years (e.g., Hegele et al.1999). Ulijaszek (2007:446) outlined briefly some of the efforts to find genes and genotypes associated with obesity. However, solid genetic data to support the theory have not been found (Speakman 2006).

Anthropologists have also stressed multiple problems with the theory, pointing out, for example, that hunter-gatherer groups who would have benefited from a thrifty

gene did not necessarily experience the cycles of food surplus and scarcity assumed by the theory (Cohen and Armelagos 1984). In addition, the ten to fifteen thousand years since agriculture began would not have been enough time to have evolved such a genetic advantage. Wrangham (2009) suggested instead that the profound influences on human physiology that cooking and the control of fire had would have been more protective from any food shortages. Poudrier (2007) read the thrifty gene hypothesis as a “cultural construction” which reifies race and can be traced to colonial attitudes toward such Native American groups: if high rates of NIDDM can be blamed primarily on genetics, there is less need to acknowledge either the circumstances under which these people currently live or the concomitant social aspects of the disease, both of which have been created by non-Native governments.

The second transition outlined by Armelagos et al. (1996) and Barrett et al. (1998) began with the Industrial Revolution and occurred primarily in Europe and North America, with a decline in deaths from infectious disease and the rise of chronic and degenerative diseases. This corresponds to the second proposition in Omran’s formulation. The increase in longevity is related to the prevalence of these degenerative diseases. To what this change was due has been debated. McKeown argued (e.g., 1976, 1978) for the primacy of nutrition, sanitation, and hygiene, and downplayed medical advancements. The transition to an increasingly technologic and urban world contributed to the rise in rates of these chronic, degenerative diseases. Factors such as pollution from automobiles and factories, and hazardous chemical wastes in water became factors in etiology. Skeletal remains show that during the first transition, women, children and, as it developed, the lower social stratum, suffered

disproportionately poor health. In the second transition, less developed nations and poorer populations within nations benefited less from the decrease in infectious disease.

The third transition is currently underway and is characterized by emerging new infectious diseases (with antibiotic resistance) and reemerging old ones (Armelagos 1998). There are three defining trends: new diseases discovered in the last three decades are contributing significantly to adult mortality (at least 30 identified by the CDC since 1973 [Fauci 1998:374]); diseases thought to be under control are growing in incidence and prevalence, or reemerging; these reemerging diseases, such as tuberculosis, are evolving into multiple, treatment-resistant strains, and evolving so quickly that drugs cannot be developed to keep pace. Causal mechanisms of the third transition include sociohistorical processes such as neocolonialism, poverty, increased global movement of people and animals, climate changes, and ecological disruption. As Armelagos et al. pointed out, “most of the emerging diseases are of cultural origin” (1996:5), such as refusal to vaccinate and overuse of antibiotics.

Anthropological Work on Chronic Disease

Anthropologists have generally focused less on conditions such as diabetes, hypertension, stroke, obesity, and cancer. Perhaps this is to some degree due to the idea that anthropologists (coming often from Western nations) are supposed to do research in far-away, little studied places, and the more exotic the illness, the better for study. However, anthropological research that has been done on diseases of affluence has been excellent. The anthropologists discussed below and their research comprise only a small but important sample of the work that has been done.

It has been found, for example, that some African Americans perceive hypertension differently from their doctors and most non-African Americans, a difference

which affects treatment and whether a prescribed medication regimen will be followed (Heurtin-Roberts and Reisin 1990). Chavez et al. (1995) examined perceptions of breast and cervical cancer among Anglo, Salvadoran, Mexican, and Chicana women, as well as primary care physicians of varied ethnic background. Among other critical findings, they discovered that a single pan-Latina perception of these cancers did not exist. There were consistent patterns in the ways Anglos, Latinas, and physicians perceived risk factors for these two cancers.

Dressler (1980, 1982, 1984), in his research on stress and hypertension, has made great strides in demonstrating the ways in which hypertension is not solely a biological phenomenon. In research on the island of St. Lucia, he showed that increasing rates of hypertension and related cardiovascular disease were part of a process of modernization or, in the case of St. Lucia, “Americanization” (Smith 1970, cited in Dressler 1984:73). “Americanization” was defined as the process of striving to attain the high material consumption pattern seen in the North American middle class. This process of culture change, that is, those efforts to consume and accumulate among St. Lucians, caused stress in a variety of ways, which led to higher blood pressure among those working hardest to attain this status. Dressler revealed how “in the Caribbean hypertension is as much a sociocultural as a biomedical phenomenon” (Dressler 1984:86).

More recently, Dressler (2005) has integrated the cultural consensus model into a larger effort to build a biocultural theory for research in human behavior. He described how a measure of cultural consonance, that is, the degree to which individual behavior corresponds to a shared cultural domain, can be examined relative to biological

phenomena such as depression and blood pressure. Dressler and Bindon (2000) established shared cultural models of lifestyle and social support among African Americans, and then compared actual behavior to these shared cultural models in trying to account for higher blood pressure levels found among African Americans.

Gravlee's work on race and hypertension has extended Dressler's. Gravlee examined the cultural model of *color* in Puerto Rico and its relationship with hypertension, focusing not only on the biomedical aspects of skin color and hypertension, but also on how individuals' perceptions of skin color may account for the variation seen in rates of hypertension (Gravlee 2005; Gravlee and Dressler 2005; Gravlee et al. 2005). He found no association between blood pressure and the etic measure of skin pigmentation (reflectance spectrophotometry), but the emic measure of skin pigmentation (self-perceived skin color) was associated with blood pressure measures through an interaction with socioeconomic status.

Garro's work on NIDDM among the Anishinaabeg (Ojibway) in Canada investigated individuals' experience of, responses to, and explanatory models of NIDDM, a new disease in the community but one whose incidence has drastically risen among various Native American groups (Garro 1995, 1996, 2000). In the course of this work she has also explored methodological issues, such as comparing cultural consensus theory and cultural schema theory to address individual and cultural knowledge surrounding diabetes. Though both cognitive anthropological theories, cultural consensus theory interprets cultural knowledge as shared, patterned knowledge among people, with some people being more competent in the cultural domain in question. Individuals access a store of knowledge to function appropriately within the

culture. Cultural models theory, on the other hand, treats cultural knowledge as something constantly under reconstruction rather than a store of information to be recalled, and uses the concept of schemas to understand how individuals know what they know of culture. Schemas are “generic mental representations that actively incorporate incoming information, and are modified by new experiences,” and as such are “dynamic and constructive processes” and “are not static” (Garro 2000:277). Garro found that cultural consensus theory alone could not account for intracultural variation in models of diabetes among the Anishinaabeg. Cultural models theory better addressed the nature of individual and cultural knowledge and allowed her to get at the ways in which “what one knows about diabetes is tied to how one knows it” (Garro 2000:312). Garro showed that when the Anishinaabeg “talk about their personal experience with diabetes, they do so within the framework of possibilities afforded by culture,” thereby joining personal experience and cultural understandings (Garro 2000:309).

Scheder (1988) also addressed diabetes, but among Mexican-American migrant farm workers. She discussed how the lifestyle of the migrant workers, who experience marginalization and psychological stress, placed them at increased risk for illnesses like NIDDM. These migrants not only were of low economic status, but were also an ethnic minority. When they did fall ill, care was not available or was difficult to acquire, whether it was due to lack of money, language skills, or illegal status. One of the two most reliable predictors of diabetes status among the workers turned out to be the number of stressful life events they had experienced.

Diseases of Affluence and the Nutrition Transition

Popkin and colleagues have put forth a theory of global diet change which helps account for the growing incidence of the diseases of affluence and which they have

termed the nutrition transition (Drewnowski 2000; Drewnowski and Popkin 1997; Popkin 1999, 2001, 2002, 2004; Popkin and Gordon-Larsen 2004). The world is converging on one “Western diet,” that is, one high in saturated fat, sugar, and refined foods, and low in fiber. Popkin (2002) found both the demographic transition (high fertility and high mortality to low fertility and low mortality, mostly in industrialized countries) and Omran’s (1971, 1983) epidemiologic transition to correlate with the nutrition transition. Popkin (2002) traced through history five dietary and activity patterns, or nutrition patterns, which have led to the transition. He did not link them to particular time periods because different areas of the world have experienced them at different times and different speeds. They are (1) collecting food, which characterizes hunter-gatherer populations; (2) famine, where diet becomes less diverse and there are acute periods of food shortage; (3) receding famine, where starchy staples are less important and people find themselves with more leisure time and therefore are less active; (4) the nutrition-related non-communicable diseases (NR-NCDs), characterized by a diet high in fat, cholesterol, sugar, and refined carbohydrates and low in fiber, with increased sedentarism; and (5) behavioral change, where a new diet emerges in the interest of staving off the NR-NCDs, and which has not taken hold broadly yet.

The concern of health and nutrition professionals is with nutrition patterns three, four, and five, through which the low and moderate income, or developing, countries (many countries in Latin America, Africa, the Middle East and Asia) in the world are rapidly transitioning. In pattern three, as people become food secure, they have more leisure time and activity patterns begin to change. The shift from pattern three to four is the point at which the nutrition transition can be located. People lead increasingly

sedentary lives and consume an energy-dense diet: one that is higher in fat, cholesterol, sugar, and refined carbohydrates. This behavior pattern is characteristic of developed countries, but it is now finding its way into sections of developing societies. Figure 3-3 shows the third through fifth major nutrition patterns, or stages, those of receding famine, degenerative disease, and behavioral change, as Popkin (2002) outlined the relationship. These dietary patterns have led to the nutrition transition.

The transition in diet and associated changes in disease incidence are occurring at a much more rapid rate in developing countries today than occurred in developed nations. “In a very short time many low- and middle-income countries have attained rates of overweight and obesity greater than or equal to those of the USA and Western Europe” (Popkin 2002:100). Obesity is no longer restricted to those of high socioeconomic status (SES) anywhere in the world. Though larger bodies may still signify wealth and beauty in some food insecure places, obesity has become an issue across the spectrum of economic class, especially with increased urbanization and immigration to cities. For example, in developing nations such as Morocco and Tunisia, rates of obesity were higher for women than men, and prevalence of overweight and obesity was greater for women in urban areas and with less education (Mokhtar et al. 2001). In Tanzania, many of the diseases of affluence have remained just that, but obesity is now a problem among all groups of people (Maletnlema 2002).

“Diseases of Affluence?”

The term “diseases of affluence” is becoming a misnomer, for a few reasons. The poor within affluent nations are disproportionately affected by these illnesses (e.g., Ezzati et al. 2005). There is debate about how affluence, often measured by income, is or is not related to who is overweight, obese, hypertensive, or dies from heart disease.

The WHO has named SES as a risk factor in the etiology of cardiovascular disease (CVD) (Mackay and Mensah 2004) and found that low SES is now a risk factor for CVD in developing countries. It is no longer true that incidence of CVD or the other diseases of affluence simply increases with improved SES in developing populations. Monteiro et al. (2004) found that the burden of obesity shifts to those of lower SES as a developing nation's GDP increases, and that the shift of the burden of obesity to women of lower SES occurs at an earlier stage of economic development than it does for men. The relationship between SES and obesity is discussed further in Chapter 4.

Grouping these diseases with the label of "affluence" is also problematic because it implies that these diseases are not urgent research priorities (compared to diseases of poverty such as tuberculosis) or are not research priorities for low-income or developing nations. Unwin (2001) pushed for non-communicable diseases (NCDs), such as cardiovascular disease, to be considered a priority for sub-Saharan Africa, noting that the region is often overlooked and not considered to be experiencing high enough rates of these NCDs to warrant research. Monteiro et al. (2004) advised that obesity be a topic of public health concern in developing nations. "Diseases of civilization," another name by which these illnesses have been known, is also unfortunate as a label, and even the name "non-communicable diseases," although correct in an epidemiological sense, could be said to be false in that a person can still "catch" these diseases as a result of invasion into local food markets by Western foods, increased stress from striving for status (often defined by acquisition of Western material goods), and other mechanisms at work as part of the global movement of goods, services, ideas and people.

The question of how income (affluence) or SES is related to these diseases has spurred a large body of research. Wilkinson (1996; Wilkinson and Pickett 2010) found that for rich nations, it is the relative distribution of income *within* each nation, not absolute wealth, that makes a difference in the health of societies. Wilkinson and Pickett (2010) found that life expectancy is unrelated to differences in average income between rich countries (see Figure 3-4, reprinted from 2010:12), and that health and social problems are weakly related to national income per person in rich countries (2010:21). However, the level of income inequality for rich countries is closely related to health and social problems (Wilkinson and Pickett 2010:20). This correlation held again when the authors examined income per person by U.S. state and income equality by U.S. state. It is not the richest countries but the most egalitarian whose citizens enjoy better health, and this egalitarianism is a measure of social cohesion within the nation. Wilkinson believed that "the quality of the social life of a society is one of the most powerful determinants of health and that this, in turn, is very closely related to the degree of income equality" (1996:5). The quality of social life is measured by social stress, social networks, low self-esteem, and rates of depression and anxiety, among other factors. How inequality "gets under the skin," so to speak, has to do with levels of anxiety, self-esteem and insecurity, threats to the social self, and status (Wilkinson and Pickett 2010:31-45).

Marmot (2002) also examined inequality and whether money is causally related to poorer health; if it is causally related, how so? Is it not having enough money, bad distribution of money, or spending it on the wrong things? Marmot pointed out that it is vital to understand how money may act a marker for other mechanisms underlying

affluence or poverty. He also found that the fewer goods and services provided publicly, the more important individual income was for health.

Across the globe, health care and health outcomes vary by ethnicity or race (Brockerhoff and Hewitt 2000; Cutter et al. 2001; Whincup et al. 2002), a variable that is typically included in a measure of SES. In the United States, nonwhite groups suffer higher rates of disease and mortality due to most causes, life expectancy is lower, and infant mortality is higher. I used data from the CDC's Healthy People 2010 online searchable database to construct Tables 3-1 and 3-2. Tables 3-1 and 3-2 show statistics for a selection of health issues, including some of the leading health indicators for Healthy People 2010, across a range of ethnic (Table 3-1) and socioeconomic (Table 3-2) indices (CDC n.d.). The years given are the most recent for which data are available. Racial groups include those individuals selecting only one race to describe themselves. American Indian groups fare the worst with respect to cigarette use and diabetes prevalence, Hispanic/Latino groups have the fewest number of people insured, and African Americans experience the highest rates of death from all cancers and coronary heart disease, and have the highest numbers of obese adults and overweight and obese children (tied with Mexican-Americans). White Americans, which comprise most of my sample population, have the lowest diabetes prevalence and lowest rates of overweight and obesity.

Race is often treated as a biological variable by health researchers. Gravlee (2009), an anthropologist, has explained the problems with this practice, which at best leads to reductionist explanations for observed differences in individuals. This is not to say, however, that epidemiologists and medical and health professionals are unaware

of such problems. There is increasing debate over how best to measure and define race, or whether to keep the concept at all, and what it means relative to health and illness (LaVeist 1994; Lin and Kelsey 2000; Fine et al. 2005). More recently, Ford and Airhihenbuwa (2010) advocated for applying Critical Race Theory to public health issues. Their study sought to understand whether racism (e.g., discriminatory behavior by clinic staff) was a factor in determining African Americans' decisions to get tested for HIV.

In terms of level of education, health inequalities persist as well. Meara et al. (2008) showed that in the United States between 1981 and 2000, while life expectancy overall increased, life expectancy for those with low education barely changed, and actually declined for women with low education. One group for whom educational mortality disparities did improve was young black men. The authors believed that trends in smoking may account for a significant part of the growing gaps in life expectancies between the less and more educated: declines in smoking have been greatest among the better educated. Steenland et al. (2002) studied mortality rates by education for the period 1959-1996 for men and women age 30 and older, and found low education to be associated with higher all-cause mortality and with almost all specific causes. Correlations were strongest with CHD, lung cancer, diabetes, and COPD.

Summary

The diseases of affluence, more specifically, the NR-NCDs, have complex etiologies, and people of varying SES around the world are now dying from them. Chapter 3 has discussed historical and evolutionary bases for the diseases and the high rates of them seen today. I have also touched on the problematic relationship of these diseases with income and SES as well as the need for more and interdisciplinary

research into the diseases of affluence and their cultural and behavioral aspects. : it is no longer true that only those of higher SES are the ones contracting the “diseases of affluence. Chapter 4 discusses obesity and finishes setting the background for the research project.

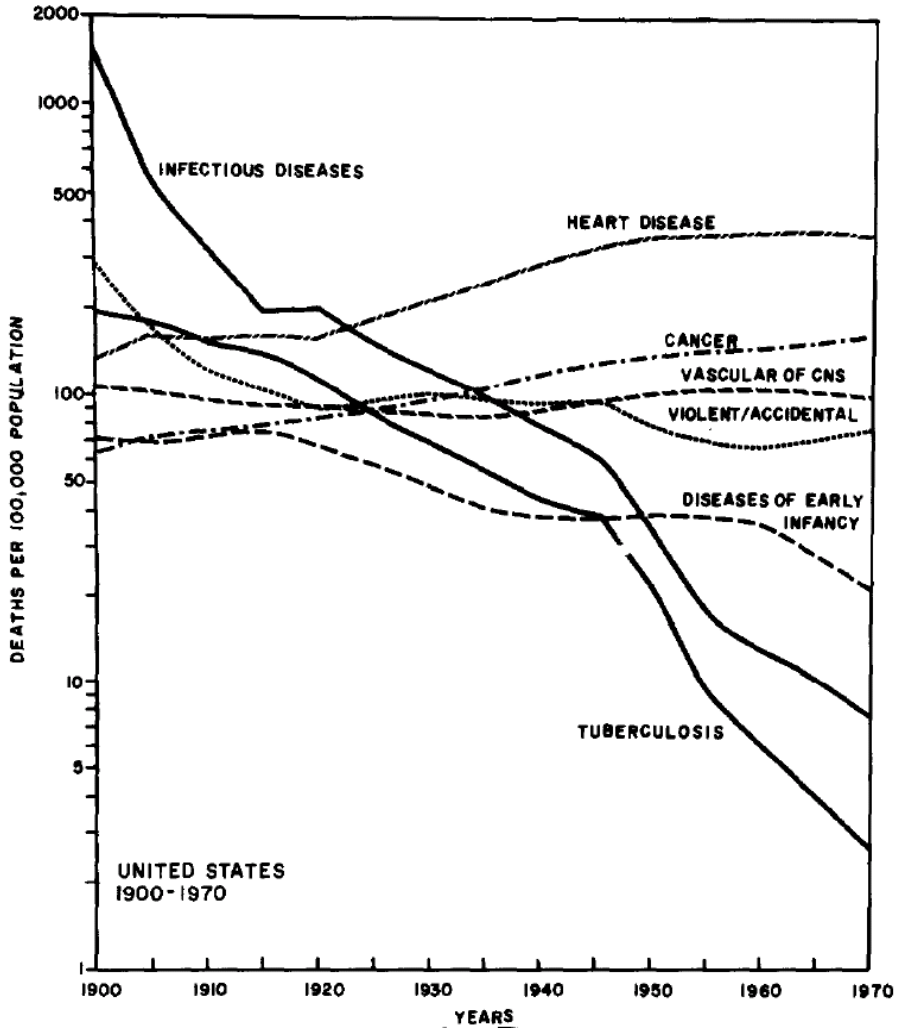


Figure 3-1. Omran's epidemiologic theory as it applied to the United States in the twentieth century. Omran, A.R., A Century of Epidemiologic Transition in the United States, Preventive Medicine, 1977, 6:30-51, page 41, Fig. 3A, by permission of Oxford University Press.

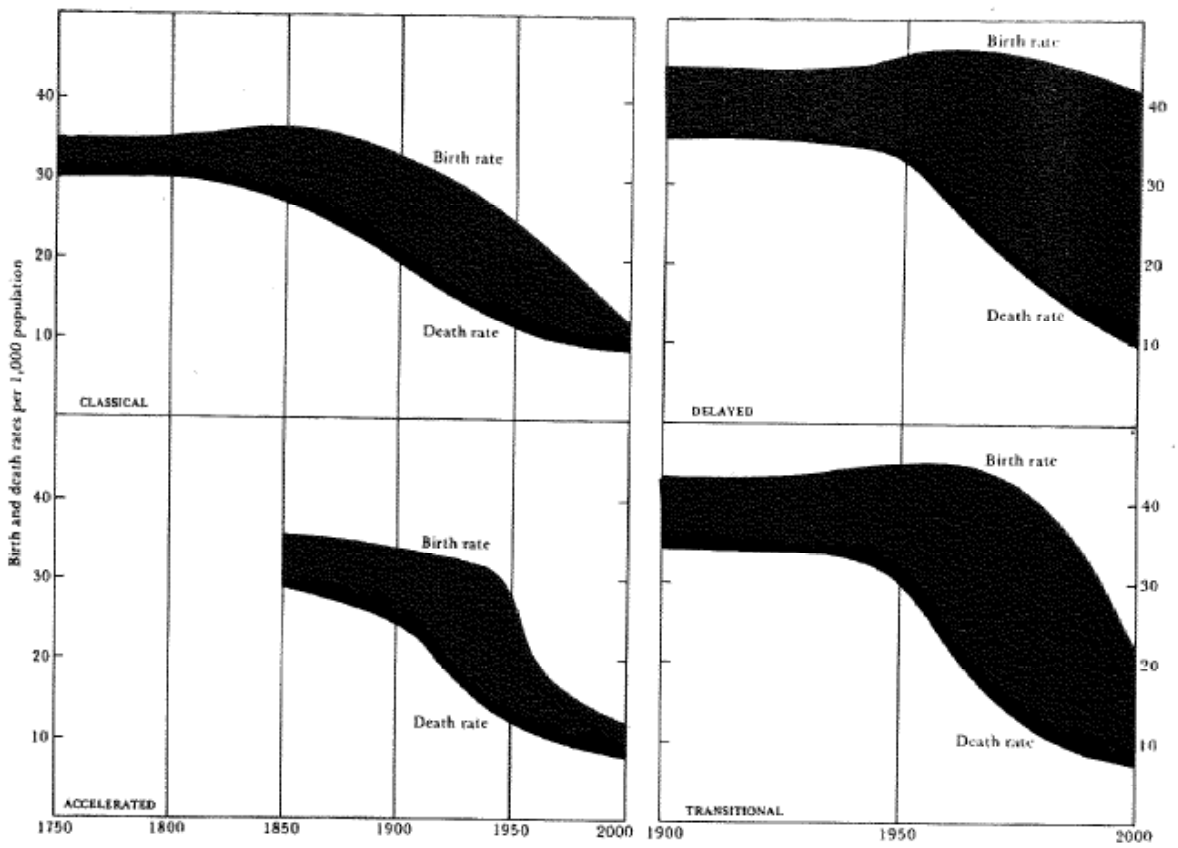


Figure 3-2. Omran's schematic of the four models of the epidemiologic transition. Reprinted from Journal of Tropical Pediatrics, 29:305-316, Omran, A.R.,The Epidemiologic Transition Theory. A Preliminary Update, page 312, Figure 5, 1983, with permission from Elsevier.

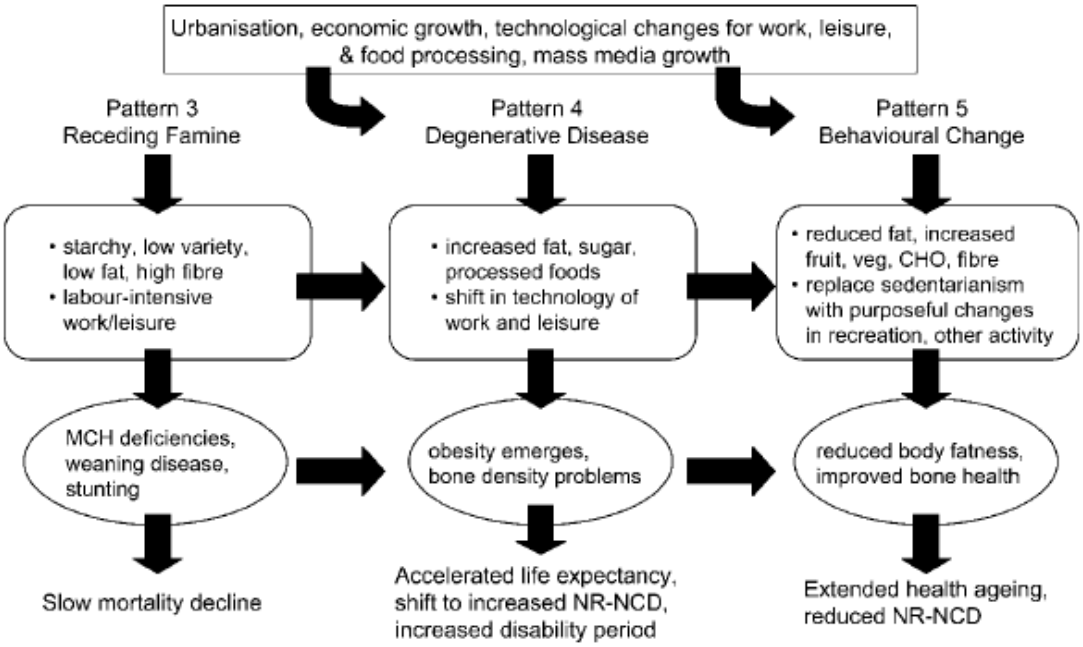


Figure 3-3. Popkin's diagram of three of five major dietary and activity patterns, or nutrition patterns, which have led to the nutrition transition. Popkin, B.M. 2002. An overview on the nutrition transition and its health implications: The Bellagio meeting. Public Health Nutrition 5(1A):93-103, page 95, Figure 2. Reproduced with permission.

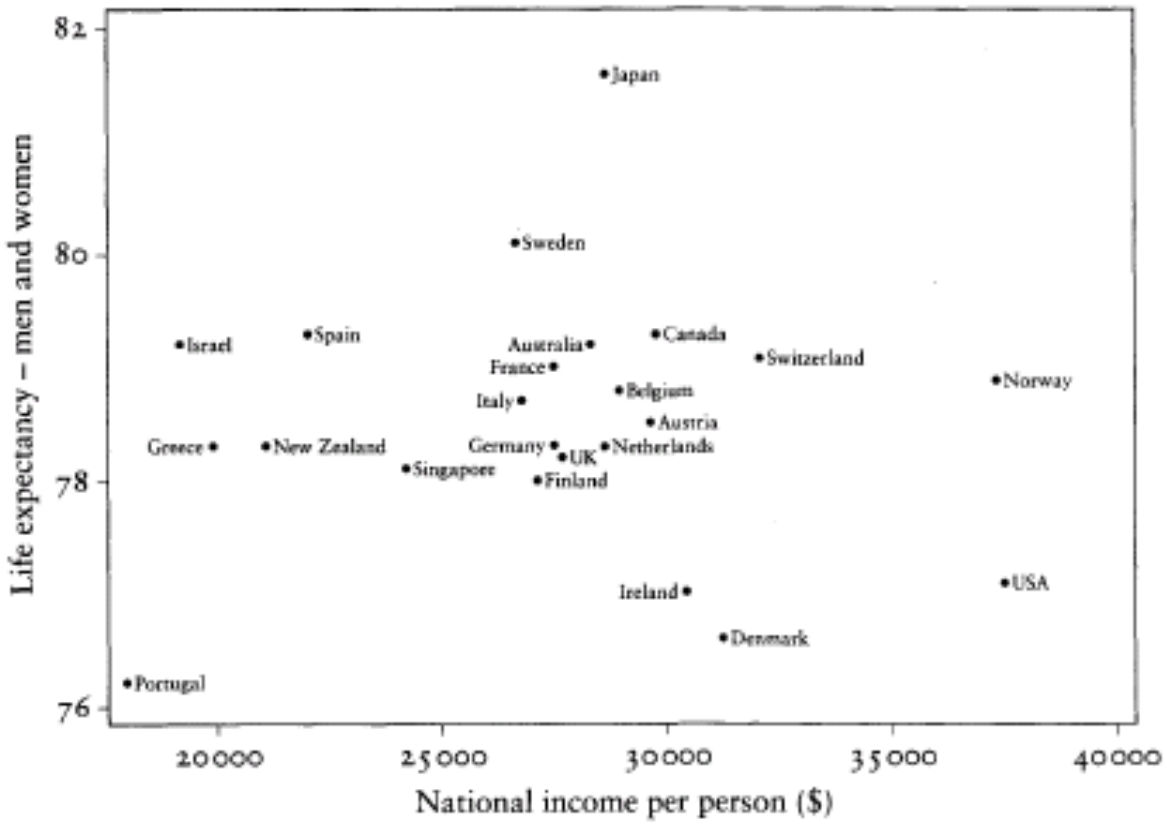


Figure 3-4. Wilkinson and Pickett's graph depicting the relationship between life expectancy and national income for twenty-three countries. [Adapted from Wilkinson, R.G. and K. Pickett. 2010. The Spirit Level: Why Greater Equality Makes Societies Stronger. New York: Bloomsbury Press. Page 12, Fig. 1-3.]

Table 3-1. United States statistics for select health indicators across a range of ethnic groups.

Issue	National average	African American	White	American Indian/Alaska Native	Hispanic or Latino	Asian or Pacific Islander
With health insurance (2008)*	83%	82%	83%	72%	67%	86%
Fully immunized young children and adolescents (2008)*	78%	74%	79%	81%	79%	82%
Adult cigarette use (2008)*	21%	21%	21%	24%	15%	10% (Asian only)
Cancer, overall deaths, age adjusted per 100,000 standard population (2006)	180.7	217.4	179.9	119.4	118	106.5
Diabetes prevalence, age adjusted per 1,000 standard population (2008)	59	83	55	109	81	58 (Asian only)
Coronary heart disease deaths, age adjusted per 100,000 standard population (2006)	144	185	142	104	114	83
Obesity (adults age 20 and over) (2006)*	33%	45%	32%	Data did not meet statistical criteria for analysis	35% (Mexican-American)	Data did not meet statistical criteria for analysis
Overweight or obesity (children and adolescents aged 6-19)* (2006)	17%	22%	15%	Data did not meet statistical criteria for analysis	22% (Mexican-American)	Data did not meet statistical criteria for analysis

*Issue is part of Healthy People 2010 leading health indicators (United States Department of Health and Human Services 2000).

Table 3-2. United States statistics for select health indicators across a range of economic variables.

Issue	Family income level Poor	Family income level Near poor	Family income level Middle/High	Family income level ≤130% of poverty threshold	Family income level >130% of poverty threshold	High school graduate	At least some college
With health insurance (2008)*	71%	69%	89%				
Fully immunized young children and adolescents (2008)*	74%	79%	Data not analyzed				
Adult (age 18 and over) cigarette use (2008)*	32%	27%	18%			28% (people ≥age 25)	15% (people ≥age 25)
Cancer, overall deaths, age adjusted per 100,000 standard population (2006)						129.3 (people age 25-64)	64.9 (people age 25-64)
Diabetes prevalence, age adjusted per 1,000 standard population (2008)						102 (people ≥age 25)	70 (people ≥age 25)
Coronary heart disease deaths, age adjusted per 100,000 standard population (2006)						71 (people age 25-64)	28 (people age 25-64)
Obesity (adults age 20 and over) (2006)*				35%	33%		
Overweight or obesity (children and adolescents aged 6-19) (2006)*				20%	16%		

*Issue is part of Healthy People 2010 leading health indicators (United States Department of Health and Human Services 2000).

CHAPTER 4
OBESITY

The body of literature on obesity has grown as quickly as Americans' waistlines, in part because there are so many angles from which to address it: causes, consequences, related medical problems, stigma, or in relation to food, hormones, genetics, or physical activity, to name a few. For example, recent literature reviews can be found for gastric banding (Chapman 2004), preventing obesity in children (Flodmark et al. 2006), school-based obesity interventions (Shaya et al. 2008), the effect of physical activity on abdominal fat (Kay and Fiatarone Singh 2006), and the nonmedical costs of obesity (Trogdon et al. 2008). In Chapter 4 I first outline some additional anthropological literature on overweight and obesity, which leads to a discussion of the current cultural values surrounding thin and fat bodies in Western nations, specifically the United States. I then move to documenting the statistics of overweight and obesity in the United States and cover some of the causes, consequences, and proposals to manage the so-called epidemic. Finally I detail the situation of overweight and obesity in New York State and my dissertation area of study. Chapter 4 relates directly to this research in providing both background information and specific details as to the current state of affairs regarding obesity in the United States and in the area from which my research participants were drawn. It also illustrates the urgent need for continuing work on the causes and correlations of obesity.

Culture and Fatness

Fatness means different things in different places. A search of the Human Relations Area Files (HRAF) yields information as to variation in the occurrence of obesity and many examples of the different ways obesity has been perceived in the

world. I constructed Table 4-1 using the HRAF database. For example, larger bodies throughout history have often been an indicator of wealth, attractiveness, and well being in many places, and remain so today in places where a large fraction of people regularly experience food insecurity, such as among the Tuareg in Africa or the Kogi in Colombia. Brown (1991) also used HRAF data and estimated that for the cultures for which obesity could be coded, 81% found it desirable to be larger rather than thinner. However, there is also evidence that obesity did not occur or was looked upon as an illness in some places. Lee and others documented no obesity among the !Kung, and Evans-Pritchard reported that among the Azande of Sudan, obesity is considered an illness of foreign origin.

Today, fatness as an achieved aesthetic and symbol of well being and attractiveness persists in some cultures. Popenoe (2004) discussed Azawagh Arab women's work toward fatness, which is considered sexually attractive, in Niger. However, these women could not display desire for food, as this was interpreted among these Arabs as sexual desire, a sentiment inappropriate for women to display. The Azawagh women found it impossible to understand that Western women did not want to be fat. Rasmussen (2010) contrasted the situation of the Azawagh Arab women with two Tuareg groups in Niger and Mali for whom the connections among food, female consumption, desire, and sexuality were openly displayed between men and women. Rasmussen also explored how the aesthetic of fatness varies between the two Tuareg communities and how it is changing.

These African groups' perceptions of fatness stand in stark contrast to the characteristics often attributed to overweight and obese people in much of the Western

world: laziness, unattractiveness, low status, stupidity, and lack of self-control. Farrales and Chapman (1999) illustrated such a contrast, which they saw taking place daily in the bodies and minds of Filipino women living in Canada. The women harbored both Filipino and Canadian models of attitudes toward their bodies, food, and health, and constantly negotiated between the two. Their Canadian model emphasized thinness and watching the diet, while their Filipino model emphasized fatness and eating.

Despite such contrasting meanings of fatness, however, there appears to be cross-cultural consensus regarding waist-to-hip ratio, which is hypothesized to be an evolutionary cue as to a woman's fecundity. Women with lower waist-to-hip ratio are considered more attractive regardless of increases or decreases in BMI (Singh et al. 2010). Other researchers have found mixed evidence for cross-culturally shared attitudes toward fatness. Anderson et al. (1992) found five factors related to cross-culturally shared feelings toward body shape and fatness: (1) reliability of food supply; (2) climate; (3) relative social dominance of women; (4) the value placed on women's work; and (5) the probability that the expression of adolescent sexuality will have adverse consequences on girls. Other anthropologists examining fatness cross-culturally have hypothesized that fatness in preindustrial societies is desired due to its adaptive value in times of scarcity (Brown and Konner 1987). The results of Ember et al. (2005), however, conflicted with some of those of Anderson et al. (1992), nor did the complex results of their study support Brown and Konner's idea.

In American culture, standards of beauty defined in terms of body size have shifted. Cassell (1995) reviewed the history of America's "cultural obsession with thinness," pointing out that in Victorian times, for example, round bodies and large

appetites were admired. Today, there is a constant barrage of images of thin white women in the American media, airbrushed into unattainable perfection (in body size and color), leading women to believe that looking this way leads to success. However, multiple body ideals do exist in the United States, and some groups find no stigma attached to overweight and obesity. For example, Massara (1989) found that obesity among married Puerto Rican women symbolized a successful marriage to a husband who is a good provider. Parker et al. (1995) found that African American teenage girls held much more flexible ideas about beauty and their bodies than white girls did. The African American girls felt that a girl had to “work with what she had,” while white girls had more rigid ideas about the body and tended to be more dissatisfied with their bodies.

Pursuing Health, Pursuing Thinness

Porter (1999) outlined a critical history of public health from ancient times to the twenty-first century which provides one way to understand current American attitudes and obsessions regarding thin and heavy bodies. In ancient times, what would today be called public health revolved around ideas of purity of body and soul, and the care of elite groups. By the medieval period, the focus had shifted from concern with the health and comfort of elites to a broader one for the increasingly dense and urban population. The Plague provoked the earliest and most direct efforts by government bodies to control disease. By the Enlightenment, nation states were experiencing disease emergencies less frequently and were dealing with infections such as malaria and smallpox. The Enlightenment also saw the development of a social science of health as well as new methods of sanitation and immunization. As centralized government and

capitalism in Western states grew, so did ideas of national health and the gathering of health statistics.

In the United States in the late eighteenth century, democracy and the health of the new nation became linked. Rosen (1952, cited in Porter 1999:57) described Thomas Jefferson's belief that the healthiness of the American people reflected the superiority of democratic citizenship. In the nineteenth century, epidemics of cholera and typhus "gave expression to dominant cultures of religious piety and individualistic voluntarism" (Porter 1999:94). These attitudes, in conjunction with Americans' suspicion of central government and support of local rights, combined to lay the cultural foundation of future public health efforts.

Bacteriology and a medical model of public health emerged as drivers of public health training at the end of the nineteenth and beginning of the twentieth century, and focused on prevention of infectious disease rather than the pursuit of health. This was achieved through control of population behavior in terms of sanitation, immunization and isolation of the sick. As the twentieth century wore on, the health and care of the population in the United States continued to focus on acute infection rather than on the transition to chronic infections and conditions that was underway in all Western societies. The functions of public health bodies became concerned with the social aspects of the health of the population. Prevention, healthy bodies and healthy lifestyles became the goal, with much of the responsibility for such prevention and maintenance shifting to the individual. This was in significant contrast to the nineteenth century model of illness prevention, which focused on social structural methods of preventing sickness. As Porter (1999:298) states, "The promotion of the healthy body became a rearguard

action to reduce the exponentially increasing costs of redeeming chronically broken bodies in an ever ageing demographic structure."

The message of personal responsibility for each individual's own health continues today. Porter (1999) gives the anti-smoking campaign of the twentieth century as a lasting example of this delegation of individual responsibility for prevention. Epidemiology's success in finding a link between smoking behavior and lung cancer highlighted and legitimized such delegation. The message of the campaign, that each person can prevent cancer (and by extension control his or her own health outcomes), in effect enshrined a new moral code of health in the United States, a code which, given an American cultural proclivity for individualism, seemed only natural, despite other factors such as marketing or the addictive nature of nicotine.

Today, the combination of commercialization of healthy bodies and the moral code of individual responsibility for health creates an at times insidious environment. In terms of overweight and obesity, it can be especially problematic; for example, leading to eating disorders and related deaths. Some research has posited, however, that it is only recently that Americans have become concerned with obesity. Oliver and Lee (2005), using data from 2000, examined the American public's attitudes toward obesity and obesity-related public policies. At that time, most Americans did not feel obesity was a significant problem. They saw obesity as a consequence of individual failing more than anything else, such as a result of genetics or the food environment. People did not approve of treating obesity as a disability or measures such as taxing food or beverages. Oliver and Lee also found that political party or liberal/conservative ideology did not explain much of the variance in attitudes. Schlesinger (2005) locates the shift in

American attitudes toward obesity in 2002. By 2003, obesity was Americans' second biggest health concern, after cancer. Barry et al. (2009) examined obesity metaphors and how beliefs about obesity affect support for health policy. The data from 2006-2007 showed that support for some, but not all, public policies was predicted by political party identification and ideology. However, these predictors were less important for obesity than for a topic such as abortion. They also found that an individual's BMI and self-reported health and exercise level explained very little variation in support for obesity policies.

Some people I interviewed who struggle with their weight told me that it was their own fault. Time and finances may matter, children may keep the single mother busy, and the career-minded man may never be home to cook himself a healthy meal, but most interviewees stated that the majority of responsibility for health, and especially overweight and obesity, lies with the individual. Most people did not discuss factors like the ubiquity of food and its marketing, or that the American diet increasingly consists of calorie dense, so-called convenience foods, ostensibly created to make life easier but that contribute to increased caloric intake. Many felt strongly that remedies such as taxing sugary beverages should be avoided. The irony is that in the United States, "the individualistic emphasis of the new social contract of health between the modern state and its citizens allows the right to consume to remain a priority. The obligation to remain healthy continues to be a subordinate value to the right of every citizen in a free market democracy to be a consumer" (Porter 1999:301).

Obesity in the United States

Flegal and colleagues (Flegal et al. 1998; Flegal et al. 2010), using data from multiple National Health and Nutrition Examination Surveys (NHANES), have

documented the prevalence of adult overweight and obesity in the United States over the last 50 years. BMI is measured as [weight (kg) / height (m)]2 or weight (lb) / [height (in)]2 x 703, and individuals are classified as being underweight with a BMI of less than 18.5, of normal weight with a BMI of 18.5-24.9, overweight with a BMI of 25-29.9, or obese with a BMI of 30 or greater. BMIs above 30 can be further classified into 3 categories of increasing obesity severity. From 1960 to 1980, obesity rates were fairly stable, but between 1976-1980 (NHANES II) and 1988-1994 (NHANES III), obesity prevalence increased by about eight percentage points, and increases in all sex and age groups were statistically significant. By 1988-1994, the highest percent of obesity for any age-sex-ethnic group was for non-Hispanic black women, 12.5% of whom had a BMI of 35-39.9 (Flegal et al. 1998:45). Increases in obesity were again statistically significant from 1988-1994 to 1999-2000 (NHANES became a continuous survey in 1999, releasing data every two years), and were again significant in all age and sex groups except men aged 40-59. By the 2007-2008 NHANES, obesity in the overall population had increased to 33.8% (age-adjusted) of the United States population, with 68% (age adjusted) of the population overweight or obese. What is even more remarkable is that for some specific age-sex-ethnic groups, the numbers of overweight and obesity were over 75% of the population: for example, 88% of Mexican-American men aged 40-59 were overweight or obese (Flegal et al. 2010:236). Wang et al. (2008) modeled the trends in obesity data in the United States and found that if trends continue, by 2048 all American adults would be overweight or obese, with all black women reaching this point by 2034. Recent data suggest that obesity rates in the United States have hit a plateau, though it is unclear why (Flegal et al. 2010). However, even

more recent data (Levi et al. 2011) challenge this, finding for example that adult obesity rates rose in sixteen states between 2010 and 2011, and no state's rate fell.

Flegal and colleagues (Flegal et al. 1998; Flegal et al. 2010) locate the start of the so-called obesity epidemic in the United States in the early 1980s, a timetable which is widely agreed upon by researchers. However, Komlos and Brabec (2010) posited that the epidemic began much earlier, and that results from studies such as Flegal and colleagues' are due to their use of measurement years, rather than birth cohort effects. Komlos and Brabec found it better to locate trends in overweight and obesity by birth cohort for two reasons: a person's BMI at time of measurement may have been achieved years prior to measurement; and it has been shown that lifestyle habits established in childhood tend to carry over to adulthood (Freedman et al. 2005). Komlos and Brabec estimated long-term trends in BMI using data from surveys collected by the National Center for Health Statistics and all NHANES through 2006. They covered birth cohorts from 1882-1986, stratifying them into four ethnic-gender groups: white men, white women, black men, and black women. Their data showed that the trend toward higher BMIs began with the cohort born right after World War I, and occurred slowly throughout the twentieth century, with black women becoming bigger faster than any other group. The trend was not continuous, given events like world wars, but Komlos and Brabec found, for example, surges after each World War. They also found that during the Great Depression and World War II the rate of BMI increase slowed down for all groups and to nearly zero for all men. The 1920s and 1950s proved to be significant periods: technological advances spawned wider automobile use in the 1920s and

television watching and fast food consumption grew in the 1950s, all phenomena which alter energy intake and expenditure.

Overweight and Obesity in New York State and the Study Area

The percentage of adults in New York State who are overweight or obese increased from 42% in 1997 to 60% in 2008. The percentage of obese adults in New York State more than doubled from 10% in 1997 to 25% in 2008 (New York State Department of Health 2008). Figures 4-1 and 4-2 show trends in rates of self-reported overweight and obesity in New York State as collected by the BRFSS. Rates of overweight appear to have remained stable for some time, but obesity rates increased over the ten-year period.

In terms of overweight, obesity, and healthy eating, the two counties from which my respondents were drawn fare worse in certain behavioral risk indicators compared to the state average. Table 4-2 shows statistics for four BRFSS behavior/risk indicators. Oneida County performs worse than the state average in leisure time physical activity and eating at least five fruits or vegetables per day, and Herkimer County performs worse than the state average in all categories except participation in leisure time physical activity.

Causes, Consequences, Proposed Solutions

The causes of the high rates of overweight and obesity today are many and there is much debate about how much any given factor contributes to the problem. Hill et al. (2003) have shown that the rise in obesity rates could be explained by an average national increase of just 50-100 calories per day. Which begs the question: What causes that increase?

With industrialization of agriculture, food has become more abundant and less expensive and aggressive advertising encourages the consumption of mass-produced, processed foods. These events form the basis for what Popkin and others (Drewnowski 2000; Drewnowski and Popkin 1997; Popkin 1993, 1999, 2004; Popkin and Gordon-Larsen 2004) have termed the nutrition transition, as discussed in Chapter 3. Service-oriented jobs and leisure time spent watching television contribute to increased sedenterization of life in late industrial society.

In the United States, federal agricultural policies contribute to obesity. In the early 1970s, in the midst of an oil and food crisis, then-Secretary of Agriculture, Earl Butz led efforts to support the production of cheap corn and the development of high fructose corn syrup (Critser 2004). Today, the Farm Bill helps “make unhealthy diets an economically sensible choice” (Schoonover 2007:4) by keeping the price of commodities such as corn, soybeans, and meat artificially low. The same oil crisis of the 1970s, and its high inflation, encouraged many women into the work force to maintain a middle-class lifestyle (Margolis 1984:186-187).The rise of the fast food industry—and everything it contributes to obesity—can be read as one response to the increased number of women in the workforce.

Food industries (Nestle 2003; Tillotson 2004) and international institutions such as the World Trade Organization (Barker and Mander 2000) influence nutrition and health by manipulating the food markets and controlling what foods are available for consumption. The billions-of-dollars-per-year business of food marketing has proved to be pernicious to the health of Americans, as lobbyists press the United States Department of Agriculture (USDA) and FDA to enact guidelines for marketing that do

not protect the health of the public, or that allow claims on food packaging that are misleading (Nestle 2003, 2007).

Finkelstein et al. (2005) provide a review of economic causes and consequences of obesity. For example, a shift from manual labor to service-oriented jobs encourages less energy expenditure in the workplace, and the lower cost of energy-dense foods has led to increased energy intake and between-meal snacking. Still more ecological factors have been assumed to play some role in obesity. These include the built environment (Papas et al. 2007), more specifically location of grocery stores (Inagami et al. 2006) and what have been termed “microscale built environments,” such as kitchens, plates, utensils, and food containers (Sobal and Wansink 2007). Participation in the federal Food Stamp Program (Kupillas and Nies 2007) and increased consumption of sugar-sweetened soft drinks (Gibson 2008) have been implicated. Some factors are mediated by gender: for women, getting married (Sobal et al. 2003), and for men, religious denomination (conservative Protestantism) (Kim et al. 2003) are linked to obesity. For childhood obesity, many of these factors apply, but there are additional considerations such as parental involvement in diet, school environments, or food neophobia. For immigrants to the United States, length of residence is associated with increased BMI (Goel et al. 2004; Himmelgreen et al. 2004).

What has been termed the obesogenic environment, aspects of which overlap with the built environment, also contributes to increasing rates of overweight and obesity (Drewnowski and Rolls 2005; Swinburn et al. 1999). Components of the obesogenic environment include urbanization, cheap and convenient foods, televisions in homes, ubiquitous vending machines, and increased portion size. All of these factors contribute

to consumption of more food that is often nutritionally bereft. Underlying the obesogenic environment are processes of global food trade, corporate agriculture and associated overproduction, transnational corporations, and better marketing strategies for different cultures.

All these contributing factors are compounded by income inequality. Sobal and Stunkard's seminal work (1989; see also Sobal 1991) illustrated relationships between fatness and SES. They found that for traditional or developing societies, there was a strong, direct relationship between SES and obesity among all members of the community. For modern or developed societies, however, there was an inverse relationship between SES and obesity for women, and the relationship was mixed for the rest of the population. McLaren (2007) updated Sobal and Stunkard's review using data for adults (age 18 and older) through 2004, and found that

> for both men and women… an increasing proportion of positive associations and a decreasing proportion of negative associations as one moved from countries with high levels of socioeconomic development to countries with medium and low levels of development. Findings varied by SES indicator; for example, negative associations (lower SES associated with larger body size) for women in highly developed countries were most common with education and occupation, while positive associations for women in medium- and low-development countries were most common with income and material possessions. (2007:29)

She also found evidence of a socioeconomic gradient in diet in several highly developed countries. In these countries people of higher SES have a healthier diet, eating more fruits, vegetables, and lowfat milk, and less fat. She noted that while factors such as globalization and the nutrition transition contribute to the global increase in rates of obesity, the burden of obesity in developing countries is being shifted to the poor, who are more vulnerable to the cultural and economic shifts toward lower quality diets. Wang and Beydoun (2007), in a review of literature from 1970-2006, found that in the United

States obesity disproportionately affected minorities and those of low SES at all ages. Chang (2006) found racial residential segregation in the United States to be positively associated with higher BMI and higher odds of being overweight for non-Hispanic blacks, and no association for whites.

The consequences and costs of obesity are great. The obese have more physician visits, more inpatient days, and need more prescription medications (Quesenberry et al. 1998; Thompson et al. 2001). As a fraction of overall health care costs in the United States, Finkelstein et al. (2003) found 5.3% - 5.7% of annual medical expenditures to be due to obesity, and that taxpayers each spend about $175 annually to finance obesity-related costs for Medicare and Medicaid alone. Cawley and Meyerhoefer (2010) found that previous research had underestimated the medical costs of obesity—that obesity raises annual medical costs by $2,826 (in 2005 dollars) and that the estimated annual cost of treating obesity for non-institutionalized adults accounts for 16.5% of national spending on medical care.

Flegal et al. (2005), using NHANES data from 1971-2002, estimated the number of excess deaths due to obesity (BMI≥30) in the United States in 2000 to be 111,909. However, they found that overweight was not associated with excess mortality. The same research team followed this up (Flegal et al. 2007) with analyses showing that the association between BMI and mortality varied by cause of death. Obesity was significantly correlated with increased mortality from CVD, and when overweight and obesity were combined, they were associated with increased mortality from diabetes and kidney disease. Evidence also suggested a weakening association of obesity with CVD mortality over time (calendar years).

Jia and Lubetkin (2010) used data from the 1993-2008 Behavioral Risk Factor Surveillance System (BRFSS) to examine the quality-adjusted life years (QALYs) lost in the United States due to obesity. QALYs lost were computed as the sum of QALYs due to morbidity and future QALYs lost in expected life years due to death. They found that black women had the most QALYs lost due to obesity, which was 31% higher than the number lost by black men, and 50% higher than the number of QALYs lost by white men and women. Perhaps the most sobering projection is that life expectancy in the United States will decline with the next generation due to obesity and its related conditions. This effect will vary by sex and race (white/African American) (Olshansky et al. 2005).

Obesity also affects work productivity. Cawley et al. (2007:1317), using data from 2000-2004, found that as weight classification increased, the probability of missing work in the past year, the number of days missed, and the costs of absenteeism rose for both men and w\omen, and that absenteeism costs associated with obesity total $4.3 million annually in the United States. Neovius et al. (2008) and van Duijvenbode et al. (2009) found a clear positive association between obesity status and sick leave.

In terms of social consequences, overweight and particularly obese people in the United States face significant stigma and discrimination. Pagan and Davila (1997) found that obese women are mostly excluded from higher paying managerial, professional and technical jobs. DeBeaumont (2009) found that obese women in sales and service occupations receive significantly less pay. Puhl and Brownell (2006) found that obese men and women experience stigma equally in terms of type and frequency, and that doctors and family members were the most often mentioned sources of weight bias.

Critical analysts (Jutel 2006; Rosenberg 2002) have noted that establishing overweight and obesity as diagnoses or disease entities legitimates them, in the guise of benign objectivity, as problems to be medicated or otherwise remedied. This legitimization also grants citizens social power to define others. Researchers have documented normative discourses surrounding weight status and what constitutes a healthy or good-looking body, which fuel stigma and discrimination (Malterud and Ulriksen 2010). Such discourses mark big bodies as ugly, shameful, out-of-control, or as a state of the self that is to be feared and avoided. Herndon (2005) examined how the so-called war on obesity in the United States, when cast as a problem of ethnicity or class, exacerbates such groups' already marginal status. Førde (1998) questioned whether the extensive risk awareness of disease and illness, which he says is imposed by epidemiology, is irresponsible in the way it can change lay perceptions of health, disease, death, and life in general. He stated that "The moral and coercive crusade for increased risk awareness and purity in life style can too readily take on the form of cultural imperialism towards conformity" (1998:1155).

The National Association to Advance Fat Acceptance has existed since 1969, but to cope with being surrounded by such a stigmatizing culture, support websites and blogs such as FAT!SO? (www.fatso.com), www.bigfatblog.com, Size Acceptance for Empowerment (www.socalsafe.org) and Unapologetically Fat: A Study in Happiness (http://unapologeticallyfat.blogspot.com) have emerged and thrived. Support has appeared in other forms as well. There is a restaurant, the Heart Attack Grill (www.heartattackgrill.com), which features items like the Quadruple Bypass Burger and Flatliner Fries (fried in pure lard). This place is also known for fostering a sense of

acceptance of people of all sizes, with weigh-ins held right in the middle of the restaurant—people weighing over 350 pounds eat free. Sadly, its 29-year-old spokesman died of pneumonia in March 2011, at 575 pounds (Johnson 2011).

As for what can be done about obesity, a wide range of tactics have been proposed, from bariatric surgeries, to pharmaceutical therapies (Neovius et al. 2008), to personal carbon trading to reduce obesity (Egger 2008). Dietary change and increased exercise, the most often attempted solutions, have produced varied results both in the lab (Söderlund et al. 2009) and anecdotally. Chopra and Darnton-Hill (2004) likened the obesity epidemic to the situation with tobacco smoking. Advertising for food exceeds that for tobacco, and contributes in the same way tobacco advertising did to increased consumption of the commodity. The authors recommended a global strategy, similar to that being used against the tobacco industry, to help regulate distribution and consumption of energy-dense foods. Jeffcoate (1998) pointed out that even when a person loses weight, this does not guarantee a life free of related disease. Life expectancy is longest for individuals who maintain a constant weight. He argued that it is politicians, not dieticians, who must step in. Davey (2004) echoed this sentiment and that of Chopra and Darnton-Hill (2004), and stated that what is needed is strict government policy to regulate consumption and to control the food industry by banning certain advertising, taxing certain foods, and rationing certain purchases. Johnston (2011) disagreed with those who would assign the task of obesity reduction to public health officials or politicians, and argued that efforts to curb obesity need to come from cooperative efforts within a community.

Summary

Chapter 4 has outlined some of the anthropological literature relevant to what fatness means in different places. It has also discussed attitudes about overweight and obesity in the United States and the culture of thinness in Western nations. Rates of obesity in the Unites States have been increasing for decades, and the causes, consequences, and proposed solutions to the obesity problem are myriad. Chapter 5 outlines the ethnographic setting of not only Oneida and Herkimer Counties but also the Mohawk Valley area and Utica, the city in which most of my participants live.

Table 4-1. Cross-cultural anthropological data about obesity, drawn from the HRAF database.

Region	Culture	Place	Author(s)	Field date/ date coverage	Obesity
Africa	San (!Kung)	Northwest Botswana	Truswell and Hansen	Date coverage 1967-69	Obesity is not seen, though there is some steatopygia (extreme accumulation of fat on the buttocks)
		Botswana, Namibia	Lee (1979)	Field date 1963-1973	Obesity is not a problem for the !Kung, who are short and tend to be very lightweight and thin for their height
	Azande	Sudan	Evans-Pritchard (1971)	Field date 1926-1930	Obesity is classified as a sickness of foreign origin
		Sudan, Democratic Republic of Congo, Central African Republic	De Graer (1929)	Not specified	Obesity is a symptom of a local disease *Hima-Dakurugwa*
	Mongo	Central Congo Basin, Democratic Republic of Congo	Pagezy (1991)	Field date 1979-1980	Primiparous women expected to become fat, and will never again in their lives attain that same level of fatness
	Tuareg	Niger, Algeria	Nicolaisen (1963)	Field date 1951-1962	Fatness is a sign of feminine beauty (with some women making great effort to grow fat), symbolizes wealth (large flocks and herds, much milk), and is preferred by men for sexual intercourse
Asia	Pashtun	Pakistan	Ahmed (1980)	Field date 1972-1977	It is said that fatness is a disease, yet it does signify a certain amount of affluence (that person does not have to work in the fields)
	Tamil	India	Djurfeldt and Lindberg (1975)	Field date 1969-1972	Slight obesity is an ideal and a status symbol which few can afford
Caucasus	Abkhazia	Georgia	Garb (1984)	Field date 1979-1982	Obesity is considered an illness
Europe	Saami	Norway	Anderson (1978)	Field date ca. 1971-1976	A slender women is not considered attractive and young women may try to gain weight
North America	Seminole	Florida, United States	Fairbanks (1973)	Date coverage 1920s-1970s	Cultural preference for large, heavy women
			Garbarino (1972)	Field date 1964-1968	One man quoted, “We like big, meaty women.”

Table 4-1. Continued

Region	Culture	Place	Author(s)	Field date/ date coverage	Obesity
North America	Maya	Mexico	Press (1975)	Field date 1963-1968	Obesity is something to be treated by local, general purpose curers
	Italian Americans	New York City, United States	La Russo (1988)	Not specified	Obesity is perceived as a deficiency to be overcome by the obese individual
	Tlingit	Alaska, United States	Kan (1989)	Field date 1979-1980	Obesity is an embarrassing physical characteristic
Oceania	Trobriand	Melanesia	Malinowski (1929)	Field date 1914-1920	Obesity is extremely rare and in more pronounced forms is classified as a disease
	Orokaiva	Papua New Guinea	Williams and Murray (1930)	Field date 1923-1924	Ideal is a plump, not fat man. Skinniness is abhorred. Researchers could not find words in the language for fat, stout, or obese
	Hawaiians	Hawaii, United States	Sahlins, Barrere (1992)	Field date 1970-1981	High chiefs tend to be obese, commoners not
Polynesia	Tongans	Tonga	Koch (1955)	Field date 1951-1952	Tongan ideal of feminine beauty has changed from the obese type with very fat legs to the well-rounded, sturdy girl; the beautiful white girl type is still too thin for most Tongans
			Bloomfield (2002)	Field date 1983	To be plump is considered better than to be thin. Plumpness is associated with beauty, good health and chiefly status
			McGrath (2004)	Date coverage 1643-2004	Changing diet and activity levels due to “modernization” or “Western lifestyle” have led to much obesity and obesity related conditions
South America	Kogi	Colombia	Reichel-Dolmatoff and Muirden (1951)	Field date 1946-1949	The ideal of physical beauty is a fat woman (which testifies to good food and health). Beauty is not desired in marriage, however, but preferably in illicit relations; skinniness is ugly in human beings as well as in animals or plants
	Yahgan	Chile	Gusinde, Schütze (1937)	Field date 1918-1924	A well built, upright, lithe and supple figure (man) has the best prospects for marriage
	Ona	Tierra del Fuego	Gusinde (1931)	Field date 1919-1923	Obesity is regarded as very unattractive

Table 4-2. Data from BRFSS for select health indicators for Oneida and Herkimer Counties (New York State Department of Health n.d.).

Oneida County Behavioral/ Risk Indicator (2008-2009)	County	95% CI*	State rate	95% CI*
% Adults Overweight or Obese (BMI≥25) - Age-adjusted based on 2000 census	56.5%	6.0%	59.3%	2.5%
% Adults Who Participated in Leisure Time Physical Activity in Last 30 Days - Age-adjusted based on 2000 census	75.4%	4.9%	76.3%	2.2%
% Adults Eating 5 or More Fruits or Vegetables per Day - Age-adjusted based on 2000 census	26.0%	5.0%	27.1%	2.2%
% Adults with Physician Diagnosed Diabetes - Age-adjusted based on 2000 census	8.8%	2.5%	9.0%	1.2%
Herkimer County Behavioral/Risk Indicator (2008-2009)				
% Adults Overweight or Obese (BMI≥25) - Age-adjusted based on 2000 census	61.0%	5.8%	59.3%	2.5%
% Adults Who Participated in Leisure Time Physical Activity in Last 30 Days - Age-adjusted based on 2000 census	79.6%	4.0%	76.3%	2.2%
% Adults Eating 5 or More Fruits or Vegetables per Day - Age-adjusted based on 2000 census	20.9%	4.1%	27.1%	2.2%
% Adults with Physician Diagnosed Diabetes - Age-adjusted based on 2000 census	11.2%	3.1%	9.0%	1.2%

*Confidence interval for %

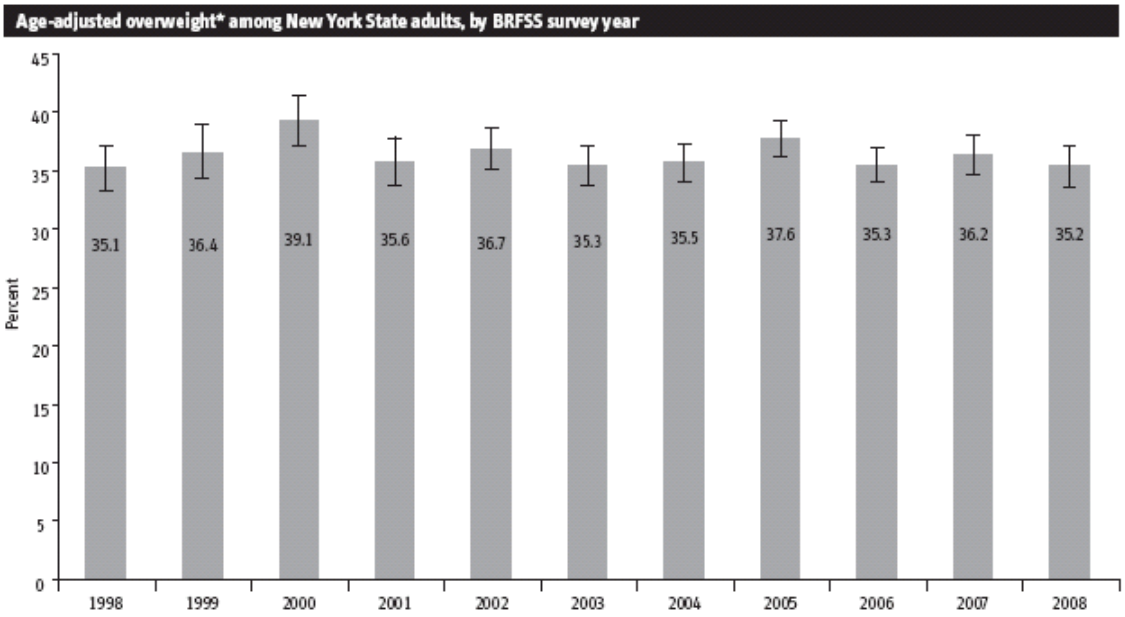


Figure 4-1. Trend in rates of overweight (BMI≥25 but <30) among New York State adults (New York State Department of Health 2008). Percentages are age adjusted for the 2000 census. Error bars represent 95% confidence intervals.

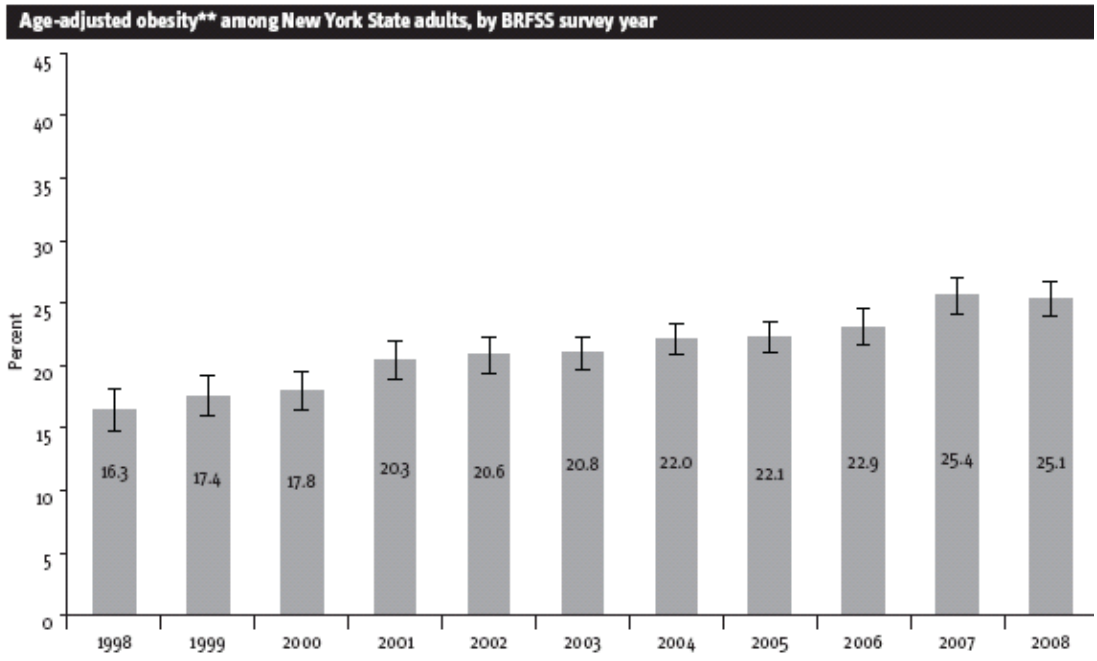


Figure 4-2. Trend in rates of obesity (BMI≥30) among New York State adults (New York State Department of Health 2008). Percentages are age adjusted for the 2000 census. Error bars represent 95% confidence intervals.

CHAPTER 5
THE ETHNOGRAPHIC SETTING

Chapter 5 provides demographic, historical, and ethnographic information about the region from which research respondents were drawn, and aims to sketch a picture of the study area. The Mohawk Valley in Central New York is made up of portions of six counties within which the Mohawk River Watershed lies: Oneida, Herkimer, Montgomery, Fulton, Schoharie and Schenectady counties. Research respondents came from Oneida or Herkimer counties. The city of Utica is the major metropolitan area for these two counties, and straddles part of their shared border. Chapter 5 covers a short history of Native Americans in the area, followed by contemporary information about the region and some of the things I experienced while living and doing fieldwork here.

Native Americans in the Mohawk Valley and Central New York

Native American groups have inhabited the Mohawk Valley for the last ten thousand years. The archaeological record reveals maize in cultivation-based permanent settlements beginning around 1350 A.D., and stone tools and stockaded villages in the fifteenth and sixteenth centuries (Wonderley 2002:152). The first permanent European settlements in the northeast United States were made in the seventeenth century (Wonderley 2002:153). The first people to inhabit the area known as the Mohawk Valley were Native Americans of varied but related groups: Mohawks, Oneidas, Onondagas, Cayugas and Senecas. These five groups came together to form what is now referred to as the Haudenosaunee (Iroquois) Confederacy or League of Haudenosaunee (Iroquois) Nations. The Tuscaroras, fleeing war in North Carolina, were admitted as the sixth Nation of the Confederacy in 1722, by which time this

Confederacy was one of the most powerful and influential Native American groups (Feeley 2007).

Of the Haudenosaunee, the Oneidas were the most geographically local to the Mohawk Valley. Prior to European contact, the Oneidas numbered an estimated 3000-4000. During the 1700s that number fell to 1000-1500, mainly due to epidemic illness transmitted by the Europeans. It has also been hypothesized that the introduction of firearms led to violence among the native peoples, thereby reducing their numbers (Wonderley 2002:153). The Oneidas were attacked toward the end of the seventeenth century, which drew them, with other Haudenosaunee, into fighting between the English and the French. During the Revolutionary War, however, each of the Haudenosaunee nations made its own decision regarding with whom to side in the fighting. Driven by material interests, many Iroquois fought on the side of the English, while most Oneidas, wary of land grabbing by the British, sided with the Americans and helped to successfully defend Fort Stanwix (in present-day Oneida County, New York) from the British (Wonderley 2002:155-57). At the end of the war, the Oneidas were the only Haudenosaunee nation who could return to their homeland with the respect of the new United States, which pledged to respect Oneida sovereignty (Wonderley 2002:159). This pledge, however, was quickly broken: in 1788 New York State bought five million acres of Oneida land in a treaty which the Oneida were given to understand was a lease on the land. Since then the state of New York has continued to acquire land, reduce Oneida authority and sovereignty, and discriminate against the Oneidas, ultimately causing many of them to move to Wisconsin and Canada (Wonderley 2002:161).

In the late 1980s the Oneida Nation began to take charge of its own future. For example, in 1993 they built a casino which has morphed into what is today the Turning Stone Resort and Casino in Verona, New York. The Turning Stone is a successful resort complex which showcases major entertainers, boasts fine dining restaurants and a spa, and hosts PGA tournaments. The Oneida Nation went from 44% unemployment in 1991 to become Oneida County's largest private-sector employer by 2000, and have reacquired over 13,000 acres of Oneida homeland (Wonderley 2002:167).

The Mohawk Valley Today

Figure 5-1 shows the location of Oneida and Herkimer Counties today within the state of New York. 2010 census data released in early 2011 shows that the population in Oneida County fell to 234,878 and population in Herkimer County grew to 64,519 (Cooper 2011). Most of northern Herkimer County falls in the Adirondack State Park, thus helping to account for the low population compared to Oneida County.

The state of New York has four types of municipal corporations: counties, cities, towns and villages. The form of government (city, town or village) depends on what has been chosen by residents and approved by the state legislature. Cities provide most major services to their inhabitants and have the most power in terms of taxing and rules. Towns are the major divisions within each county and provide an array of services to the town and its residents, from basic road maintenance to municipal services. A town may contain within it any number of villages, or no villages. Villages may provide services to their residents such as garbage pickup. Towns may also contain hamlets and communities. A hamlet, unlike a village, has no government of its own. For example, there are no towns or villages in cities, such as the city of Utica, but next to Utica there is the Town of New Hartford, which contains within it the Village of New

Hartford and the Village of New York Mills. Utica is the major urban center for Oneida and Herkimer counties. Everyone I interviewed either lives in Utica, works in Utica, and/or attends school in Utica, though they may live as far as thirty miles away from the city. Many also come into Utica or adjoining New Hartford and New York Mills for shopping and restaurants. Figure 5-2 shows Oneida County with Utica and select other towns, and Figure 5-3 shows Herkimer County with select other towns.

In trying to paint a picture of Utica and its surrounding area, I find myself faced with contradictions. Having just moved from a blue collar, working-class kind of town in Michigan, Utica and the Mohawk Valley seemed to me to have a similar feel. However, the area's geography, longer history, and proximity to New England makes for a different culture than what one tends to find in the Midwest. For example, students and children in upstate New York play rugby and lacrosse and are routinely sent to prep schools, and there are far more small, private, liberal arts colleges in the area than are found in other parts of the United States. There is a thriving winter sports culture, aided by the average annual snowfall in the area of around 100 inches. Some people I spoke with mentioned second homes or "camps" in the nearby Adirondacks, where they spend much time during the summer. These are generally fully equipped and furnished homes often found surrounding the various lakes in the Adirondacks. Great Camp Sagamore, a National Historic Landmark and famously the Vanderbilts' camp, is on Raquette Lake in the Adirondacks.

The rolling hills of the Mohawk Valley and the foothills of the Adirondack Mountains are some of the loveliest landscapes I've had the pleasure to see in the United States. The spirit of the area shines at its brightest when people come together,

for example at local festivals or in the run-up to the annual Boilermaker Road Race. The region is agriculturally strong, and a small but thriving local food scene has developed in the past few years.

Despite these things that can be taken as evidence for wealth in the Mohawk Valley, there is plenty that speaks to its poverty. I recall one Sunday morning, around 9:00 A.M., I was driving to meet a research participant in Utica and while waiting at a stoplight, a woman slowly crossed the street in front of me, dressed in bedroom slippers and pajama-like attire, with a large can of beer in her hand. The shuttered store fronts across downtown Utica, buildings on the verge of collapse from lack of use or care, and suburban sprawl into neighboring New Hartford, Clinton, Whitesboro, and New York Mills all indicate the trouble most of upstate New York has encountered. There is also some significant violence in Utica, as well as racism and ethnic friction. For example, in 2009, the violent crime rate in Utica as reported to the FBI was 821.4 (per 100,000 population). The violent crime rate for the state of New York for 2009 was 384.7, and the national violent crime rate in 2009 was 429.4 (United States Department of Justice 2009).

In its heyday Utica was a thriving, exciting place to live and home to a number of inventions and famous American citizens. The Union Suit was invented here during the boom of textile manufacturing in the area (Clarke 1952:58-59), and Dick Clark got his start in radio on stations broadcast from Utica and nearby Rome. Former Secretary of War and Nobel Peace Prize Winner (in 1912) Elihu Root was born eight miles from Utica in Clinton, New York, and Francis Kernan, noted lawyer and Democratic senator from New York, practiced law in Utica and is interred there. In contrast, today one of

Utica's most famous citizens is the reality star known as "New York," first seen on MTV's *Flavor of Love* with rap artist Flavor Flav. Utica has morphed from an upstate urban powerhouse with a population of over 100,000 in 1930 to a Rust Belt town beset by economic difficulty. The population began to decline after 1960 (Table 5-1).

By the 1950s all the textile manufacturing had left the city for the southern United States. In the 1970s and 1980s other major manufacturers and high tech employers which had thrived as the textile industry waned began moving overseas for economic reasons. During the 1990s tens of thousands of local jobs were lost in a spate of closings: two General Electric Plants, a Lockheed-Martin plant, and Griffiss Air Force Base (Zielbauer 1999). More than one person told me that in the late 1980s and early 1990s residents could be seen driving around town with bumper stickers reading "Last One Out of Utica, Please Turn Out The Lights." The population of the city now seems to have stabilized, though the population of Oneida County has declined slightly.

Utica is a poor city. In 1999 24.5% of individuals in Utica were estimated to be living below the poverty line, a percentage well above the state average of 14.6%, the county average of 13.6%, and the national average of 12.4% (United States Census Bureau n.d.). One informant told me that Utica had the highest number of social service organizations per capita. I was not able to verify this information, but having attended one of the monthly plenary meetings of the Mohawk Valley Homeless Assistance Coalition, which brings together various social service groups from Oneida, Herkimer, and Madison counties, this seemed a distinct possibility. In 1999 the New York Times ran an article about Utica, at the outset describing it as a "defeated factory town in the heart of the Mohawk River Valley" (Zielbauer 1999).

However, living and talking with people in the area showed me that there are as many people who feel like “Utica sucks” as people who feel like the area is on its way back to prosperity, and who are working hard to make Utica and the surrounding area a place people want to live. Reader’s Digest dubbed Utica the Second Chance City, citing the impact that the refugee population has had on the area by helping to stem the drain of citizens and providing economic and cultural stimulation (Burnett 2007). More than one informant explained to me that he or she moved back to the area from other parts of upstate New York because it was a beautiful area and a good place to raise children. Many people talked about the multiculturalism of the city (a result of the influx of refugees to Utica) as a good thing, citing cultural festivals, groceries, and restaurants. The refugee population is now one of the first topics of conversation when talking about Utica. The 2000 census put Utica’s foreign-born population at 11.9% of the total for the city (United States Census Bureau n.d.). Refugees from the former Soviet Union, Vietnam (including Amerasian), and Bosnia make up the majority of the refugee population, which also includes large numbers of Karen, Burmese, and Sudanese.

The various refugee and ethnic communities in the city seem not to mix much. But they are present, running Nguyen Phat grocery and Thuy Café on Bleecker Street, or stocking Bosnian and other European foods at Ruznic Market. I was fortunate to have a temporary job teaching English as a second language classes to employees at a medical instrument manufacturing plant, where I briefly got to know some refugees. It certainly puts most Americans’ lives into perspective: one Karen woman from Burma, about 23 years old, told the story of her two years alone in a Thai refugee camp before coming to the United States. She goes through each day with the knowledge that she

may never see her parents again. She told me that if she were to go back to Burma, the Burmese military police along the way would know that she was Karen (and not Burmese) and because of that would probably hurt her or her family, perhaps even killing any of them. Many of the refugee group students spoke positively about Utica, but they do experience additional difficulties beyond racism or discrimination. One man talked about how much more prosperous he had been in Bosnia, where he worked as a furniture maker and owned two homes. In Utica he works for little more than minimum wage, manufacturing medical instruments on the assembly line at this plant. He is thankful to not have bombs going off next to his house, but is frustrated by his inability to be upwardly mobile.

Many other citizens in Utica and the surrounding towns self-identify as Italian-American. Italian last names fill the phone book. Utica and the upstate area have a famous history of Sicilian mafia/mob involvement (LaDuca 2009), and there are many Italian restaurants, groceries, and local recipes. Levenstein (2002) tells the story of Italian cuisine in the United States. Italians were the largest group of immigrants to the United States during the “New Immigration” of 1880-1921, and managed two major feats: they survived American assimilation with their food habits still identifiable, and theirs was the first major foreign cuisine to be widely accepted among Americans, who by 1940 were cooking Italian food (albeit Americanized, hybrid Italian food) in their homes.

Italian cuisine did not survive without a fight, however. Variation in Italian food corresponds to regions in Italy and regional differences among the immigrants carried over into their lives in America. Certain regional ingredients were not available here.

What were more often available were items like tomato sauce, which was a staple of southern Italian dishes. Thus availability (and price) forced the first immigrants to shift culinary habits while they strove to duplicate their regional cuisines. Though some Italian cuisine spread early among the upper classes in the United States, the middle class rejected it. Lingering public doubts over the safety of tomato consumption and general rejection of pork products didn't help either. Home economics reformers and social workers trying to help immigrants were concerned about the amount of money Italians spent on food and their absolute refusal to give up what was called their "over-stimulating and innutritious diet" (Levenstein 2002:80). Institutes were set up to try to teach Italian women American cooking and housekeeping. One such center, the "Housekeeping Center" was opened in Rochester, New York, 135 miles from Utica.

The necessity of changing diets due to World War I, in addition to Italy's role as an ally in that conflict, began to turn the tide for the acceptance of Italian cuisine in the United States. The ever-changing science of nutrition by then supported Italian diets for their healthiness, and women's magazines like Good Housekeeping began featuring Italian recipes in the 1920s (Levenstein 2002:84-85). The Great Depression gave Italian cuisine another boost. By World War II, Italian-Americans were enjoying the rapid rise of their by-now-thoroughly-hybridized cuisine, reinforcing their ethnic pride (Levenstein 2002:88).

To any observer, this hybrid cuisine is still what people in the Mohawk Valley mean when talking about Italian food, and is clearly expressed when, for example, grated Parmesan cheese offered tableside in restaurants is Kraft in the green can, or when tracing the transformation of the famous Utica Greens: as it was explained to me

by a local grocer in his eighties, whose family has been in the grocery business in Oneida County for nearly one hundred years, Utica Greens grew out of the necessity of poor Italian immigrants to pick dandelion greens to eat (without meat or other additions as are seen in the dish today).

Local Experiences

My husband and I lived in Clinton, New York, eight miles southwest of Utica, for about eighteen months before I began fieldwork. I thought that Genesee Street, one of the main streets through Utica, was pretty, with lots of large, old homes along it that had been turned into businesses like doctors' offices, insurance companies, and law firms. Now I know that those gentrified parts of Genesee Street serve as a kind of window dressing for the rest of the city, which in fact has a number of diverse neighborhoods. I also found the village of Clinton to be charming, with its village green in the center and row of little local shops lining College Street and the green.

I found a job in early October, 2007 as a legal secretary in a Utica law firm (one founded by the senator Francis Kernan in the 1850s), and it was there that I met Elizabeth, who would turn out to be a close friend and key informant later during fieldwork. In addition, being employed at a local professional business allowed me to gain a good working knowledge of area personalities, power, and some politics. I worked full time at the law firm for about a year, and during that time took part in and experienced a number of local events, many of them food-related.

I learned about chicken riggies and Utica greens, two culinary specialties of the area. Utica greens, chicken riggies and, to a lesser degree, tomato pie, are points of pride for Central New York citizens in the Mohawk Valley. Utica greens are escarole cooked with cherry peppers, bread crumbs, and parmesan cheese, with the permissible

addition of things like prosciutto or ham, and other vegetables like potatoes or mushrooms. While it is agreed that Utica greens can be made according to different recipes, people argue over which one is the best, and which restaurant makes them properly. Chicken riggies are even more hotly contested. These are rigatoni noodles in a tomato and cream sauce with chicken, mushrooms and cherry peppers. Food Network star Rachael Ray (a native of upstate New York) attempted to make Utica greens and chicken riggies in an episode of her television show *30 Minute Meals*, only to be scolded by viewers about inaccuracies in her cooking and history of the two dishes (http://www.foodnetwork.com/recipes/rachael-ray/chicken-riggies-and-scarole-with-soul-recipe/reviews/index.html). In September of 2009 the first Greens Fest was held in Varick Street in Utica, and I participated by having a table set up to recruit research participants. There is also the annual Riggie Fest held each April, which functions as a fundraiser for the local YWCA but is also the venue where entrants, both restaurants and home cooks, compete for the Riggie Cup. This event has been held annually since 2005, and draws thousands of people. The winner can benefit from the publicity. However, the decision can be controversial: I heard many people disagree with the judging, or declare that despite the winner, they would stay loyal to their favorite riggie place.

During the summers of 2009 and 2010, we signed up for a CSA share from a farm located in the nearby town of Ilion. The CSA movement in the United States began in the mid 1980s and is a way to help support local farmers and for consumers to have fresh, locally grown produce. The Mohawk Valley region and the rest of upstate New York is full of small farms, though the area is not nearly as famous as the agricultural

tourist attraction that is the Hudson Valley region downstate. Knowing our farmers and being involved with the CSA helped open the door to the locavore scene in Utica and the Mohawk Valley. In the beginning of 2010, The Foodshed Buying Club was launched in Utica, a local social enterprise which functions as an online buying club for local produce, meats, dairy, maple syrup, honey, and other value-added locally produced products (http://www.foodshedbuyingclub.com/). It performed well in its first, year, with over $115,000 in sales (orders processed) and has since expanded (Shulamis Giordani, founder of The Foodshed Buying Club, personal communication).

I visited other areas of upstate New York, including Elizabeth's family's camp in the Adirondack mountains, small towns such as Ilion, Herkimer, and Mohawk, larger towns like Cooperstown, and the cities of Syracuse and Rochester. Many of the smaller towns are much like Clinton, and Syracuse seems in many ways like a larger version of Utica: a Rust Belt town struggling to hold on to inhabitants and economic stability. Rochester seems to be on a better track to reinventing itself, although the downtown area still seems pretty bare of establishments and people.

One other major local event in which I participated was the Boilermaker Road Race (http://www.boilermaker.com), which has been held annually in Utica in July since 1978. The Boilermaker is a world-class 15-K road race, attracting Olympians and world records holders. In 2009, the first seven finishers were all Moroccan, Ethiopian, or Kenyan, with the top finisher running the 15 kilometers in 43 minutes and 56 seconds. Over ten thousand people register to run the 15-K. Elizabeth and I trained for and ran the 2008 race—I placed 7,183rd out of 9,773 people who finished the race. This was one of the most enjoyable things I have ever done. For one thing, I had never run that far in

my life, so it was a personal goal to just be able to run the entire race. Being at the starting line with over 10,000 other people was an exhilarating feeling. And the entire community, it seems, turns out for this event. The racecourse stretches across four neighborhoods: East Utica, South Utica, West Utica, and New Hartford/Yorkville, and there is a competition for most enthusiastic neighborhood. There are bands playing, spectators and runners dressed up in costumes, and handmade signs rooting for friends, family members, and everyone in general.

Summary

Chapter 5 has provided a small window on the world of Oneida and Herkimer counties in the Mohawk Valley region in upstate New York, supplying a backdrop for me to recount some of my experiences as I lived there and conducted fieldwork. In Chapter 6 I lay out the research plan, objectives, and participant recruitment and discuss topics such as fieldwork in the home culture, potential biases in the research, and my experience with research assistants.

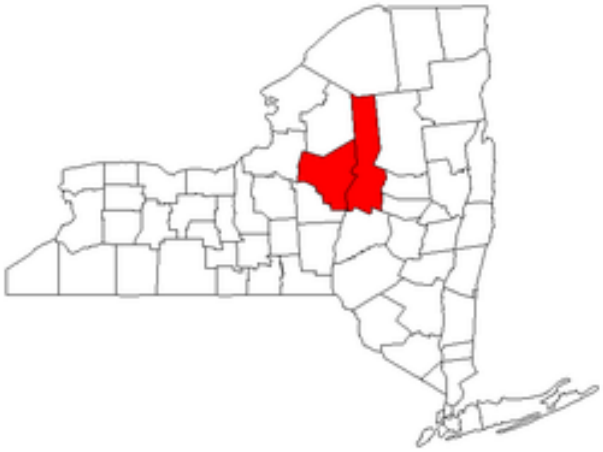


Figure 5-1. Map of New York State showing Oneida and Herkimer Counties. Oneida County is west of Herkimer County (Acntx at the English language Wikipedia).

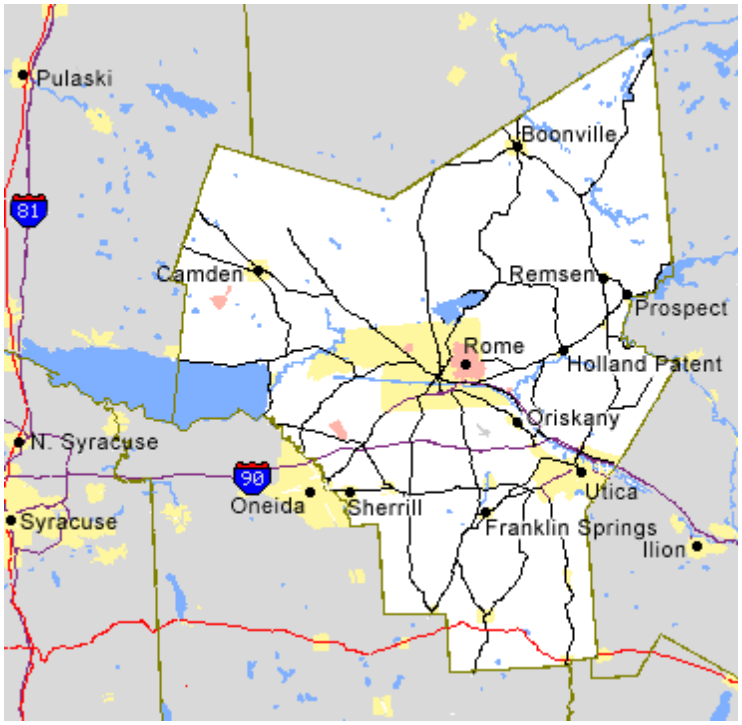


Figure 5-2. Oneida County.(www.adirondack.net/maps/countymaps/oneida.cfm accessed April 11, 2011).

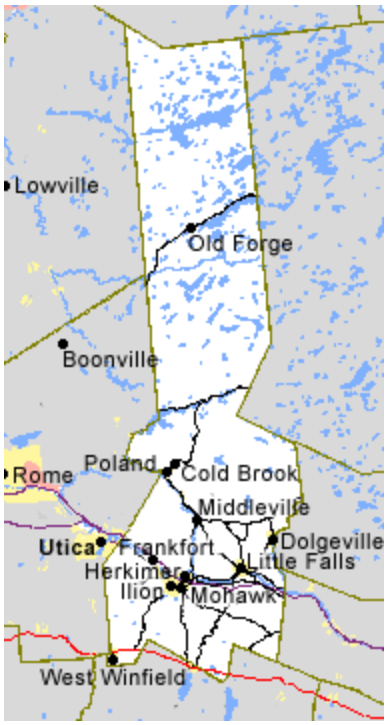


Figure 5-3. Herkimer County. (www.adirondack.net/maps/countymaps/herkimer.cfm accessed April 11, 2011).

Table 5-1. Figures from the United States Census for the city of Utica, New York.

Census year	Population	% change ±
1820	2,972	
1830	8,323	180
1840	12,782	53.6
1850	17,565	37.4
1860	22,529	28.3
1870	28,804	27.9
1880	33,914	17.7
1890	44,007	29.8
1900	56,383	28.1
1910	74,419	32
1920	94,156	26.5
1930	101,740	8.1
1940	100,518	-1.2
1950	100,489	0
1960	100,410	-0.1
1970	91,611	-8.8
1980	75,632	-17.4
1990	68,637	-9.2
2000	60,651	-11.6
2010	62,235	2.6

CHAPTER 6
OVERVIEW OF RESEARCH

Chapter 6 reiterates the specific objectives for this research project; traces the timeline of data collection activities; describes recruitment of respondents, their participation, and sample statistics and information; and finally, discusses potential researcher effects and some adverse events that happened during the data collection.

I am drawn to a cultural materialist perspective, and the research methods I use lend themselves well to studying aspects of food, obesity and culture. These include systematic data collection coupled with analytical techniques such as cultural consensus analysis to discover cognitive classification schemes, shared cultural models and intracultural variation within those models; social network analysis; and combining qualitative and quantitative research methods for hypothesis testing.

The overall objective of the research project was to investigate the correlates of American adult overweight and obesity in Oneida and Herkimer counties in the Mohawk Valley in upstate New York. My goals were to understand what foods people consider healthy and unhealthy and to what extent they agree about this; to measure behavior against models of healthy foods; to document eating habits; and to understand how these elements, along with the social relationships of individuals, contribute to increased body mass. Specific objectives of the research included:

- **O_1** Testing the extent to which there is a shared cultural model of healthy and unhealthy foods and measuring the extent to which the behavior of individuals deviates from such a model. (This is not the same thing as testing for models of healthy eating, which would include many other factors in addition to foods consumed.) This involves a series of data collection techniques described below.
- **O_2** Examining whether models of healthy and unhealthy foods vary by age, income, education, sex and weight status.

- **O_3** Examining the social networks of individuals and testing their significance for obesity. This involves collecting egocentric social network data, followed by in-depth interviews with informants about which aspects of those social relationships influence food habits.

- **O_4** Documenting eating habits in this community in upstate New York. This involves the use of food diaries to record individuals' food intake.

Why study food and obesity? Lay people I spoke with saw the answer to the problem of overweight and obesity in the United States to be obvious: "It's McDonald's." "People are lazy." "People need to eat less." "People need to move more." Much of the research into obesity and its related diseases and disorders in the United States focuses more on clinical or medical aspects of the condition than on related cultural or social factors, despite Mintz's call for "down-to-earth practical ethnography on American eating habits" (1998:1041; also Mintz and Du Bois 2002).

Timeline for Research and Phases of Data Collection

The research project had three overlapping phases and began at the end of January, 2009. There was a break of nearly two months, from the last week of February until around April 20, 2009 when I conducted no interviews, because I had been instructed to temporarily stop interviews due to grant funds administration difficulties. Figure 6-1 shows the three phases and the data collection tasks associated with each.

For all of the data collection tasks, respondents were first presented with a consent form to read and sign, which explained who I was, the project and its goals, what I would ask of participants, and IRB status of the project. The form also contained contact information for me, the PI, and the University of Florida. Respondents who chose to participate were given a copy of the form to keep. I maintained three different consent forms for use depending on the task the respondent would complete: one for freelisters, one for semistructured interviewees, and one which included the set of three

tasks (social network interview, food diary, final structured questionnaire). I found respondents through a number of different sampling methods (described in this chapter). This allowed me to broaden the sampling frame and comprised a convenience sample that resulted in a set of subpopulations.

Height and weight were taken for all respondents to calculate BMI. I weighed informants on a digital scale and used a portable height rod to measure them (shoes off). Researchers have noted the ways in which BMI fails as an accurate measure of fatness; for example, it does not quantify body composition (Garn et al. 1986; Smalley et al. 1990), it misclassifies athletes (Nevill et al. 2006), and it provides inaccurate measures across gender, ethnicity, or other groups (Burkhauser and Cawley 2008). Measures to replace BMI include total body fat, percent body fat, waist circumference, and waist-to-hip ratio. The fact that the distribution of body fat matters must be taken into consideration as well; abdominal fat poses greater risk to health (Bray 1998). However, the major advantage of BMI as a measure of weight status is its cost effectiveness.

I first conducted twenty-three semistructured interviews with people in the community. Topics covered in these interviews ranged from personal history having to do with food and weight, family background and upbringing as it relates to eating, to feelings about food and overweight/obesity. I also interviewed the owner of a local grocery store and the Executive Director of a local food bank (these two are not counted in the descriptive statistics below).

The next steps comprised the systematic data collection for the cultural consensus analysis. I collected 66 freelists, asking people to “Please list as many

healthy foods as you can think of. Please be specific." and "Please list as many unhealthy foods as you can think of. Please be specific." I recruited freelisters in a few different ways. I was able to participate in the Health and Fitness Expo as part of the weekend of America's Greatest Heart Run & Walk in Utica, sponsored by the American Heart Association. This event is a fundraiser for the American Heart Association and serves to raise awareness of heart disease and stroke. It is held in cities all over the country, and Utica's is held in March each year. The Health and Fitness Expo is an opportunity for participants in the run/walk to pre-register for it, but also serves as a venue for local health-related organizations to advertise, disseminate information, and give free samples or screenings for the community at large. It is a day-long event, open to the public and free of charge. I was allowed to set up a table at the expo to recruit study participants from the community members who attended the event. I had a large, colorful poster (Appendix A) and asked people walking by if they would be interested to help me with a research project about food, health and obesity. They filled out the freelist form on the spot, and I took each person's height, weight and basic demographic information.

I was also allowed to set up a table at the Utica farmers' market and recruit in the same manner. I did this for a number of Wednesdays during the period of late June to early August 2009. I was less successful here than at the Health and Fitness Expo, for a few reasons. One is that I was unable to attend the market as often or for as long as I would have liked because by this point I was working at a part time job, which significantly cut into my research time. The farmer's market is held in downtown Utica in Chancellor Park on Bleecker Street, and is not consistently attended by either vendors

or shoppers, especially when compared to other local farmers' markets such as the one held on Thursdays in nearby Clinton. A large number of shoppers at the Utica market came from the retirement complex across the street, and there were many refugees and their families who came to do some of their grocery shopping. Many of these older residents were not interested in what I was doing or, more often, mistook me to be an information booth and asked me about things like the electronic benefit transfer machine that was promised to be installed at the market so that people could use public assistance funds to buy goods. By the time we cleared up who I was, any information I tried to communicate about what I was really doing there was completely uninteresting to them. As for the refugees, for most of them there was a serious language barrier between us, and even when I could get any of them to talk with me, trying to explain what I was doing seemed futile.

I began the most intensive data collection in July 2009. I recruited sixty-three participants to complete three tasks over a period of weeks (for some, this turned into months or was not completed). With each participant, I first conducted a social network interview using EgoNet software (McCarty 2005) on my personal laptop (see Appendix B for interview schedule). I met each person, usually at a local café in Utica, another restaurant, or at the public library, but occasionally in someone's home, at a college campus, or at some other public location convenient for the participant. At the end of the social network interview I gave participants a food diary to keep for a week (see Appendix C for diary schedule). I would go over the diary form and explain what to do and what I was looking for. I asked people to call or email me when they finished the diary, at which point we would set up a brief meeting wherein I took the diary and gave

them the final structured survey form (see Appendix D for interview schedule) to take and complete in their own time. I again went through and explained the form and asked that the participant call or email me when finished. I estimated that this third instrument would take at least a half an hour to complete, and this is why I asked people to take it home with them, take their time, and let me know when they felt they'd finished with it. Only once did someone insist on completing it at the time she received it, and that only worked out because I was conducting another interview at the same place at the same time.

I recruited people in a few ways in addition to the methods just discussed: I recruited people for the semistructured interviews via the local craigslist™ (http://utica.craigslist.org/), solicitation at grocery stores, or, for some more public community members, direct contact. Some people with whom I conducted semistructured interviews said that they would be interested to participate in further data collection; I found some additional, mostly younger, participants via craigslist™; I placed an ad in a few local newspapers; and I found a handful of participants through word of mouth of other participants. I also attempted to put up fliers in some local businesses, but with the smaller businesses I was often told no, usually because there was a policy in place for no such solicitation, or there was no area in the business to put fliers. The few places I did manage to put fliers yielded no participants.

I learned a few lessons with a couple of the recruitment methods I used. With craigslist™, I knew I was narrowing my sampling frame to likely younger people who owned or had regular access to a computer. But because I coupled this with other methods of recruitment, this restriction was of less concern to me as long as I did not

draw my entire sample from those responding to my craigslist™ ad. However, I believe response might have been lower than normal due to the recent activity of the so-called Craigslist Killer, Philip Markoff, who had murdered one woman and attacked two others he found through craigslist™ in April 2009 (I was posting ads in the late winter, spring and summer of 2009). Markoff would answer ads for erotic services and then attack the women who solicited him. In addition, Markoff was from the town of Sherrill, New York, which is located about twenty miles west of Utica, in Oneida County. More than one informant mentioned this to me, and I was in fact unaware of this person and the crimes until one of my participants told me about it. This was unnerving, but I simply made sure to meet people during the day, in public places, and if I got what I could only describe as a weird vibe from any of them when we spoke or emailed to discuss the project, I just said I had enough participants (this only happened with two male individuals about whom I felt uncomfortable).

Another of the recruitment methods I used for participants for the social network interviews/food diary/structured questionnaire was putting a print ad in local newspapers. With one small, independent (and at the time free to readers) local paper, the Utica Phoenix, I had only one response, a woman who turned out to be one of my best participants and informants. So when I placed an ad some time later in the largest local paper, the Utica Observer-Dispatch, and the local Pennysaver paper, which is free and not subscription based, I was surprised when I was overwhelmed with calls and emails. I received 110 responses from that ad, which ran daily for two consecutive weeks. I was dealing with at least five or six calls and emails a day for those two weeks, and people continued to contact me in the days following the two week ad period. This

sudden volume was a problem for a few reasons: (1) I worked part time every morning until 1 PM, so could only do interviews after that time during the week; (2) I had no research assistant to assist me with these interviews, so I was doing all of them myself; (3) I had one computer with which to conduct these social network interviews. A fellow student, Rosalyn Negrón (personal communication), in her dissertation research described having sometimes half a dozen people scheduled at once doing part of the social network interviews by themselves on computers, but I was not able to do anything like this. This situation was an obvious disadvantage to me in terms of time, but was an advantage in that I was forced to conduct every interview and therefore be more attuned to each person, and I could guide the speed of the interviews, to some extent. However, Negrón described a higher rate of error due to each participant working alone with the program, something that I avoided; (4) I could sometimes do two interviews in one weekday afternoon and evening, but interviews ran on average 1.5 to 2 hours (occasionally running 3-4 hours) and were mentally draining. I found when I tried to do more than one a day I often did not perform as well as an interviewer and listener during the second interview, thereby gathering data of lesser quality; (5) with the sudden volume of calls and emails, I was scheduling some people for interviews four to six weeks in the future, which I am sure accounts for the many of the no-shows I had. I called people a day or two ahead of the interview to remind them, and they would say something along the lines of “oh yes, I’ll be there,” and then they wouldn’t show up and wouldn’t return any more of my calls to reschedule—except for a few people, who would reschedule and stand me up once or twice again. I imagine that people lost interest in the time between their response to the ad and the date we set to meet. The results of

the newspaper ad were a valuable fieldwork learning experience for me. This was a recruitment tool I had never used in any previous research project with which I was involved. If I had it to do over I would have placed the ad for only a five to seven day period, once every four or six weeks, to better take care of participants. As it turned out, I had no occasion to run it again, because the time period I had set for conducting interviews had ended.

When potential participants responded to one of my ads, I explained the process of the three data collection steps to them. There were twenty-six people who, upon hearing what I expected of them, declined to participate, often on the grounds that these tasks were more than they were willing to do for the $40 compensation I offered. Some explained that they thought it would be something different and were, after all, not interested. I did anticipate that this type of response might be common, because I knew I was asking a lot from people in terms of time and attention. I also feel sure that some people who did participate would not normally have done so, but the facts of the depressed economy and that many people had lost or were in danger of losing their jobs seemed to be enough motivation for some.

Participants overall responded favorably to the three tasks. Many thought that the social network interview was interesting and they enjoyed the network visualization section in the last part of the interview. Some people disliked the food diary task, which also turned out to be the area where the most data was either incomplete, not detailed, or the result of people not doing as I had requested. A few participants told me outright that they didn’t like or even hated completing the diary.

The food diary activity also generated an unanticipated situation. An early participant explained how one day, during the week of completing her diary, she had been at her sister's house and there were M&Ms sitting out in a bowl. She went to get a handful but stopped, she said because she realized that she would have to write it down in the diary. I asked if her desire to not record the food was due to the fact that she didn't want to model unhealthy eating for me or that writing it down was a pain and she didn't want to deal with it. She said it was a little of both. This happened again and again with other participants. Some said that they also realized in such a situation that they were not really hungry. Keeping the diary made some people exquisitely aware of what they were putting or wishing to put in their mouths. Some were pleasantly surprised at how the diary in effect made them watch what they ate, and as a result ate fewer between-meal snacks during the week of keeping the diary. One man suggested that this kind of tool should be used in all weight loss programs, for these reasons. So although I was not so naïve as to expect the diary to have no observer effect on individuals' diets, I did not expect to be told about it and to be able to note this fact some of the times that it happened.

The third task, the structured survey instrument, was generally unproblematic. A few people were surprised at how long it took them to complete it, and a few had slight difficulties with the last section, which asked them to rate a set of thirty foods as to healthiness; to tell me the last time they ate each food; and to tell me how often they usually ate it. I also used this thirty-item multiple choice section as a stand-alone questionnaire at the Utica Greens Festival in September 2009, and in analyses of these thirty food items combined all informants (see Chapter 7 for analysis). It appears that

some people got tired of rating the foods, and I noted more missed items in this part of the survey instrument than anywhere else in it. I found this odd because I thought that since it is easier to answer a multiple choice question (rating each food) than to answer some of the essay-type questions that were placed earlier on the survey, this set of data would be pretty complete. One food item in particular, Rice-a-Roni, was left unrated and unanswered so many times that I wondered if perhaps people did not know what this was. However, no one noted or told me that this was the reason for this missed item.

The Sample

I did not draw a random sample due to limited funding and manpower. I found my samples for each data collection step in a few different ways, as described above. I purposefully sampled and augmented sampling methods when I had concerns about representativeness or sample size. The restrictions for participants were that they had to be at least 18 years old; could not be pregnant; and could not be institutionalized. The people who did participate displayed variation across a number of characteristics. For those with whom I conducted the earlier interviews and asked for freelists, I did not ask for as much personal information as I did in the social network interview and final structured questionnaire. I interviewed, in some form or another, a total of 139 individuals, eleven of whom completed both an early semistructured interview with me and the social network interview (therefore the total number of interviewees in Table 6-1 appears to be 150). Six of the sixty-three people who completed a social network interview did not complete the food diary and/or the final structured questionnaire. None of the freelisters completed any of the other data collection steps. Descriptive statistics about the 139 people and who completed which data collection tasks are in Tables 6-1 and 6-2

I did not strive for any particular distributions with regard to participant characteristics. The average age of all 139 respondents was 44.8 years, and I oversampled women, who made up 67% of the 139 respondents. There are a few things worth noting about the variation in the sample. The variation in BMIs of participants is similar to nationwide estimates that 68% of adults over age twenty are overweight or obese, 33.8% are obese, and 5.7% are severely or extremely obese (Flegal et al. 2010). 68.6% of my sample were overweight or obese, 30.6% were obese, and 6.7% were severely or extremely obese. 2009 ethnicity estimates for Oneida County (in which the majority of my participants resided) show that white non-Hispanics make up 86.8% of the population (United States Census Bureau n.d.). 82.7% of my total sample were white non-Hispanic. I asked individuals to estimate their annual household income after taxes, which is a different calculation from other national income measures, but found that 20.4% of my sample (excluding students and unemployed) were living on less than $15,000 a year. In 2008, 14.2% of people in Oneida County were living below the poverty line (United States Census Bureau n.d.).

Research in the Home Culture

Since 1980, social scientists, especially anthropologists, have been doing more ethnographic research in the United States (Moffatt 1992). The pros and cons of conducting ethnographic research in one's own culture have been debated (e.g., Aguilar 1981). In studying subjects at home, anthropologists already have command of the language, or "communicative competence" (Duranti 1994; Hymes 1972), that is, they have the ability to speak and interpret native speech and its varieties, and adhere to native discourse rules (Jacobs-Huey 2002). They can also blend in better, be better attuned to cultural nuances, can have better rapport and cause fewer observer-related

behavior modifications (Moffatt 1992). However, one major issue in conducting fieldwork in the home culture is how to “find the unfamiliar in the familiar, to make it clear that things are not what they seem, to reach behind the façade of ordinary behavior and belief to the deeper implications of social action” (Goldschmidt 1995). How do native researchers “get at ‘tacit’ culture without difference to attune them to it?” (Moffatt 1992). In this respect, the familiar can become problematic. The researcher also must be aware that being of the home culture does not mean that informants will identify with him or her, or that he or she is considered to be one of them. In this research project, I found that it was much more difficult to ask questions that one can ask more easily in a foreign culture. So many things were supposed to be already understood by me, but I could not assume that I knew the answers to any questions or the reasons for particular behaviors. I had to be vigilant about recognizing that I was constantly in danger of making such assumptions. However, because research of this kind is a culturally legitimate activity in the United States, I did not face the same guardedness I might have in another culture. My research topic, moreover, was not necessarily a sensitive topic for people (though it was for a few), and this fact allowed them to talk with me more openly. I had “communicative competence,” but had to be aware of, for example, class differences which colored the tone of interviews and influenced interactions with individuals.

I did not experience other difficult issues faced by researchers doing work in their own cultures. For example, Lieblich (1996) described how her role as an anthropologist studying a kibbutz in Israel shifted slowly to that of emotional catalyst and (almost) therapist, and as time went on, to advisor and consultant on behalf of the residents. She

heard residents' difficult stories and dealt with various hurt feelings over her research, and wondered, "I was getting dramatic stories—but what else was I doing in these people's lives?" (Lieblich 1996:178). In my case, people overall seemed pleased with the work I was doing, and felt diet and obesity to be important topics of research.

Researcher Effects

In Western, especially American, culture, the body ideal of thinness and/or athletic fitness is overwhelmingly prevalent. While perceptions of body size and shape were not one of the main foci of this fieldwork, interviews about food, eating, health, and weight would implicitly include this topic. Even before I began fieldwork, responses to my research plan were often along the lines of, "But you're not obese!", as if my personal lack of embodiment of my research topic somehow invalidated my interest in it, or rendered me unfit for such an investigation. Once, I retorted, "Does everyone who studies HIV need to have it?"

People I interviewed did not often make immediately evident to me their reactions about my body and my research project, but some did. One woman said, before any salutations, "Wow, you're so thin! I mean, you look great, but you're so skinny!" Other interviewees made comments as we went further into the interviews. One woman said I looked "gaunt"—comparing me to one of her acquaintances. Many informants, especially women, made some comment about my body as compared to theirs. In these cases, the communication was in a tone of distaste, envy, or occasionally concern.

My BMI has always been at the low end of the normal range for women. People who were closer to a normal BMI tended not to make snide or disparaging comments about my weight, and in some cases shared stories of being on the receiving end of similar comments or sentiments. More than once in my fieldnotes I recorded how

surprised I was at the ease and frequency with which people commented on my body and weight. Did they feel this was permissible because I had made it explicit that we were going to talk about food and obesity? Did they feel that their consent to my asking them personal questions allowed for such commentary about the interviewer? I never felt comfortable confronting anyone about this when it happened, and I did not want to anger anyone or jeopardize further research questions or activities. Some people seemed to be threatened by their own perceived inability to meet cultural (and moral?) ideals of body size. I think some people resented being questioned on topics related to body size by someone who, in their eyes, embodied this cultural ideal.

These researcher effects carry implications for the data gathered. McKenzie et al. (2002) found no effect of interviewer BMI on interviewee self-reported energy intake, but, given the reactions I encountered, I am sure that, had I been overweight or obese, subjects would have responded differently to me and my questions. For example, one man, in his early 50s, stated the following when I pointed out that there were no obese people in his social network:

> Stupidity is obesity. I don't do fat. I don't know how to say it…and the lifestyle that goes with people who are obese, because they weigh so much, they're not going to be riding a bike. They're not going to be out hiking. They're not – they're going to be on a couch in front of a TV. I would walk in and walk out. I just can't handle that. You know, I don't like it. . There's no connection.

I feel certain that, despite the fact that he and I had met once or twice prior to the interview, had I been overweight or obese, I never would have been able to elicit such frankness from him. On the other hand, had I been overweight or obese, I might have gotten more information, or more honest information, from some of the overweight or obese people I interviewed.

I feel that being a woman was an advantage in doing this research. Interviewees of both sexes stated that food and eating were things women talked more about. With many female interviewees I felt that my shared experience as a woman, that is, as one who is assumed to provide food and make decisions related to household eating, was an asset. Women went into great detail to tell me about the role food plays in their lives on many levels: providing for the family, struggling with weight or eating disorders, cooking techniques, where to buy the best foods, and so on. There were few men who discussed food and eating at the same level of detail. I also feel that my sex allowed some male interviewees to express themselves in ways I don't believe they would have with another man—for example, talking about their perceptions of their bodies and how these related to their ideas of masculinity. One 29-year-old man explained,

> I know I'm overweight. My ideal weight for my height's like 185. I'm 100 pounds overweight, I guess that's obesity, I would say. I don't feel obese, I don't… There was a point in my life where I would never take a shirt off going to the beach, now I don't care… Because I'm a strong guy, I am, I am a bull-strong guy to go and I like that feeling. I like knowing that if need to move that cooler, I'm not gonna have a problem with it or if someone comes in my house and I need to protect my household, I'm not gonna have a problem doing that… I like my size, I do like my size.

A male anthropologist colleague, hearing about these kinds of remarks, told me that I must be a good interviewer. I pointed out that some men are eager to emphasize their strength and masculinity to a woman, whoever she might be.

As for my age, I don't feel that it was a liability or an advantage. I think I fit interviewees' expectations: a student typically is a youngish person.

Research Assistants

My experience with research assistants was a disaster almost from the start. When I worked as a student assistant on an anthropology project the summer after I

graduated college, I would not have dreamed of treating my employer and collaborator the way I was treated by the two women with whom I attempted to work.

I had planned to recruit one or two students, depending on how the work went and how many hours one student would be able to work. In late fall of 2008 I sent an email to two anthropologists at nearby Utica College, asking them if they knew of any students who might be interested to work on the project, and if so, to pass my email on to them. One professor never acknowledged my message. The other was friendly and helpful (she and I later assembled a panel for the Society for Medical Anthropology meeting in 2009). She passed the email on and mentioned the opportunity in her upper-level classes, but I received no responses. After a few weeks with no response I turned to an anthropologist at Hamilton College. I explained my situation and he named a female student in her junior year that he thought would be great. She contacted me shortly thereafter. We met in early January and talked about the project and the work, and she was enthusiastic about it. She was extremely bright and we got along well. I explained that I would be happy to let her be as involved as she liked, even doing some interviews on her own or working with the data, if it came to that. She came with me on a few early interviews and helped with some freelist recruitment and other participant recruiting, and in the late spring I began giving her transcription work. We began training with the social network interview software at the end of the school year. Then things became difficult.

She had always been a little inconsistent in her communication with me, but by midsummer, a pattern had developed of my emailing or calling her, and her taking longer to respond, or not responding at all. I had earlier, at her request, sketched out a work schedule for the transcription based on how many hours per week she thought she

could devote to the work. I had asked her to send me a status report each week, and none were coming. When I did speak with her, she was apologetic about communication and assured me that the transcription was coming along and that she was working with the social network software. Alas, in mid-September of 2009, she admitted to me that she had completed far less of the transcription than she had let me believe, and was going to have to stop working with me because she was overwhelmed with classes, post-graduate scholarship applications, and career planning in her senior year. I began looking for another assistant.

By that time I was teaching an introductory cultural anthropology class at Utica College. Partway through the semester a woman in the class mentioned that should I ever need it, she would be interested to help with any research I was doing. She performed well in the class and was slightly older than the average college student, so I felt confident that she could be a good assistant. We met outside of class to talk about the project, and I proceeded much the same way as I had with the previous assistant. I gave her some transcriptions to work on, and we planned to meet to train her with the social network software. We mainly corresponded via email and talking after our weekly class.

The semester ended and during most of Christmas break I did not correspond with her. Beginning in early January 2010, I emailed and called her several times. She finally responded in mid-March, saying that her grandmother had died shortly after Christmas and other family members had been in the hospital, and that she had had some computer problems, but she assured me that these had been taken care of and that she was working on the transcription. I asked for details about how the work was

going and whether she was ready to train for other parts of the project, and I heard nothing. As the weeks went by I emailed and called many times, but received no response from her. I hesitated to fire her via email or a phone message, as she had my transcription hardware and some data in her possession, and I did not know where she lived. I finally received an email from her in mid-June, in which she explained that she had just returned from a school trip to Europe and that she had lost all the data she had but was ready to try again on a new computer. I refused. I did not attempt to recruit anyone else to help with the project because by this time I had finished data collection and grant funds had to be spent by the end of the summer.

Summary

In Chapter 6 I have outlined the major objectives and hypotheses of the research project; sketched the time frame and phases of data collection; provided descriptive statistics on the sample; and reflected on my role as researcher in this project. Chapters 7 and 8 outline the four hypotheses for this project and cover data analysis and discussion.

Figure 6-1. Timeline of research activities.

Table 6-1. Descriptive statistics for interviewees categorized by type of interview.

	Semistructured interviewees (n=21)	Freelisters (n=66)	Social network interviewees (n=63)
Male	11 (52%)	24 (36%)	19 (30%)
Female	10 (48%)	42 (64%)	44 (70%)
Age range	19-67	19-87 (n=64)	21-69
Average age	40.4	48.3 (n=64)	41.5
Annual income after taxes- range	$10,000-$165,000 (n=18)	$7,000-$130,000 (n=41)	(categorically measured)
Annual income after taxes- average	$63,000 (n=18)	$53,440 (n=41)	(categorically measured)
White	20 (95%)	50 (79%) (n=63)	55 (87%)
Non-white	1 (5%)	13 (21%) (n=63)	8 (13%)
BMI range	20.3-45.4	19.4-50.2 (n=61)	17.5-42.6
BMI<18.5, underweight	0 (0%)	0 (0%)	2 (3%)
BMI 18.5-24.9, normal	7 (33.3%)	17 (27.4%)	21 (33%)
BMI 25-29.9, overweight	5 (23%)	20 (32.2%)	18 (29%)
BMI >30, obese	7 (33.3%)	21 (33.9%)	19 (30%)
BMI >40, severely obese	2 (9.5%)	4 (6.5%)	3 (5%)

Table 6-2. Descriptive statistics for all interviewees.

	All interviewees (N=139)
Male	52 (37%)
Female	87 (63%)
Age range	19-87
Average age	44.8 (n=137)
Annual income after taxes- range	(mixed measures)
Annual income after taxes- average	(mixed measures)
White	115 (83%) (n=136)
Non-white	21 (17%) (n=136)
BMI range	17.5-50.2 (n=134)
BMI<18.5, underweight	2 (1.5%)
BMI 18.5-24.9, normal	40 (29.9%)
BMI 25-29.9, overweight	42 (31.3%)
BMI >30, obese	41(30.6%)
BMI >40, severely obese	9 (6.7%)

CHAPTER 7
FREELISTS, CULTURAL CONSENSUS MODELING AND BEHAVIOR CONSONANCE

In Chapter 7 I lay out the two hypotheses regarding models of healthiness of foods, describe how I investigated the cultural domains of healthy and unhealthy foods, and discuss the tests for cultural consensus models of the healthiness of one set of foods. I also outline the measure of behavior consonance I developed using data gathered via food diaries, and discuss the statistical tests used in uncovering correlations among these cultural and behavioral variables and BMI.

For all statistical tests discussed in Chapter 7 I used SPSS® Statistics GradPack 17.0 except for the cultural consensus analysis, for which I used UCINET (Borgatti et al. 2002). The cutoff point for significance is $\alpha=0.05$. The analysis steps discussed begin with a descriptive analysis of the freelists and t-tests of whether mean list length differed statistically significantly by sex or BMI. This is followed by cultural consensus analysis to uncover shared models of healthiness of foods. For the cultural consensus analysis I first tested for a single shared model, then tested multiple models for intracultural variation in the model in terms of age, sex, education, income and weight status. I then discuss the bivariate analyses of the relationship between BMI and the measures of behavior consonance I constructed. I further explore other possible relationships for BMI, cultural competence, and behavior consonance among variables with means tests and linear regression modeling. I then include a small amount of qualitative data analysis related to some of the findings discussed. The sample sizes for certain of the tests were small, and some correlations may be due to chance. BMI was measured as a continuous variable (the actual measure of an individual's BMI: weight (kg) / [height (m)]^2 or weight (lb) / [height (in)]^2 x 703) except in a few statistical tests where I

categorized individuals by weight status based on BMI (underweight/normal weight/overweight/obese).

Cultural Models Hypotheses

W.O. Atwater is the father of modern nutrition education in the United States. At the turn of the twentieth century, he was working for the USDA using science to develop nutritional guidelines. The first food guide created for consumers was based on his work and was published in 1916 by Caroline Hung, and included five food groups (Welsh 1994:1799S). The economic exigencies of the Great Depression and then World War II contributed to a greater focus on nutrition across many disciplines. New data on recommended dietary intake also contributed to the development of the National Food Guide, or the Basic 7, which was developed for private citizens to use during wartime. This guide was based on the idea of a “foundation diet,” or a diet that would provide guidance as to the core nutrients and calories of a diet (Welsh 1994:1799S-1801S).

As the century progressed, so did the field of nutrition science. The USDA published the Basic 4 food guide (with four food categories) in 1956, again based on the idea of the foundation diet, and revised it in 1979. This revision was based on research that linked lower intake of certain foods to prevention of chronic disease. The updated guide included a new, fifth category: Fats, Sweets and Alcohol. The new category was added so that the USDA could advocate moderation in intake of these foods and drinks (Davis et al. 2001:881). In 1977 the United States Senate Select Committee on Nutrition and Human Needs issued Dietary Goals for the United States, in recognition of the public’s need for consensus from experts in guidance for their diets.

The USDA and the Department of Health, Education and Welfare (today the Department of Health and Human Services) in 1980 jointly issued Dietary Guidelines for

Americans which have since been revised and reissued every five years (Welsh 1994:1801S). This food guidance system came to be known as the Food Guide Pyramid and was first illustrated in 1984 as a Food Wheel (Davis et al. 2001:881-882).Though the importance of physical activity had always been discussed in the guide, in 2000, in response to the growing rates of obesity across the country, the guidelines placed even more emphasis on maintaining fitness and being physically active each day (Schneeman 2003:S6-S7)

Despite attempts to make nutrition information clear and accessible to the public, it remains opaque for most Americans. This lack of clarity and accessibility is not because our public health officials fail us. It is instead a result of factors like the influence of food companies (Nestle 2003) or the proliferation of misinformation by individuals with no expertise via innumerable media outlets. My goal in elucidating models of healthy and unhealthy foods was not to compare them to public health standards of nutrition (such as the USDA food pyramid) and deem my research participants compliant or noncompliant. However, the models of healthy and unhealthy foods that emerged can be of use to nutrition and health advocates interested in promoting healthy diets. I expected that these models would mirror, to some extent, nutrition education information disseminated by public health authorities. One goal in looking for shared models of healthy and unhealthy foods is to illustrate individuals' beliefs about the healthiness of foods and, by extension, how they comprehend and translate aspects of the vast amount of nutrition information available to them. I hypothesized that

H1 There are some shared models of healthy and unhealthy foods in this population. These models will vary by age, income, education, sex and weight status.

I also investigate to what extent individual behavior mirrors shared cultural models about the healthiness of foods. Strict nutritional knowledge about foods has been shown to be of less importance in determining food intake (Glanz et al. 1998; Nestle et al. 1998; Tepper et al. 1997), while specific beliefs and attitudes have been shown to be stronger predictors of intake (e.g., Shepherd and Towler 1992). A recent study (Elbel et al. 2009) of the effectiveness of fast food labels to reduce calorie intake in New York City found that, although consumers claimed that the labels influenced their intake, when compared to consumers in New Jersey (where there is no labeling law), calorie intake did not vary between the groups. Thus, finding shared cultural models of healthy and unhealthy foods, rather than testing individuals as to their scientific knowledge of what foods are healthy or unhealthy, can be a valuable approach in linking knowledge and behavior.

I assume that to some extent, Americans strive to eat those foods they consider most healthful, like fruits and vegetables. Rozin et al. (1999) compared Americans', Japanese, French, and Flemish Belgians' attitudes toward food and found that Americans associated food most with health and least with pleasure. Consumption of fruits and vegetables, which as a group are typically considered healthy foods, has been linked to lower obesity prevalence, while consumption of more energy-dense foods has been linked to greater obesity prevalence (Ledikwe et al. 2006). Therefore, I hypothesized that

H2 The degree of individual behavior consonance in terms of aspects of a shared cultural model varies inversely with BMI. That is, individuals who consume more of the foods deemed healthy by the shared cultural model will have lower BMI, and those who consume more of the foods deemed unhealthy by the shared model will have higher BMI.

Freelists

To understand the cultural domains of healthy and unhealthy foods and to test for cultural consensus about them, I began by collecting freelists (as described in Chapter 6). I then cleaned the freelist data, which involved work like correcting spelling, creating consistent data, and making decisions about when respondents were listing the same items. For example, merging “grape” and “grapes” is a low-inference decision, while merging “whole wheat bread” and “whole grain bread” requires more inference. Ultimately, I thought it best to preserve as much specificity as possible, so I collapsed as few categories of foods as possible; for example, when people listed items such as “lean beef,” “beef,” and “meat,” I did not bring these down to one category of “meat” or “beef.” After cleaning the freelists, I had a total of 336 healthy food items listed and 193 unhealthy ones (these two complete lists are given in Appendix E). No respondents listed any food more than once; for example, no one tried to list cheese on his or her healthy freelist and then again on his or her unhealthy freelist. Making so few modifications to the original data did create long lists of unique items, or those listed by only one respondent. Respondents listed 171 unique healthy foods (51% of all healthy foods listed) and 113 unique unhealthy foods (59% of all unhealthy foods listed). These long tails of unique items, however, is typical of free lists.

One obvious result that emerged from the freelists is the much smaller number of items listed as unhealthy foods (193) compared to the number listed as healthy foods (336). Also, for unhealthy foods, respondents tended to list categories like “fatty meat” rather than specific, individual foods like pork chops, pork roast, or bacon. These results could be due to the way I collected the data: I gave each person a three page, stapled document with the first page asking for the healthy foods, the second for the unhealthy

foods, and the third for demographics. By the time people finished writing the list of healthy foods, they may have been fatigued and not as willing or able to be as specific and exhaustive in their lists of unhealthy foods. Were I to do this again, I would assign respondents randomly to list healthy or unhealthy foods first. However, I also consider that it might be more difficult to name specific unhealthy foods because unhealthy foods are generally not marketed as such, and lobbyists and food companies go to great lengths to prevent negative health messages being tied to certain products.

There were 66 usable freelists of healthy foods and 63 usable freelists of unhealthy foods. Tables 7-1 and 7-2 give descriptive statistics for the lists. Two scree plots (Figures 7-1 and 7-2) show the first 50 items listed by the number of respondents who listed them. Tables 7-3 and 7-4 give the food items that were listed in each domain by at least 20% of respondents (the most salient items). The number of healthy foods listed drops off steadily from apples, listed by 44 people, or 67% of respondents, to foods like pasta, listed by ten people, or 15% of respondents, but there is no sharp drop and no clear elbow (Figure 7-1). For unhealthy foods, however, there is a sharp drop from candy (listed by 30 people, 48%) to potato chips (listed by 22 people, 35%) and a clear elbow at the shift from white bread (17 respondents, 27%) to pizza (14 respondents, 22%). Thirty-four healthy foods are listed before any food reaches the 20% threshold, while it takes just 11 unhealthy foods to reach this threshold.

Thirty food items were listed by some respondents as healthy and by others as unhealthy (Table 7-5). For example, twenty people listed ice cream as unhealthy, but two people listed it as healthy. Fourteen people listed pizza as unhealthy, but one person listed it as healthy. Some foods appear to be more ambiguous: beef, cheese,

pork, rice and steak. (Had I coded steak as beef, the ambiguity would be stronger). The ratio of items that fall on both healthy and unhealthy lists to the total number of items listed in both domains is 30:529. That is, 5.67% of all foods listed by respondents overlap to some extent in the two domains of healthy and unhealthy foods.

I also categorized freelists by sex and BMI category (BMI 18.5-24.9, normal weight; BMI 25-29.9, overweight; BMI ≥30, obese; there were no underweight [BMI<18.5] freelist respondents). Tables 7-6 through 7-9 show the average list length and standard deviations for these groups. On average, women provided longer lists of both healthy and unhealthy foods than did men, and people of normal weight provided longer lists of both foods than did either overweight or obese people. A means test (t-test) for whether the average list length differed significantly between men and women and among the BMI groups yielded no statistically significant differences (results not shown). Finally, I also ran nonparametric correlation tests to see whether the lengths of lists were significantly correlated with actual BMI measures or with age. There were no significant correlations, but length of list (both healthy and unhealthy lists) was positively correlated with age and inversely correlated with BMI (results not shown).

The Cultural Consensus Model, Cultural Consensus Data and Analysis

I particularly like Goodenough's (1957:167) definition of culture: "A society's culture consists of whatever it is one has to know or believe in order to operate in a manner acceptable to its members." Culture defined as such encompasses not only behavior and material artifacts, but the knowledge and ideas (cognition) that give rise to behavior and artifacts. In this way, culture is also a kind of "socially transmitted information pool" (D'Andrade 1981:180). The cultural consensus model is both a method and a theory of culture. It is a theory in the sense that it defines culture as

rooted in consensus about that “socially transmitted information pool” for any cultural domain. Knowledge about the content of a given domain, like healthy or unhealthy foods, is not shared by everyone in a culture. Consensus analysis is a method for measuring the amount of agreement, and therefore, of knowledge, for any cultural domain. Cultural consensus analysis allows the researcher to discover whether a single shared component of cultural knowledge—about manioc (Boster 1986) or fishery management (Miller 2004) or sexual risk (Swora 2003)—exists, and then to discover the extent to which that cultural knowledge is shared. People who know a lot about a given cultural domain are said to have high “cultural competence”. These people tend to agree with each other more about features of the domain in question than people who know little about the cultural domain, who are said to have low cultural competence (Bernard 2011:371-372).

The formal mathematical model for cultural consensus analysis treats informants’ statements as probabilistic: there is some probability that a given statement is correct, and the more informants agree on a statement’s correctness, the more likely it is that the statement is, in fact, culturally correct (Romney et al. 1986:314). Agreement is a function of shared knowledge. There are three assumptions attached to the model: all informants come from a common culture; all informants provide information independently of one another; and questions are drawn from a coherent domain, or are of the same level of difficulty for all informants (Romney et al. 1986:317-318). If the assumptions are met and if the factor analysis finds that a single factor represents the knowledge of the cultural domain, then, because agreement is a function of shared

knowledge, the most commonly given answers to questions about the cultural domain can be used as a kind of answer key for the domain.

The freelists in this study were used to build a survey instrument to test for cultural consensus regarding healthy and unhealthy foods. From the aggregate freelist data I chose a subset of thirty foods to use in a seven-point Likert-type scale and asked people to rate the healthiness of each food item (see Appendix D for questionnaire, part of the final structured survey). One overall criterion for choosing the thirty foods was popularity, or the likelihood that many people would consume these foods. Therefore I did not choose specific foods like kidney beans, even though they were listed by seven people or 10.6% of respondents as healthy, or foods like liver, which are difficult to find, or foods like quinoa, which may be unknown to many people. Half of the thirty foods chosen for inclusion were some of the most frequently mentioned healthy and unhealthy foods: apples, broccoli, salmon, spinach, strawberries, tomatoes, onions, and turkey as healthy foods, and soda, candy, french fries, potato chips, sausage, butter and margarine as unhealthy foods. I also chose some foods that came up as ambiguous in the freelists; that is, they were listed by some people as healthy foods and by others as unhealthy foods: eggs, cheese, peanut butter, pasta, steak, pizza, maple syrup and ice cream. I selected fried haddock because it is a local cultural food. I chose the final six foods based on topics that came up in interviews and that I considered relevant, namely certain processed foods, potatoes, and salad. People talked with me about trying to eat fewer processed foods but rarely named specific items, so I chose from the freelists four named processed foods: cornflakes, Triscuit crackers, Rice-a-Roni and pretzels. Pretzels and crackers as a general food item also came up on both healthy and

unhealthy lists. People also talked with me about the ambiguity of potatoes as a healthy food. Iceberg lettuce piqued my interest as a food to include because people qualified it as a food that is generally discussed as healthy: salad. For example, one female respondent in her early thirties described to me how her mother-in-law would boast of serving healthy food at a family dinner, yet what her mother-in-law considered a healthy salad was iceberg lettuce with tomatoes and a choice of pre-made/processed cream-based dressing, which my respondent identified as definitely not healthy.

Though Romney et al. (1986) proved the robustness of the cultural consensus model for a small number of informants, Weller (1987) showed that for cultural consensus modeling it is best to have at least forty questions and at least forty informants. I do not meet this standard, with only thirty questions asked, and for some of the subgroups discussed below I did not have forty informants. The number of foods I asked respondents to rate was an effort to make the final survey instrument less burdensome to respondents, who had many additional pages of questions to answer.

The data I collected originally used a scale measure of healthiness, and the cultural consensus model is not built for such data. For consensus modeling, data must be in fill-in-the-blank, true/false, or multiple choice format. Prior to statistical analysis I transformed the healthiness rating data to multiple choice data. However, I have provided the average healthiness ratings of each of the thirty foods using the scale data, which are shown with other descriptive statistics in Table 7-10.

The scaled data were rescored to three multiple choice scores by collapsing the first three scale scores (1=One of the healthiest foods you can eat; 2=Very healthy; 3=Somewhat healthy) into one “healthy” score, the last three scale scores

(5=Somewhat unhealthy; 6=Very unhealthy; 7=One of the worst foods you can eat) into one “unhealthy” score, and the center score (4=Neither healthy nor unhealthy) was left as the third option. I considered rescaling the data dichotomously by collapsing the first three and last three scores in the same manner, and foods which were scored as 4 (Neither healthy nor unhealthy) would be input as missing data. However, I considered two problems with dichotomizing the data in this way: first, this would have created what I felt to be an unacceptable amount of missing data (12.46% of 2,280 responses). The 12.46% would be in addition to data already missing through respondent error (1.6% of 2,280 responses). Second, I felt that preserving the category of ‘Neither healthy nor unhealthy’ was important and informative, and therefore using the data rescored as multiple choice with three choices made the most sense.

I used the software program UCINET (Borgatti et al. 2002) to run the cultural consensus analysis with all seventy-six informants, and then subdivided the seventy-six participants to test for subgroup consensus and intracultural variation, that is, different shared cultural models. Hruschka et al. (2008) illustrated how even when the statistical output indicates the existence of single cultural model for a domain (theirs was causes and symptoms of postpartum hemorrhage), cultural knowledge can still vary: when they subdivided the women they questioned into groups, the knowledge that skilled birth attendants had differed from that of traditional birth attendants and lay women. As Bernard explained, “the two groups of women were drawing their answers to test questions from different answer keys” (Bernard 2011:378). I tested groups defined by sex, age, income, education, and weight status. I did not test for ethnicity because I only had five nonwhite informants. The numbers of respondents for the education and

income groups do not total the full n because some people refused or neglected to answer these questions. The two age groups also do not total the full n because one man did not give his age and I did not feel I could guess into which age category he fell.

Output from the cultural consensus analysis includes eigenvalues of the agreement matrix; factor loadings for each informant on the first factor; and an answer key, in this case, the agreed upon healthiness rating (healthy, unhealthy, or neither healthy nor unhealthy) for each of the thirty foods. If the ratio of the first to the second factor eigenvalues is equal to or greater than three, then at least 60% of the variance in the matrix is accounted for by the first factor. As a rule of thumb, this ratio of three-to-one is evidence of a single-factor solution. If the test is about knowledge of healthy foods, then a very large first factor means that there is an underlying cultural model about the healthiness of foods that is shared, more or less, by the members of the group. The factor loadings indicate the extent to which each respondent shares this underlying cultural consensus and are, in effect, cultural competency scores for each of the individuals in the domain under study. The competency score is the probability that the informant knows the culturally correct answer for any item, and which is “equivalent to the proportion of shared knowledge that individual has with the unobservable culturally correct answers” (Weller 1987:181). Negative scores would indicate that some people in the group do not share the underlying model. Table 7-11 gives the average cultural competency scores and eigenratios for the groups tested.

Results from Table 7-11, and the fact that there were no negative cultural competency scores, provides evidence for a single, shared model of healthiness of these foods. It also suggests that this shared model extends to all subgroups. Thus, the

first part of Hypothesis 1 was supported: there are shared models of healthy and unhealthy foods in this population. As to the second part of Hypothesis 1, examination of the answer key (which in most cases is the modal answer) can help determine if and to what extent agreement on the healthiness of foods varies. The answer keys for each group are given in Table 7-12.

Table 7-12 shows that there is mostly agreement on healthy food ratings (as expected from the eigenratios) but that there are some disagreements by age, income, education, and weight status. There were no disagreements according to sex: that is, the answer keys for the 30 foods were exactly the same for both men and women.

Steak was rated by most groups as unhealthy, except for those with less than a college degree, those making less than $25,000 a year after taxes, obese people, and underweight and normal weight people (as a group) who rated it as healthy. Pizza was rated as unhealthy by all groups except for those with at least a college degree and those making less than $25,000 a year after taxes who rated it as healthy. Six of the thirteen groups rated iceberg lettuce as neither healthy nor unhealthy, while the rest rated it as healthy. Four of the thirteen groups rated pretzels as unhealthy, while the rest rated them as neither healthy nor unhealthy. All groups rated fried haddock as unhealthy except those with less than a college degree, who rated it as healthy. All groups rated cornflakes as healthy except for those who were underweight, normal or overweight (as a group), who rated it as neither healthy nor unhealthy. Finally, ratings for Triscuit crackers spanned the three ratings; eight groups rated them as healthy, three groups rated them as unhealthy, and two groups rated them as neither healthy nor unhealthy.

Referring back to Table 7-5, which shows foods that were rated by some respondents as healthy and by others as unhealthy, meat as a general category and steak specifically were foods which seem to be problematic for people when assessing their healthiness. Beef, fried meat, ham, meat, pork, red meat, and steak all featured on both healthy and unhealthy lists. Pizza was found on one person's healthy freelist and on 14 others' unhealthy freelist. This might be a simple case of idiosyncracy for this food and one individual, but the data in Table 7-12 shows that pizza may be a contested food in terms of its healthiness. As expected, iceberg lettuce is also a food that many people are not sure about. Three of the processed foods did not rate consistently across groups, which may speak to the strength of media and advertising for some processed foods. Advertisers highlight attributes such as the amount of fiber or vitamins and minerals present in cereals such as cornflakes. Pretzels and crackers like Triscuits are perhaps thought of as healthier snack options than something like potato chips. Conflicting characteristics of these foods might cause people to feel uncertain about the healthiness of these foods.

Behavior Consonance

I wanted to test how closely individuals' behavior matched their knowledge about the culturally agreed upon models of healthy and unhealthy foods. I took as inspiration Dressler's (2005) work on cultural consonance, discussed in Chapter 3. Cultural consonance is a measure of how closely individual beliefs and behavior correlate with culturally agreed upon models (i.e., those models of ideal behavior or attributes elicited via cultural consensus analysis) (Dressler 2005; Dressler and Bindon 2000). The word "ideal" is key in this definition. I found culturally agreed upon models of the healthiness of a set of thirty foods, but I did not have a measure of ideal behavior for this part of

American culture. For example, I might have attempted to find the ideal healthy diet in this culture. This would encompass far more than a close examination of a subset of foods commonly eaten by Americans. It would include factors like tobacco use, exercise, drug use, and other non-food variables. Therefore, I use instead the term "behavior consonance," because I did not define an ideal model of behavior. In addition, in creating a measure of behavior consonance I did not adhere solely to the cultural models found via cultural consensus: I also drew upon the other ethnographic data I gathered. In this section I outline the measure of behavior consonance I used, how I derived it, and the results of statistical tests.

To address the second hypothesis laid out earlier in Chapter 7, I collected food intake data from participants by asking them to keep food diaries (Murtagh 1985). This helped flesh out the ethnographic information gathered via interviews and participant observation and allowed me to assign behavior consonance scores to participants. Recording accurate food intake of people is one of the most difficult tasks social scientists, nutritionists and dieticians face. Food diaries are problematic to use as a measuring device for intake. However, it would not have been feasible to carry out all the other data collection activities as well as to observe people consistently and to weigh and record everything they ate. Moreover, invasive methods, such as direct measurement of food intake, are highly reactive and cause respondents to modify habitual patterns (Ulijaszek 2004). Recall of what people have eaten has also been shown to produce poor data (Bernard et al.1984; Maurer et al. 2006; Novotny et al. 2003). Another option for collecting this type of data is to create food intake surveys after initial interviews and early data collection. A food intake survey is a record form on

which all possible food and drink intake selections for a population are listed, and the informant records each day which items were consumed (Henry and Macbeth 2004). The list may help prompt informants to remember to record items, but imposing a list may force informants to abide by rules and food categories that are not their own. My choice therefore was to use food diaries for respondents, or what Ulijaszek calls estimated food records (2004:122). These allowed informants to define what they ate and when, as well as any other feelings and characteristics about the intake situation. (see Appendix C for the food diary form).

One of the most pressing problems with the food diaries in this research project is that the level of detail in recordings varies, and I could not interpret how much it varied from person to person. In addition, I was the only person who coded the food diaries. It would have been much better to have had several people coding the data and checking for interrater reliability.

The measure of behavior consonance I created is an index of behavior in terms of healthy and unhealthy foods consumed. For a set of twelve foods or food categories, I scored each participant according to how many times in a week that food item (or items in the category) was consumed. I did not ask respondents to record the amount of foods eaten, so these are measures of consumption frequency, not volume (see Appendix F for detail on how the food diaries were scored). Six of the food items or categories on which I scored the food diaries were drawn directly from the thirty items used in the Likert scale for cultural consensus: fruits, vegetables, leafy green vegetables, cheese, soda and candy. The other six food items or categories were chosen based on a broader definition of cultural models of healthiness of foods. That is,

they were based on a combination of data from the cultural consensus models, the freelist data, and interview data: poultry, salad, fish, fast food, meat, and processed food. In the case of poultry, turkey was one of the thirty foods in the Likert scale and chicken tied with broccoli as the third most frequently freelisted healthy food. Salad and fish, despite the apparent disagreements over iceberg lettuce and fried haddock (see earlier discussion), were generally discussed in interviews as healthy foods, and 48% and 36% of respondents freelisted lettuce and fish as healthy foods, respectively. Fast food was listed by 21% of respondents as an unhealthy food, and when respondents were asked in interviews what constitutes a “terrible diet,” fast food was often discussed as one such element. Meat and processed foods are widely consumed, and although not consistently rated as either healthy or unhealthy in the cultural consensus models, they appeared often enough on unhealthy freelists and in interviews where they were characterized as unhealthy that I felt they would be important food categories to include. Cultural models of healthy foods indicate that poultry, fruit, vegetables, leafy greens, salad, cheese, and fish are considered healthy foods, and my hypothesis means that these should be inversely correlated with BMI, and fast food, processed food, soda, candy, and meat are considered unhealthy foods, and should be positively correlated with BMI.

I ran nonparametric bivariate tests for these correlations, because the distributions of food intakes were non-normal for all foods except poultry, cheese, meat, and processed foods (Appendix G shows descriptive statistics and Kolmogorov-Smirnov tests for normal distributions for the twelve foods). Tables 7-13 and 7-14 show the correlation coefficients for each of the twelve foods’ intake and BMI.

What emerged from these simple tests were little more than descriptive patterns. There were no statistically significant correlations between any of the behavior consonance (food intake) measures and BMI. Fast food, fish, poultry, leafy greens, cheese, soda, meat, and processed foods intake were all positively correlated with BMI, and vegetable, fruit, salad, and candy intake were inversely associated with BMI. I tested for significant correlations between BMI and food intake in another way with eight of the twelve foods: fast food, fish, poultry, leafy greens, fruit, salad, soda and candy. I dichotomized the intake measure to indicate whether people ate these eight foods at all during the week they kept the food diary. I did not test for vegetables, cheese, meat, or processed food intake because the variation in these variables was very little when dichotomized: only one person ate no vegetables, five did not eat cheese, four did not eat meat and six did not eat any processed foods. I created two different dichotomous measures of BMI: people who were obese (1) or not (0), and people who were overweight or obese (1) or not (0). I conducted chi-square tests (and Fisher's exact tests for candy, poultry, and fruit versus obesity 1/0) to determine whether intake of these eight foods was significantly different according to weight status as measured either of these two ways. There were no significant categorical relationships (results not shown). I then conducted tests to determine the relative risks of consumption of these eight foods by each group during the week of the food diary, and those results are presented in Table 7-15. This information better illustrates any small differences in consumption. For example, during the week of the food diary, people who were obese were 1.36 times as likely to have consumed fast food but half as likely to have consumed candy as people who were overweight, of normal weight or underweight.

To sum up the findings for the second hypothesis, that intake of foods deemed healthy by the cultural models would inversely correlate with BMI, the results offer only very limited support: vegetable, fruit and salad intake were inversely correlated with BMI, but fish, poultry, leafy greens, and cheese intake were not. In addition, candy intake was associated with lower BMI. Fast food, soda, meat, and processed foods intake were all positively correlated with BMI. None of these correlations were strong or statistically significant.

Exploring Other Relationships

Eating more of the foods that people in this population believe to be healthy (behavioral consonance) is not statistically significantly related to BMI, nor is the magnitude of the relationship one that demonstrates a pattern of association. So what is correlated with BMI in this population? And what is correlated with intake of certain foods?

If behavior consonance is not correlated with BMI, does knowledge about the cultural model of the healthiness of foods, that is, cultural competence, help predict BMI? Recall that cultural competence is the probability that the informant knows the culturally correct answer for any item, and is “equivalent to the proportion of shared knowledge that individual has with the unobservable culturally correct answers” (Weller 1987:181). I also added income, age, education and intake of six of the twelve foods used as behavior consonance measures (fish, poultry, vegetables, salad, meat, processed foods) in conducting linear regression to predict BMI. To conduct a linear regression analysis of cultural competence scores on BMI, I first removed from the original dataset (N=56) thirteen individuals as data points which fell outside of the interquartile range (IQR) for the ten variables, bringing N to 43. I did not include more

than six of the twelve foods because to do so would have required removal of up to an additional nineteen individuals as outliers. I generated a histogram to test normality of the error term and a scatterplot of predicted values against residuals to test for heteroscedasticity (not shown). I then conducted a regression analysis of these variables on BMI. The first model that included all variables yielded a significant F score (2.299, sig.=.037) and an R-square of .426 (adjusted R-square=.241), but there were problems with collinearity (multiple eigenvalues close to zero and two high condition indices). The test statistics and coefficients for this model are shown in Table 7-16. Note that at the α=.05 level, cultural competence and age are significant predictors in the model, and income and meat intake and poultry intake are close to significant (<.10), and all have positive associations with BMI. A second stepwise model (p in .05, p out .10) excluded all variables except age (a positive relationship) and yielded a significant F score (6.183, sig.=.017) and an R-square of .134 (adjusted R square .112). The test statistics and coefficients for this model are shown in Table 7-17. Age being a significant predictor of BMI is not surprising, nor is it very interesting given the research hypotheses and goals presented here.

What else might be related to cultural competence? Women had a higher average cultural competence score (N=53, average score .725) than men (N=22, average score .701), but this was not statistically significant in a t-test (one individual's cultural competence score was an extreme outlier, falling more than 3 IQR outside the lower quartile, and he was removed before this test). I also conducted linear regression analysis to examine other variables related to cultural competence. I used sex, age, education and income to predict cultural competence, first removing from the original

dataset (N=63) six individuals as data points which fell outside of the IQR for the five variables. Missing data further reduced N to 53. The model did not yield a significant F score with the enter method, and the stepwise method (p in .05, p out .10) excluded all variables from the model. The test statistics for the model using the enter method are shown in Table 7-18.

How are cultural competence and food intake (behavior consonance) related? I would expect that those individuals who are more competent in the culture of healthy and unhealthy foods would consume more culturally agreed upon healthy foods and fewer unhealthy foods. That is, I would expect to see positive correlations between cultural competence score and intake of fish, poultry, vegetables, leafy greens, fruit, cheese, and salad, and inverse associations between cultural competence score and intake of fast food, soda, candy, meat, and processed foods. There were no significant correlations (Spearman's rho or Pearson's; N=56) between cultural competence scores and any of the food intakes (results not shown). The nonsignificant correlations of intake with cultural competence score were positive for fast food, fruit, cheese, salad, soda, and candy, and inverse for fish, poultry, vegetables, leafy greens, meat, and processed foods. Therefore not all of the food intakes correlated with cultural competence score in the expected direction. Only meat, cheese, fruit, leafy greens, salad, and processed foods correlated (but not significantly) in the expected direction.

I also tested whether cultural competence scores (N=56) varied significantly according to food intake measured dichotomously (did an individual eat any of these foods at all during the week) for eight foods (fast food, fish, poultry, leafy greens, fruit, salad, soda and candy). Wilcoxon-Mann-Whitney tests showed no significant

differences in cultural competence scores according to whether each of these eight foods was consumed (results not shown).

Age and food intake were significantly correlated (Spearman's rho or Pearson's; N=56) for two foods, fish and candy. Fish intake was positively correlated with age, and candy intake was inversely correlated with it. Among these thirteen variables (age and 12 foods' intake) there are three times the number of correlations expected by chance at the α=0.05 level. A Bonferroni correction test shows that correlations at the 0.0006 level would be valid to report at the α=0.05 level. However, for these thirteen variables, the p-values of two correlations meet this criterion, but neither of these correlations is with age, and the magnitude of association is not strong (between vegetable and fruit intake=.255, and between soda and fast food=.26). Table 7-19 shows these associations. If the correlations between age and fish and candy intake are not random, they may be due to more traditional upbringings (with regard to fish intake) and life experience (with regard to candy intake) of these respondents. Some older respondents talked more often with me about their Italian background and food-related activities like eating fish, or eating fish on Fridays. I would also guess that because these older respondents did not experience the ubiquity and cheapness of candy while growing up, they would be less likely to consume much of it as adults. Otherwise, age was also positively but not significantly correlated with intake of poultry, vegetables, leafy greens, fruit, and cheese, and inversely but not significantly correlated with intake of fast food, salad, soda, meat, and processed foods. Recall that, based on the cultural consensus model of the healthiness of foods, fish, poultry, vegetables, leafy greens, fruit, cheese, and salad are considered healthy foods, and fast food, soda, candy, meat and

processed foods are considered unhealthy foods. When I tested whether intake of foods was associated with cultural competence, the associations were not as expected. But when testing whether food intake is associated with age, the results were not significant but were more in line with the association I expected between cultural competence and food intake: older people ate more of the foods deemed healthy by the consensus model (fish, poultry, vegetables, leafy greens, fruit, cheese) and less of the foods considered unhealthy (fast food, soda, candy meat, processed foods). The inverse (but not significant) correlation between age and salad intake was the one odd association, and I have no ethnographic evidence that might explain why the older people are in this population, the less they eat salad. Perhaps people simply grew up eating other vegetables rather than salad, and continue to do so today.

Knowledge of what foods are healthy or unhealthy, intake of healthy and unhealthy foods, and BMI are not strongly associated in this population. Education and income are also not strongly associated with BMI. Although better education and higher socioeconomic status have been associated with better health status (including obesity status), as the nation approaches a figure of three-quarters of its citizens being overweight or obese, it is possible that education and income matter less and less as mitigating factors in obesity. To be clear, I do not mean to say that nutritional status and overweight/obesity are the same problem, and it is clear that food-related problems linked to socioeconomic status remain: poorer people cannot afford to buy fresh vegetables and energy-dense foods are cheaper, and the cost disparity between these two food categories appears to be increasing (Monsivais et al. 2010). The wealthy also have more access to doctors, dieticians, personal trainers, better environments, and

technology that makes the world of information and behavioral options more available to them. Obesity has many causes and contributors. Perhaps what these results speak to is the fact that there are many factors which are external to personal dietary choices (influenced by income or education) that contribute to obesity, and that in this part of the country, these external factors are what affect people more. For example, in this part of upstate New York, there may be snow on the ground for more than six months of the year. This significantly impacts opportunities for outdoor recreation or exercise in this area, and many people cannot afford to engage in winter activities such as skiing or snowshoeing. There are few places such as parks, basketball courts, running trails, or recreation centers for people to go to exercise when the weather is conducive (Hoehner et al. 2005). Certain neighborhoods have deteriorated, are not safe, or lack sidewalks. Few people are within walking distance of grocery stores, and if they do not have a car and cannot get to the bus, their food options are limited.

Age appears to be a possible important factor for behavior consonance, even though its relationship to cultural competence was not at all significant. I would speculate that the reason older people ate more of the healthier foods and less of the unhealthy foods is not accumulated scientific knowledge. Perhaps older people just "know better," that is, despite what scientific or nutrition knowledge they do or do not possess, they are more disciplined about eating better foods, whether for health, longevity, or another reason. They may also have more time to prepare better food because of retirement or no longer having to care for children. Younger people, who typically have fewer health issues and less time, may be more likely to eat what is available, convenient, or tastiest (and less healthful) because they have less regard for

the consequences of their diets at a younger age. Some of my respondents' statements bear out this potential attitude of younger people. One man, a 19-year-old community college student living with his family, described how he felt about his diet and his health:

Interviewer: How would you describe your diet in your own words?

Interviewee: Poor.

Interviewer: Why would you say poor?

Interviewee: What I do eat is not considered healthy, and I eat it a lot. I guess you're not supposed to eat before you go to bed. I do that every night. I wake up in the middle of the night and eat.

Interviewer: Would you change it [your diet] if you could?

Interviewee: Uh huh.

Interviewer: How would you change it?

Interviewee: Probably definitely wanna eat some kind of vegetable. I'm sure that'd be a good idea, and probably cut down on carbohydrates.

Interviewer: So it sounds like if you had a choice, you would try to eat a little more healthfully. Do you think that you will ever change your eating habits? For example, maybe when you move out of your parents' house or..,?

Interviewee: I think so.

Interviewer: Do you worry about food and health and your weight or anything like that at all?

Interviewee: I guess like my mom said, family has a history of diabetes, high blood pressure, all that good stuff, so especially being a smoker, just trying to quit. It definitely does double duty on my heart between smoking and overeating, so.

Interviewer: …you said you're a little bit concerned about your health. It sounds like maybe more in the future than right now, and you're trying to quit smoking, do you think – what would have to happen or what would be the thing that would really make you make a change in your eating habits?

Interviewee: Heart attack. Something drastic. It'd have to be.

This young man is aware that he eats an unhealthy diet; for example, he told me that he does not eat breakfast, and eats pizza for lunch almost every day. He knows what his diet might be doing to him and he knows he has a family history of food-related problems, yet he is not motivated to make an effort to eat healthfully unless some "drastic" health issue befalls him. He possesses some degree of cultural competence (though he was not a respondent who completed the questionnaire from which I calculated cultural competence), yet his behavior is not consonant with his knowledge.

I also suspect that an additional reason why age rather than cultural competence might correlate better with food intake is that older people learned different dietary habits growing up, and have kept these habits. The ways in which older respondents talked about food and eating indicate that they recognize that diets in decades past were significantly qualitatively different. People frequently spoke of the family's backyard garden as a common feature of their youth, of fewer processed foods being available, of mothers (and themselves) who did not work outside the home, and of family dinner together every night. My older respondents eat the way they do based on what they learned and experienced growing up. One woman, a 55-year old retired schoolteacher, described eating in her childhood compared to what is available to children today:

Interviewee: …my parents were always very conscious of eating healthy and the food, and we never had the choices or anything that kids have--the choices that we have today….We didn't get a lot of candy, you know, we would have a treat every once in a while but it was very controlled. And there just wasn't the opportunities back then.

Another man, a 68-year-old lawyer whose mother did all the household cooking, described the availability of fresh fruits and vegetables in his youth:

Interviewee: We were sort of a meat and potatoes family, but we had vegetables and we had seasonal foods. There were certain things that everybody in the family liked and we had fairly regularly: fruits and fresh vegetables. She [his mother] used to buy vegetables at a farmer's stand type of thing. I grew up in a rural area, so you couldn't go home from work without driving by one of those places.

Interviewer: Did you have a garden or anything like that in your own yard?

Interviewee: Part of my life, we did. That was an economy thing, but yeah we did. It was easy to buy farmer's stuff too. It was fresh.

Another man, a 62-year-old retired engineer:

Interviewee: It was mostly home-cooked meals, lunches in a lunch box – the metal cans, metal lunchbox.
…I remember kidney stew as one of my favorites. Mac and cheese was probably homemade. I'd expect that. Casseroles, a lot of that kind of stuff, vegetables were always part of the meal. We did have desserts, except during Lent. I don't know if we had salads or not, knowing my father probably, various kinds of salads. It might be a coleslaw, or even carrot and raisin. I have good memories of – things were around the table with everybody at the table.
…Desserts can be special. Fresh homemade apple pie, or something like that, berry pies, rhubarb was something. I wouldn't eat it today because it has so much sugar in it, but my father grew it in the garden, and so it was fresh.

These older respondents' discussions are starkly different from what the 19-year-old man spoke about. The older respondents use words like "fresh," "home-cooked," and talk about the limited choices they had for food. The 19-year-old man does not talk about eating with his family, but wakes up in the middle of the night and eats alone. He talks about needing to eat more vegetables, but does not actually do it. Later in my interview with him (transcription not shown) he also told me about eating lunch on campus every day, and which of the many fast food options available he tends to choose; he never brings a lunch from home. It seems that the time period in which the older respondents grew up exerted a lasting influence on their eating habits, and as

such, these older respondents' eating habits are qualitatively different from those of "generation Y" of today. These data do not allow for pinpointing when such a qualitative shift in habits happened, but they do provide suggestive evidence that it has occurred.

Additional Possibilities and Research

After noting the nature of the small intracultural variation in cultural consensus models in this sample, I consider another possibility to explain the lack of significant and strong associations between cultural competence and BMI: perhaps knowledge of healthy and unhealthy foods does not matter as much as knowledge related to certain smaller habits that add up over time. For example, in the data from the rating of 30 foods' healthiness, those of lower income (≤$25,000 per year after taxes) and those with less than a college degree gave soda average ratings of 6.17 and 6.12, respectively, while those with more money (>$25,000 per year after taxes) and those with at least a college degree gave soda average ratings of 6.67 and 6.73, respectively. A means test showed that these differences in the rating of the healthiness of soda were statistically significant: those of lower income and less education believe that soda is unhealthy, but they do not believe it is as unhealthy as people with more money and more education do ($p=0.007$, $p=0.003$ respectively; results not shown). These differences in healthiness rating would be even more meaningful if this in turn translated into greater soda intake for those who believe soda is less unhealthy. A Wilcoxon-Mann-Whitney test of soda intakes for these groups showed that those with less money and less education did in fact consume more soda, although not significantly more. This is an area that warrants more research, especially inquiry into reasons why beliefs about some foods like soda vary.

Another future task would be to derive overall diet patterns using methods such as cluster analysis or factor analysis (e.g., Guinot et al. 2001). I have noted, however, a few patterns of food intake. Simple bivariate correlations (Spearman's rho) among the twelve foods for which I measured intake yield a few significant correlations, but none of them are of a magnitude greater than .26 (refer back to Table 7-18 for these tests). Fast food intake is significantly inversely correlated with intake of vegetables and fruits, and is significantly positively correlated with intake of cheese and soda. Vegetable and fruit intake are significantly positively correlated, and vegetable and soda intake are significantly inversely correlated. Intake of leafy greens correlates significantly with intake of fruit, and fruit intake significantly inversely correlates with soda intake. Intake of processed foods correlates significantly with intake of meat, and significantly inversely correlates with fish intake. In addition, there are nearly significant correlations among a handful of other items. Thus it appears that, for example, people who eat more vegetables eat significantly less fast food. These are important behaviors to uncover and understand.

Summary

Chapter 7 has laid out the specifics of the data and related analyses for two hypotheses regarding cultural consensus and behavior consonance. Shared models of the healthiness of certain foods in this population did exist, but there was little intracultural variation, thereby providing partial support for the first hypothesis of the project, that shared models would exist, but they would vary. In fact, these models reproduced much public health nutrition information.

Cultural competence (knowledge) in the domain of healthiness of foods contributed little to predicting BMI, nor was it significantly associated with behavior

consonance, i.e., intake of twelve specific foods. In turn, behavior consonance was also not significantly associated with BMI. These results provide no support for the second hypothesis of the project, that behavior consonance would vary inversely with BMI.

None of the variables of sex, age, years of education or income were significant in predicting cultural competence, and years of education and income contributed little to predicting BMI. Age was the only variable for which there were any significant associations with behavior consonance, i.e., intake of twelve specific foods. Implications of these findings will be discussed further in Chapter 9. Chapter 8 focuses on the social network data and its analysis to address the final two hypotheses of this project.

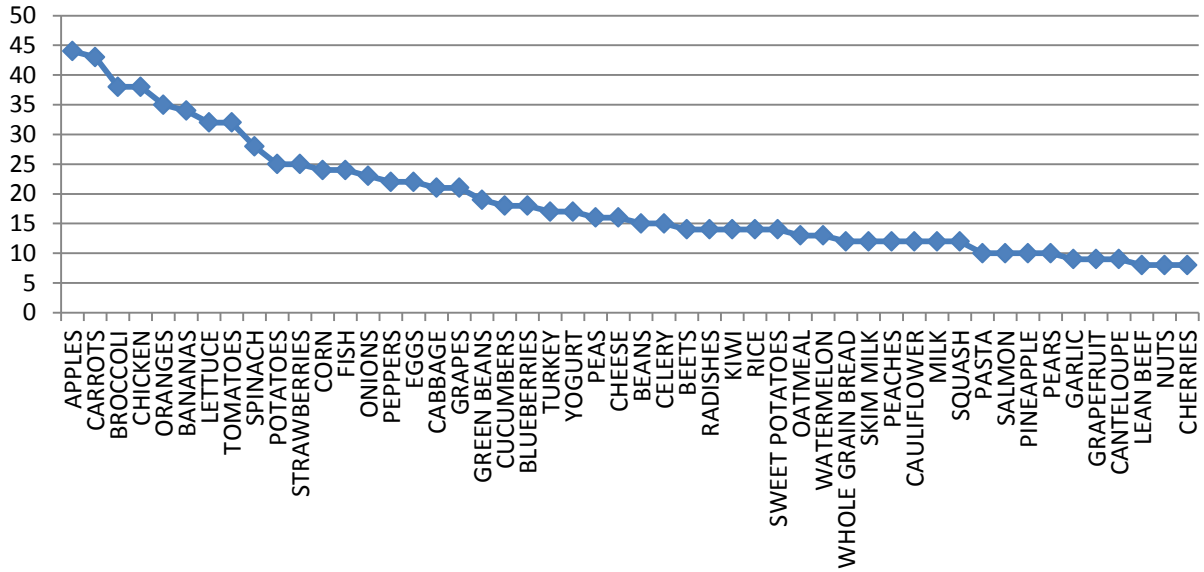


Figure 7-1. First 50 healthy foods by number of respondents (N=66) listing them.

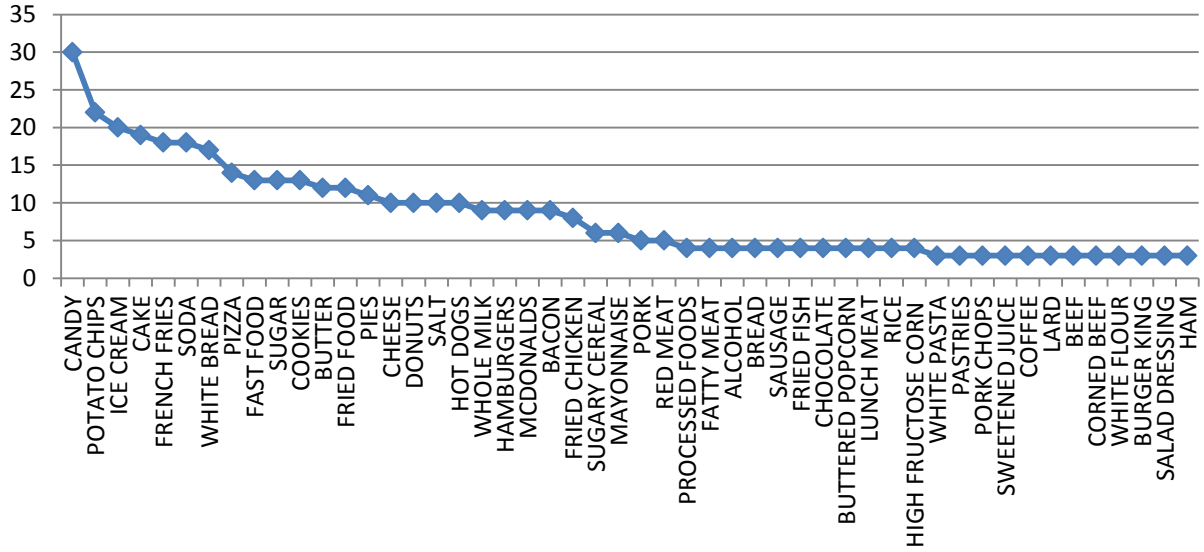


Figure 7-2. First 50 unhealthy foods by number of respondents (N=63) listing them.

Table 7-1. Healthy foods freelist statistics. N=66.

	Minimum	Maximum	Mean	Std. Deviation
Healthy freelist length	4	71	23.45	14.05

Table 7-2. Unhealthy foods freelist statistics. N=63.

	Minimum	Maximum	Mean	Std. Deviation
Unhealthy freelist length	2	31	9.49	5.74

Table 7-3. Foods listed as healthy by at least 20% of respondents.

Healthy foods 66 respondents 336 foods	Frequency	Respondent percentage
Apples	44	67
Carrots	43	65
Broccoli	38	58
Chicken	38	58
Oranges	35	53
Bananas	34	52
Tomatoes	32	48
Lettuce	32	48
Spinach	28	42
Potatoes	25	38
Strawberries	25	38
Fish	24	36
Corn	24	36
Onions	23	35
Eggs	22	33
Peppers	22	33
Cabbage	21	32
Grapes	21	32
Green beans	19	29
Blueberries	18	27
Cucumbers	18	27
Turkey	17	26
Yogurt	17	26
Cheese	16	24
Peas	16	24
Celery	15	23
Beans	15	23
Radishes	14	21
Rice	14	21
Beets	14	21
Kiwi	14	21
Sweet Potatoes	14	21
Watermelon	13	20
Oatmeal	13	20

Table 7-4. Foods listed as unhealthy by at least 20% of respondents.

Unhealthy food 63 respondents 193 foods	Frequency	Respondent percentage
Candy	30	48
Potato chips	22	35
Ice cream	20	32
Cake	19	30
French fries	18	29
Soda	18	29
White bread	17	27
Pizza	14	22
Cookies	13	21
Sugar	13	21
Fast food	13	21

Table 7-5. Foods which were listed by some respondents as healthy, by others as unhealthy.

Foods appearing on both lists	Frequency on healthy lists	Frequency on unhealthy lists
Beans	15	1
Beef	5	3
Butter	1	12
Celery	15	1
Cheese	16	10
Chocolate	1	5
Crackers	1	1
Eggs	22	2
French fries	1	18
Fried meat	1	2
Fruit juice	3	1
Ham	1	3
Ice cream	2	20
Liver	2	1
Maple syrup	3	1
Meat	1	2
Pasta	10	2
Peanut butter	3	1
Peanuts	4	1
Peas	16	1
Pizza	1	14
Popcorn	8	1
Pork	5	5
Potatoes	25	1
Pretzels	3	1
Red meat	1	5
Rice	14	4
Steak	2	2
Tea	1	1
Yogurt	17	1

Table 7-6. Descriptive statistics of healthy lists by sex. N=66.

			Healthy list length
Sex	Female	Mean	25.40
		Std. Deviation	13.45
		Minimum	4
		Maximum	71
	Male	Mean	21.48
		Std. Deviation	15.28
		Minimum	6
		Maximum	58

Table 7-7. Descriptive statistics of unhealthy list lengths by sex. N=63.

			Unhealthy list length
Sex	Female	Mean	10.03
		Std. Deviation	5.87
		Minimum	2
		Maximum	31
	Male	Mean	8.91
		Std. Deviation	5.81
		Minimum	2
		Maximum	22

Table 7-8. Descriptive statistics of healthy list lengths by BMI category. There were no underweight freelist respondents. N=66.

			Healthy list length
BMI category	18.5-24.9 normal weight	Mean	25.88
		Std. Deviation	19.08
		Minimum	7
		Maximum	71
	25-29.9 overweight	Mean	22.45
		Std. Deviation	13
		Minimum	6
		Maximum	44
	≥30 obese	Mean	23.88
		Std. Deviation	11.45
		Minimum	4
		Maximum	41

Table 7-9. Descriptive statistics of unhealthy list lengths by BMI category. There were no underweight freelist respondents. N=63.

			Unhealthy list length
BMI category	18.5-24.9 normal weight	Mean	10
		Std. Deviation	4.96
		Minimum	2
		Maximum	19
	25-29.9 overweight	Mean	9.25
		Std. Deviation	7.73
		Minimum	2
		Maximum	31
	≥30 obese	Mean	9.68
		Std. Deviation	4.63
		Minimum	3
		Maximum	21

Table 7-10. Descriptive statistics for thirty foods used in the 7-point Likert scale.

	N	Minimum score	Maximum score	Modal score	Mean score	Standard deviation
Butter	76	1	7	5	4.63	1.15
Apples	76	1	4	1	1.53	0.66
Cheese	75	1	7	3	3.40	1.25
Steak	75	1	6	5	4.01	1.27
Peanut butter	75	1	7	3	2.80	1.08
Eggs	76	1	7	2	2.55	1.08
Potatoes	75	1	7	3	2.88	1.16
Pizza	75	1	7	5	4.32	1.34
Pasta	76	1	6	3	3.55	1.15
Broccoli	76	1	3	1	1.26	0.47
French fries	74	2	7	6 [a]	5.89	1.13
Salmon	74	1	3	1	1.53	0.67
Soda	74	4	7	7	6.49	0.75
Iceberg lettuce	75	1	7	4	3.33	1.22
Tomatoes	74	1	4	2	1.69	0.70
Ice cream	76	2	7	5	4.92	1.18
Turkey	75	1	5	2	2.47	0.92
Pretzels	75	2	7	4	4.24	0.97
Spinach	76	1	4	1	1.34	0.58
Sausage	76	2	7	6	5.61	1.16
Candy	74	2	7	7	6.23	0.92
Fried haddock	74	1	7	5	4.54	1.58
Onions	74	1	4	2	2.36	0.99
Maple syrup	73	1	7	5	4.38	1.29
Cornflakes	74	1	6	3	3.36	0.99
Margarine	74	3	7	5	5.59	1.17
Rice-a-Roni	71	2	7	5	5.01	1.40
Strawberries	75	1	6	1	1.69	0.93
Triscuit crackers	76	1	6	4 [a]	3.79	1.15
Potato chips	74	3	7	6	5.96	0.90

Foods were scored by respondents (N=76) using the following scale:

1 = One of the healthiest foods you can eat
2 = Very healthy
3 = Somewhat healthy
4 = Neither healthy nor unhealthy
5 = Somewhat unhealthy
6 = Very unhealthy
7 = One of the worst foods you can eat

a. Multiple modes exist. The smallest value is shown.

Table 7-11. Average cultural competence and eigenratios for all respondents and for each of twelve subgroups.

Group	N	Average cultural competency	Eigenratio
All	76	0.710	9.190
Age 18-40	34	0.706	9.290
Age 41and older	41	0.714	9.238
4-year degree or more	31	0.724	9.447
Less than 4-year degree	26	0.679	6.914
Female	53	0.725	9.720
Male	23	0.681	8.672
≤$25,000/year after taxes	25	0.664	6.504
≥$26,000/year after taxes	46	0.742	11.449
Obese people (BMI ≥30)	28	0.701	6.892
Overweight or obese people (BMI≥25)	48	0.716	9.120
Underweight and normal weight people (BMI≤24.9) (93%, or 26 people, were of normal weight)	28	0.701	9.293
Underweight, normal or overweight people (BMI ≤ 29.9)	48	0.718	11.778

Table 7-12. Healthiness ratings of 30 foods as determined by the cultural consensus analysis. 1=Healthy, 2=Not healthy, 3=Neither healthy nor unhealthy.

Food	All	Age 18-40	Age 41 and older	4-year degree or more	Less than 4-year degree	Female	Male	≤$25,000/year after taxes	≥$26,000/year after taxes	Obese (BMI ≥30)	Overweight or obese (BMI≥25)	Underweight & normal weight (BMI≤24.9)	Underweight, normal & overweight (BMI ≤ 29.9)
Butter	2	2	2	2	2	2	2	2	2	2	2	2	2
Apples	1	1	1	1	1	1	1	1	1	1	1	1	1
Cheese	1	1	1	1	1	1	1	1	1	1	1	1	1
Steak	2	2	2	2	1	2	2	1	2	1	2	1	2
Peanut butter	1	1	1	1	1	1	1	1	1	1	1	1	1
Eggs	1	1	1	1	1	1	1	1	1	1	1	1	1
Potatoes	1	1	1	1	1	1	1	1	1	1	1	1	1
Pizza	2	2	2	1	2	2	2	1	2	2	2	2	2
Pasta	1	1	1	1	1	1	1	1	1	1	1	1	1
Broccoli	1	1	1	1	1	1	1	1	1	1	1	1	1
French fries	2	2	2	2	2	2	2	2	2	2	2	2	2
Salmon	1	1	1	1	1	1	1	1	1	1	1	1	1
Soda	2	2	2	2	2	2	2	2	2	2	2	2	2
Iceberg lettuce	3	1	3	3	1	1	1	1	3	1	1	3	3
Tomatoes	1	1	1	1	1	1	1	1	1	1	1	1	1
Ice cream	2	2	2	2	2	2	2	2	2	2	2	2	2
Turkey	1	1	1	1	1	1	1	1	1	1	1	1	1
Pretzels	3	3	3	2	3	2	2	3	2	3	3	3	3
Spinach	1	1	1	1	1	1	1	1	1	1	1	1	1
Sausage	2	2	2	2	2	2	2	2	2	2	2	2	2
Candy	2	2	2	2	2	2	2	2	2	2	2	2	2
Fried haddock	2	2	2	2	1	2	2	2	2	2	2	2	2
Onions	1	1	1	1	1	1	1	1	1	1	1	1	1
Maple syrup	2	2	2	2	2	2	2	2	2	2	2	2	2
Cornflakes	1	1	1	1	1	1	1	1	1	1	1	1	3
Margarine	2	2	2	2	2	2	2	2	2	2	2	2	2
Rice-a-Roni	2	2	2	2	2	2	2	2	2	2	2	2	2
Strawberries	1	1	1	1	1	1	1	1	1	1	1	1	1
Triscuit crackers	1	1	2	2	1	1	1	3	2	1	1	1	3
Potato chips	2	2	2	2	2	2	2	2	2	2	2	2	2

Note that consensus in this sense does not mean that every respondent answered in accordance with this table, i.e., not everyone had to say that apples were healthy in order for the answer key to show that it is a healthy food.

Table 7-13. Spearman's correlation coefficients for BMI and intake of foods. N=56, 2-tailed significance level.

		BMI
Spearman's rho	Fast food	0.123
	r^2	0.015
	p	0.365
	Fish	0.066
	r^2	0.004
	p	0.630
	Vegetables	-0.023
	r^2	0.005
	p	0.867
	Leafy greens	0.025
	r^2	0.0006
	p	0.854
	Fruit	-0.041
	r^2	0.002
	p	0.765
	Salad	-0.115
	r^2	0.013
	p	0.402
	Soda	0.029
	r^2	0.0008
	p	0.832
	Candy	-0.1358
	r^2	0.018
	p	0.323

Table 7-14. Pearson's correlation coefficients for BMI and intake of foods. N=56, 2-tailed significance level.

		BMI
Pearson correlation	Poultry	0.092
	r^2	0.009
	p	0.501
	Cheese	0.089
	r^2	0.008
	p	0.512
	Meat	0.077
	r^2	0.006
	p	0.573
	Processed foods	0.041
	r^2	0.002
	p	0.766

Table 7-15. Results from relative risk tests of consumption of eight foods during the week of the food diary for people who were obese/those who were not obese (i.e., overweight, of normal weight or underweight) and people who were overweight or obese/those who were not overweight or obese (i.e., of normal weight or underweight).

Obese people were	1.36 times as likely to have consumed fast food during the diary week as people who were overweight, of normal weight or underweight .98 times as likely to have consumed fish during the diary week as people who were overweight, of normal weight or underweight 1.17 times as likely to have consumed poultry during the diary week as people who were overweight, of normal weight or underweight 1.06 times as likely to have consumed leafy greens during the diary week as people who were overweight, of normal weight or underweight 1.02 times as likely to have consumed fruit during the diary week as people who were overweight, of normal weight or underweight .81 times as likely to have consumed salad during the diary week as people who were overweight, of normal weight or underweight 1.10 times as likely to have consumed soda during the diary week as people who were overweight, of normal weight or underweight .50 times as likely to have consumed candy during the diary week as people who were overweight, of normal weight or underweight
Overweight or obese people were	1.08 times as likely to have consumed fast food during the diary week as people who were of normal weight or underweight .96 times as likely to have consumed fish during the diary week as people who were of normal weight or underweight 1.13 times as likely to have consumed poultry during the diary week as people who were of normal weight or underweight 1.10 times as likely to have consumed leafy greens during the diary week as people who were of normal weight or underweight .97 times as likely to have consumed fruit during the diary week as people who were of normal weight or underweight 1.10 times as likely to have consumed salad during the diary week as people who were of normal weight or underweight .83 times as likely to have consumed soda during the diary week as people who were of normal weight or underweight 1.13 times as likely to have consumed candy during the diary week as people who were of normal weight or underweight

Table 7-16. Linear regression statistics (enter method): dependent variable BMI. N=43..

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.653[a]	.426	.241	5.7143

a. Predictors: (Constant), income, vegetable intake, salad intake, poultry intake, cultural competence score, processed foods intake, age, years education, meat intake, fish intake

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	750.765	10	75.076	2.299	.037[a]
	Residual	1012.246	31	32.653		
	Total	1763.011	41			

Coefficients[a]

		Unstandardized Coefficients		Standard-ized Coefficients			Correlations			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-9.289	12.784		-.727	.473					
	Cultural compe-tence score	22.647	10.974	.300	2.064	.047	.177	.348	.281	.877	1.141
	Fish intake	-.574	.928	-.102	-.619	.541	.011	-.110	-.084	.676	1.480
	Poultry intake	.973	.567	.239	1.716	.096	.279	.295	.234	.951	1.051
	Vegetable intake	.314	.270	.173	1.164	.253	.255	.205	.158	.835	1.198
	Salad intake	-.186	.520	-.053	-.358	.723	-.130	-.064	-.049	.831	1.203
	Meat intake	.818	.440	.298	1.858	.073	.097	.317	.253	.720	1.388
	Processed foods intake	.285	.343	.124	.829	.414	.077	.147	.113	.825	1.212
	Age	.222	.079	.445	2.808	.009	.366	.450	.382	.739	1.353
	Years education	.111	.574	.030	.193	.848	.002	.035	.026	.758	1.319
	Income	.663	.350	.280	1.894	.068	.194	.322	.258	.846	1.182

Table 7-17. Linear regression statistics (stepwise method): dependent variable BMI. N=43.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.366[a]	.134	.112	6.1785

a. Predictors: (Constant), age

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	236.044	1	236.044	6.183	.017[a]
	Residual	1526.967	40	38.174		
	Total	1763.011	41			

a. Predictors: (Constant), age

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	19.925	3.261		6.110	.000					
	age	.183	.074	.366	2.487	.017	.366	.366	.366	1.000	1.000

Table 7-18. Linear regression statistics (enter method): dependent variable Cultural competence score. N=53.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.292[a]	.085	.009	.089

a. Predictors: (Constant), sex, age, income, years education

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.036	4	.009	1.117	.360[a]
	Residual	.382	48	.008		
	Total	.417	52			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Correlations			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.601	.127		4.736	.000					
	Age	9.262E-5	.001	.013	.094	.925	-.013	.014	.013	.948	1.055
	Years education	.007	.007	.140	.898	.374	.216	.129	.124	.789	1.267
	Income	.003	.005	.092	.625	.535	.167	.090	.086	.872	1.147
	Sex	-.035	.029	-.175	-1.211	.232	-.227	-.172	-.167	.918	1.090

Table 7-19. Spearman's rho for twelve foods and age. N=56 except for Salad, N=55 due to missing data.

			Age	Fast food	Fish	Poultry	Vegetable	Leafy greens	Fruit
Spearman's rho	Age	r	1.000						
		r^2							
		Sig.	.						
	Fast food	r	-0.206	1.000					
		r^2	0.042						
		Sig.	0.128	.					
	Fish	r	0.298	0.087	1.000				
		r^2	0.089	0.008					
		Sig.	0.026	0.526	.				
	Poultry	r	0.112	0.123	0.022	1.000			
		r^2	0.013	0.015	0.0005				
		Sig.	0.412	0.366	0.875	.			
	Vegetable	r	0.180	-0.358*	0.154	0.123	1.000		
		r^2	0.032	0.128	0.024	0.015			
		Sig.	0.185	0.007	0.256	0.368	.		
	Leafy greens	r	0.003	0.042	0.072	0.188	0.223	1.000	
		r^2	0.000009	0.002	0.005	0.035	0.05		
		Sig.	0.981	0.756	0.599	0.166	0.099	.	
	Fruit	r	0.244	-0.250	0.152	0.079	0.505	0.273	1.000
		r^2	0.060	0.063	0.023	0.006	0.255	0.075	
		Sig.	0.070	0.063	0.264	0.564	<0.001	0.042	.
	Cheese	r	0.192	0.267	0.251	0.198	0.009	0.197	-0.053
		r^2	0.037	0.071	0.063	0.039	0.00008	0.039	0.003
		Sig.	0.156	0.046	0.062	0.144	0.950	0.145	0.695
	Salad	r	-0.069	-0.037	0.366	0.048	0.194	0.094	0.122
		r^2	0.005	0.001	0.134	0.002	0.038	0.009	0.015
		Sig.	0.619	0.788	0.006	0.726	0.156	0.493	0.376
	Soda	r	-0.254	0.510	-0.185	-0.131	-0.379	-0.089	-0.339
		r^2	0.065	0.26	0.034	0.017	0.144	0.008	0.115
		Sig.	0.059	<0.001	0.173	0.335	0.004	0.516	0.011
	Candy	r	-0.265	0.072	-0.236	0.033	0.138	0.027	-0.042
		r^2	0.070	0.005	0.056	0.001	0.019	0.0007	0.002
		Sig.	0.049	0.598	0.080	0.807	0.311	0.846	0.760
	Meat	r	-0.211	0.097	-0.220	-0.023	0.115	0.020	-0.042
		r^2	0.045	0.009	0.048	0.0005	0.013	0.0004	0.002
		Sig.	0.118	0.476	0.103	0.864	0.400	0.884	0.758
	Processed foods	r	-0.220	0.044	-0.386	0.089	-0.022	0.108	0.066
		r^2	0.048	0.002	0.149	0.008	0.0004	0.012	0.004
		Sig.	0.104	0.748	0.003	0.513	0.875	0.428	0.629

Table 7-19. Continued.

			Cheese	Salad	Soda	Candy	Meat	Processed foods
Spearman's rho	Age	r						
		r^2						
		Sig.						
	Fast food	r						
		r^2						
		Sig.						
	Fish	r						
		r^2						
		Sig.						
	Poultry	r						
		r^2						
		Sig.						
	Vegetable	r						
		r^2						
		Sig.						
	Leafy greens	r						
		r^2						
		Sig.						
	Fruit	r						
		r^2						
		Sig.						
	Cheese	r	1.000					
		r^2						
		Sig.	.					
	Salad	r	0.246	1.000				
		r^2	0.061					
		Sig.	0.070	.				
	Soda	r	-.016	-0.069	1.000			
		r^2	0.0002	0.005				
		Sig.	0.908	0.617	.			
	Candy	r	0.051	0.166	-0.023	1.000		
		r^2	0.003	0.028	0.0005			
		Sig.	0.709	0.226	0.866	.		
	Meat	r	0.113	-0.009	0.088	0.001	1.000	
		r^2	0.013	0.00008	0.008	0.000001		
		Sig.	0.406	0.945	0.518	0.992	.	
	Processed foods	r	-0.112	-0.107	0.082	0.205	0.296	1.000
		r^2	0.013	0.011	0.007	0.042	0.088	
		Sig.	0.409	0.436	0.546	0.130	0.027	.

CHAPTER 8
SOCIAL NETWORKS, FOOD AND OBESITY

In Chapter 8 I first outline literature on social networks, health, and obesity. I then describe my hypotheses for the social network data, explain the social network data collection process, and the conduct, results and discussion of the statistical analysis.

For all statistic tests discussed in Chapter 8 I used SPSS® Statistics GradPack 17.0. The cutoff point for significance is $\alpha=0.05$. The analysis steps discussed begin by outlining some bivariate trends for the social network variables and age, income and education, and then examining bivariate tests of association in addressing the two social network hypotheses, integrating textual interview data in their discussion. To address other possible relationships in addition to those hypothesized, I then conducted a linear regression analysis of the social network variables and BMI. Next I discuss kappa tests and more interview data, which I used to address whether actual and perceived weight of my respondents differed significantly, and ANOVA and post hoc tests in considering whether any of the social network variables differed significantly by respondents' weight category. The sample sizes for certain of the tests were small, and some correlations may be due to chance. BMI was measured as a continuous variable (the actual measure of an individual's BMI: weight (kg) / [height (m)]^2 or weight (lb) / [height (in)]^2 x 703) or categorically by weight status based on BMI (underweight/normal weight/overweight/obese) where indicated.

Background

At the end of the first decade of the twenty-first century, substantially more people are connected via one social networking site or another. Social networks, their discussion, and their use seem to be everywhere. But social networks as a field of

academic inquiry has a much longer history, and in the last four decades, the field of social network analysis developed into a multidisciplinary field (Barabási 2002; Buchanan 2002; Freeman 2004; Watts 2004). Scott (2000:7-37) outlined the three main traditions of social network analysis and their paths to unity in the 1960s and 1970s, and Freeman (2004) traced the development of the field. Watts (2004) reviewed advances and major findings of social network analysis and network modeling from approximately 1998 to 2003. Jackson summarized some of the network analysis work in a range of fields including mathematics and computer science (2008) and in the area of economic behavior (2009); Luke and Harris (2007) covered public health and network analysis; and Smith and Christakis (2008) reviewed major findings in the area of social network analysis and health.

Berkman and Syme's (1979) classic study of Alameda County made it clear that there is an association between health outcomes and social integration. In their study, components of social integration included measures of marital status, church membership, and interaction with friends and relatives. Many studies since then have corroborated this association. For example, Kawachi et al. (1996) found that American men with the lowest level of social network integration (not married, fewer than six friends or relatives, no membership in church or community groups) were at increased risk for death due to cardiovascular disease, which confirmed earlier indications of this association (Berkman et al. 1992; Blazer 1982; House et al. 1982; Orth-Gomer and Johnson 1987; Schoenbach et al. 1986; Welin et al. 1985).

Holtgrave and Crosby (2006) applied Putnam's (2000) measure of social capital (a concept related to compositional measures of social networks) and found it to be

protective against both diabetes and obesity. Christakis and Fowler (2007), using longitudinal data from the Framingham Heart Study, found that obesity can spread through an individual's social network. Cohen-Cole and Fletcher (2008) disputed this finding using their own econometric techniques applied to another large, longitudinal data set. Their data (from the National Longitudinal Study of Adolescent Health) focused on adolescents over a seven-year period, whereas the Framingham data followed adults over thirty-two years. Two other attempts to link obesity and social networks, using the adolescents' data, corroborated Christakis and Fowler's findings (Halliday and Kwak 2007; Trogdon et al. 2008).

Social Network Hypotheses

Research regarding how the presence of others affects an individual's food consumption is compelling but conflicting. Commensality (eating together regularly) is important in facilitating social processes (Bloch 1999), but can also play a role in regulating food intake. Herman et al. (2003:883) called social influences on eating "arguably greater than any other influence." Some studies have found that eating in groups of people, whether acquaintances, friends, or strangers, facilitates greater intake of food (Clendenen et al. 1994; DeCastro et al. 1990). Other research has found that people eating with others may use any of those people as a norm against which they compare their own eating, thus leading to better self-regulation of food intake, that is, it leads a person to not overeat (Herman and Polivy 2005). Herman et al. (2003) outlined three separate bodies of literature on social influences on eating: social facilitation (when people eat in groups they tend to eat more); modeling (when you eat with someone else who tends to eat either a lot or a little, you do the same); and impression management (when you eat with someone you believe is evaluating you, you tend to

eat less than when alone). DeCastro (1994) found that meals eaten with spouses and other family members were larger and were eaten more quickly, with the presence of those people likely causing relaxation and disinhibition of intake. However, none of these studies focused on the social networks of individuals. Silverman et al. (2002), who did focus on network measures, found for women a positive association between percent of relatives in the network and the likelihood of making healthy dietary changes.

Research has also uncovered associations between healthful diets and frequency of family meals, but this link has almost solely been identified in studies of children and their diets. Adults have been overlooked for the influence of family on eating patterns of grown family members. Gillman et al. (2000) found that children who ate family dinners more often ate more fruits and vegetables and less soda and fried foods. Neumark-Sztainer et al. (2003) found a positive association between frequency of family dinner and a healthful nutrient pattern, including less soda consumption and increased consumption of fruits, vegetables and grains. Taveras et al. (2005) found an inverse association between BMI of children aged 9-14 and frequency of family meals, but when this was extended to a longitudinal analysis the result was null.

Overall the evidence for a connection between increased overweight or obesity and eating with others, specifically family members, is mixed, but indicates a tendency for presence of others, especially those who are familiar, to facilitate greater food intake. However, I hypothesize that

H3 People whose family members figure centrally (measured by the percent of network alters who are family members, and activities with family members such as eating together and talking about food, eating and health) in their social networks will have lower BMI.

There are three ideas behind this hypothesis:

1. Network measures might be a proxy for a mechanism whereby if people eat with family, they may moderate intake because they are subjected to stronger norms and judgment about intake based on their lifetime relationships with these people; for example, a mother who has always warned her daughter against getting fat, or a father who had a health scare and now constantly talks about the importance of a healthy diet.

2. People who eat more often with family are more likely to eat at home and to eat breakfast, both of which have been linked to lower prevalence of obesity (Ma et al. 2003).

3. Finally, if people talk more frequently with family about food, eating, or health then they might be more likely to try to eat more healthfully and to keep their weight down due to increased exposure to information and discussion about food, eating, or health.

Density of social networks might also measure this last pathway (#3 above) of information traveling within a social network. That is, the more connections within a network, the more information to which a person is potentially subjected, and therefore that person may be more likely to make efforts to have a healthy diet. I hypothesize that **H4** Density of social networks will vary inversely with BMI.

The Social Network Interview

I used the software program EgoNet (McCarty 2005) to collect and analyze structural data on the personal networks of sixty-three informants (Appendix B gives the interview schedule). I asked each respondent (known as ego) to name thirty people (known as alters), that he or she knew, with knowing being defined as “you know the person by face and name, you could contact him/her if you had to and you have had some contact with him/her in the last two years.” I told respondents that they could name anyone they knew, whether friends, family, co-workers, acquaintances, etc., but they were not allowed to consult their address books or cell phones. I chose thirty as the number of alters to elicit in an effort to strike a balance between my interest in gathering

as much information as possible about egos' alters and my participants' work load in terms of time and fatigue. McCarty et al. (2007) found that, while it has been assumed that a forty-five-alter adjacency matrix represents an ideal for analysis, for most network structural measures twenty-five alters is an adequate minimum. I then asked ego a set of questions about each of the thirty alters, and then asked whether each alter knew each of the other alters. EgoNet makes these previously onerous tasks feasible by systematically interviewing informants, interactively, on a computer. In addition, the EgoNet program allows for visual representation of networks, a tool I used after eliciting all the data about ego's thirty alters. I pulled up the representation of the respondent's personal network and asked questions about it. This allowed me to show each respondent how people within his or her network were connected and which people knew each other. I also manipulated the graph to highlight attributes for each alter such as weight status as judged by ego, or alters with whom ego ate and how frequently he or she did so.

Designing the social network interview this way builds trust with respondents. In turn, the quality of the data from the other two tasks was, I am convinced, higher because people felt they could trust me with sensitive information. For example, during the social network interview with one woman in her early thirties, she described in detail certain things she did when eating with others and with regard to food in general that might clinically be considered disordered eating. Later, in the food diary, she would allude to some of these behaviors in side notes and explanations of what she was eating. If I had not extended the social network interview using the network visualization

and asked the follow up questions, I don't think I would have had an opportunity to elicit that information from her, nor would I have been granted such personal disclosure.

Data Analysis

To use the network data in the tests of association and in building the regression model, I created the following eleven network compositional variables, that is, variables that summarize different characteristics of alters in the networks: "average age of alters;" "average closeness to alters" (closeness was judged on a five-point scale, 1=not close, 5=extremely close); "percent of network ego identified as overweight or obese;" "percent of network eaten with at least once a month;" "percent of network talked with about food, eating and/or health at least occasionally;" "percent of network family;" "percent of network living locally" (within the area considered for fieldwork); "percent of network ego said had an excellent or very good diet;" "percent of network ego said had a not good or terrible diet;" "percent of network who were family and with whom ego ate at least once a month;" "percent of network who were family and with whom ego talked about food, eating and/or health at least occasionally."

I also used EgoNet to calculate density (a network structural variable) for each social network. Table 8-1 shows descriptive statistics for these twelve variables with the full dataset of sixty-three respondents. Density in a social network is a measure of how complete the network is, or how connected the alters in a network are (Scott 2000:69-70). The more connections there are among alters, the denser a network is. Density is dependent on two other network structural parameters: (1) what is known as inclusiveness of the network, or the number of connected points, or alters, as a proportion of the total number of alters; (2) the sum of the degrees of a network's alters (Scott 2000:70), where degrees for each alter are the number of connections with other

alters in the network. In an egocentric network, such as those I collected from participants, the density measure concerns those links around ego. Since ego is, by definition, connected to every alter, ego is not included in the measure of density.

Density is problematic to calculate with valued relationships within networks, but I have collected non-valued connection data for these networks. I simply asked whether each alter knew each other, and did not elicit data on the direction or strength of tie with alters. The measure of density also cannot be compared across networks of different sizes. I avoided this problem by asking each participant to name 30 alters.

The social network data evidenced multiple trends for age, income, and years of education. However, there were few significant associations with any social network variables. I tested ten of the twelve variables listed above with age, income, and years of education (I excluded “percent of network who were family and with whom ego ate at least once a month” and “percent of network who were family and with whom ego talked about food, eating and/or health at least occasionally” for these tests).

1. As ego’s age increased, so did the average age of his or her alters ($r=.801$, $r^2=.64$, $p<.001$). Ego’s age was also positively but weakly associated with the percent of network ego said was overweight or obese ($r=.150$); the percent of network talked with about food, eating and/or health ($r=.534$); percent of network living locally ($r=.114$); and percent of network ego said had an excellent or very good diet ($r=.996$). Ego’s age correlated inversely but weakly with the other social network variables.

2. Ego’s income was positively but not significantly associated with all social network variables except percent of network living locally.

3. As ego’s education increased, so did the average age of his or her alters; average closeness to alters; the percent of network eaten with at least once a month; the percent of network talked with about food, eating and/or health; and the percent of network ego said had an excellent or very good diet (none of these trends were strong). Ego’s education correlated inversely but not significantly with the other social network variables.

Family Influence, BMI and Eating Habits

For the first hypothesis, that people whose family members figured centrally in their social networks would have lower BMI, I tested three network compositional variables' correlation with BMI. These three network compositional variables were "percent of network who were family," "percent of network who were family and with whom ego ate at least once a month," and "percent of network who were family and with whom ego talked about food, eating and/or health at least occasionally." The latter two variables were not normally distributed according to a Kolmogorov-Smirnov test. I used Pearson's r and Spearman's rho to test for correlation among the variables. There were only extremely weak correlations between any of the three network compositional variables and BMI, and one of the three associations was inverse. Tables 8-2 and 8-3 show these results. As might be expected, the three network compositional variables were all significantly positively associated with each other (test results not shown).

The weak inverse correlation between the percent of an individual's network with whom he or she ate at least once a month and BMI offers no support for the hypothesis that people whose family members figure centrally in their social networks have lower BMI. However, interview data illuminate how complex the relationships can be, even within one person's family. One 29-year-old woman explained to me at (entertaining) length how she felt eating with her family influences her own habits, both in good ways and in bad:

Interviewer: Do you feel like any of those people influence your eating habits?

Interviewee: Yes.

Interviewer: Who?

Interviewee: [mother], [father], [sister], [husband] – probably those three and four at the most.

Interviewer: Okay, so how does your mom influence your eating habits?

Interviewee: We usually get together for family dinners, and so I think she [her mother] influences it in a healthy way as far as what we're eating, but because we're together and we're happy, we eat a lot, and it always involves dessert [Laughter].
So she is very well balanced in that way, but we eat a lot of food –

Interviewer: Okay. What about [sister]; she's another you said?

Interviewee: She has a sweet tooth in the way that I do, so while she is much better at controlling her portion size, and I think on her own eats better; when we're together, we eat a lot of sweets. And we like to indulge and try different things too, so we're more adventurous, but then we always usually order two desserts.

Interviewer: Okay. And you also said [husband] influences what you eat?

Interviewee: Yes, in a really bad way -

Interviewee: 'Cause we're comfortable and tired, we love to just hang out together and go out to dinner and eat, and another problem is I cook for a family of four. But we're just a family of two.

Interviewee: And he's lucky because he has a I think a generally different metabolism than I do. He can eat and he eats a lot, and I feel like my portion size is skewed because I see him eat a ton and so therefore what I'm eating is as much as he is eating.

Interviewer: I see; that's interesting, and the other person did you say [father] was the fourth person?

Interviewee: He probably is the biggest influence on my eating because I was always a picky eater 'cause he was a picky eater, and my mom tailored our meals for picky eaters. So I was never adventurous, and plus he always likes to celebrate with food; exorbitant amounts of it, and it's, his big thing are baked goods and desserts. And so whenever we get together, we're happy, and we want to go eat a lot. That's basically what we do. We seek out delicious food, and we eat and enjoy it together. And by delicious I don't mean sophisticated; I just mean sugary.

When I asked who in her social network influences her eating habits, this respondent answered with only her closest family members. She explained that her mother influences healthy food consumption, but that being with the family in general influences her (and them) to overeat and to eat more sweet foods. She also hinted that she believes her sister is influenced by the family when she eats with them. She described her comfort level when eating around her husband, which leads her to eat more food. She used the word “happy” more than once to describe the way her family feels when they are together, which leads to relaxation of any self-imposed discipline she might have about eating. From other (not tape-recorded) conversations with this woman I also know that when she eats with some of her other, less close family members, she feels she is being watched and judged according to what and how much she eats, and therefore restrains herself in a way that she never would when in the company of the immediate family that she discussed above.

Though the correlations of the three variables with BMI are of low magnitude and are not statistically significant, the varied directions of them suggests that eating with family members affects BMI differently than the mere incidence of family in one’s social network or how much ego talks with family members in the network about food, eating or health. However, when I regressed (ordinary least squares) these three variables on BMI, they accounted for virtually none of the variation in BMI for this population (R square=.002; N=55 after removal of eight outliers across three of the four variables; these test results not shown).

In the future, this hypothesis about the influence of family on eating and BMI could be better tested by creating more specific variables regarding family and eating.

The three variables under discussion cover all family members, even those ego may see only rarely, and cover any kind of eating, including things like special occasions or annual holiday feasts. So for example, specifying immediate family, or family living with ego, and specifying which meals are eaten with whom would allow for clearer pictures of influence to emerge.

Social Network Density and BMI

To address the hypothesis of an inverse relationship between density and BMI, I ran a simple bivariate correlation. I removed one woman from the analysis as an outlier who claimed everyone in her network knew each other, which yields a perfect density score. Density was positively but not significantly correlated with BMI: as density of the network increased, so did weight, which was the reverse of what I hypothesized. Table 8-4 shows the Pearson correlation statistic for the relationship between these two variables.

What could explain this result? Density was positively but weakly correlated with BMI, but it was significantly positively correlated (results not shown, $r=.337$, $r^2=.114$, $p=.007$) with closeness (average closeness of alters, as judged by ego). When controlling for closeness, density and BMI were still positively but not significantly correlated (results not shown, $r=.061$, $r^2=.004$). BMI and average closeness of alters were also positively but not significantly correlated, and this held when controlling for density (results not shown, $r=.104$, $r^2=.011$). Christakis and Fowler (2007) found that people in closer, mutual friendships affect each other more in terms of obesity and its spread than in other kinds of friendships (for example, those where ego states that alter is a friend, but alter does not state that ego is a friend). They also found that as the social distance between alter and ego increased, alter's influence on ego decreased.

Christakis and Fowler did not use the network structural measure of density, and I did not measure directionality of friendships: but the measures of density and average network closeness in my dataset could be proxies for mutuality and social distance, in addition to closeness of friendships, for ego. That is, while my results do not directly replicate those of Christakis and Fowler, perhaps the fact that closeness and density are both positively (if not significantly) associated with ego's BMI here is an encouraging result and a relationship that should be further examined with more refined variables.

Food Networks and Further Data Analysis

To test the significance of social networks for obesity, I used nine of the eleven compositional social network variables (I did not include "percent of network who were family and with whom ego ate at least once a month" or "percent of network who were family and with whom ego talked about food, eating and/or health at least occasionally") and the network structural variable of density to attempt to build a multiple regression model (ordinary least squares) to predict BMI. The set of social network variables considered are listed in Table 8-5.

To be clear: this dataset is less than ideal. It is small and relationships are only mildly linear. Some of these social network variables are also significantly correlated with each other. Of the complete set of social network interviews (N=63), I removed as outliers five individuals, bringing N to 58: four individuals for the variable "percent of network who live locally" whose scores fell more than 1.5 IQR outside the lower quartile and the individual who had a perfect density score, which was over 1.5 IQR outside the upper quartile.

I first attempted to sort out the ten variables with principal components analysis. The first four extracted components with eigenvalues greater than 1 explained 72.2% of

the variability in the original ten variables, but represented a loss of nearly 28% of information were I to use the four components in the regression model instead of the ten original variables. I did not feel that a 28% loss of information was acceptable.

Upon examination of the bivariate correlations among the ten variables and BMI (Table 8-6), I thought that I could eliminate some of them for use in the regression model. The only variable significantly associated with BMI was “percent of the network ego judged to be overweight or obese,” but this is not a strong association (r^2=.078) Variables with the least association with BMI were “percent of the network ego ever eats with,” “percent of the network ego ever talks with about food, eating and/or health,” “percent of the network who live locally,” and “percent of the network ego judged to have excellent or good diets.” The variable “average closeness of ego to alters” was significantly but not strongly correlated with five other network variables (r^2 ranged from .087 to .266), four of which were those with the weakest associations with BMI. “Percent of the network ego judged to have excellent or good diets” and “percent of the network ego judged to have poor or terrible diets” were also significantly but modestly correlated (r^2=.359). “Percent of the network ego judged to have excellent or good diets” was also significantly but not strongly correlated with “percent of the network judged to be overweight or obese,” (r^2=.173) and “percent of the network who live locally,” (r^2=.107) in addition to being significantly correlated with “average closeness of ego to alters” (r^2=.115). Based on this information, I removed from the analysis the variables “percent of the network ego judged to have excellent or good diets” and “percent of the network ego ever eats with.”

Before performing the regression I examined the scatterplot of predicted values against residuals (not shown) to check for any other outliers, and removed one other individual based on the plot, bringing N to 57. I then conducted a regression analysis of these variables on BMI. The first model that included all variables yielded a significant F score (2.239, sig.=.041) and an R-square of .272 (adjusted R-square=.15), but there were problems with collinearity (multiple eigenvalues close to zero and one very high and one somewhat high condition index). The test statistics and coefficients for this model are not shown. A second stepwise model (p in .05, p out .10) excluded all variables except “percent of the network ego judged to be overweight or obese” (an inverse relationship) and yielded a significant F score (6.661, sig.=.013) and an R-square of .108 (adjusted R square .092). The test statistics and coefficients for this model are shown in Table 8-7.

The stepwise model shows that the fewer alters in an ego’s network deemed by ego to be overweight or obese predicts *greater BMI for ego*. This variable accounts for 10.8% of the variability in BMI in this sample. If overweight and obesity are supposed to spread through social networks as Christakis and Fowler (2007) have found, shouldn’t there be a positive association between these two variables? What if instead, the perception of what overweight and obesity look like is changing among those who are overweight or obese? My social network data rely on egos’ judgment of alters’ weight status. For these data and for this particular variable, heavier people may be underestimating the size of their alters because they themselves are larger, and thus perceptions of what is overweight or obese may have shifted for these people. However, the statistical significance of this variable in predicting BMI in this dataset

could instead confirm that individuals simply judge others' bodies relative to their own, without a true shift in perception having occurred.

Shifting Perceptions or Relative Judgments?

Other data from this project provide implications about shifting perceptions or relative judgments of body size. Each respondent was asked to self-describe as underweight, normal weight, overweight, or obese. Table 8-8 shows the cross-tabulations and results of the kappa for true BMI by whether people correctly categorized themselves in terms of weight. The test shows the value of kappa (.32) to be significant (<.001) (a kappa test statistic value of 1 indicates perfect agreement, 0 indicates that the level of agreement is no better than chance).

I also asked interviewees to rate their own body size using silhouettes taken from Stunkard et al. (1983) (see Appendix D for silhouettes and question, part of final structured survey). These silhouettes have been used many times over the years, and Bulik et al. (2001) have established norms to link BMI for white Americans to these silhouettes. I compared the silhouette chosen to actual weight status. Table 8-9 shows the cross-tabulations and results of the kappa for true BMI by whether people correctly categorized themselves in terms of weight using the silhouettes. The test shows the value of kappa (.455) to be significant (<.001). The cross-tabulations for each of these two tests show that people of all weight categories made mistakes about judging their body size. However, obese people underestimated their size the most frequently, and only people of normal weight or who were underweight ever overestimated their size.

I created two additional variables based on these self-ratings: a dichotomous measure of whether each person's verbal judgment of his or her own weight category matched the category into which his or her actual BMI placed him (a variable called

“weight categories match?”) and a dichotomous measure of whether each person’s visual judgment of his or her own weight category matched the category into which his or her actual BMI placed him (a variable called “silhouette of self correct?”). A point biserial correlation (Tate 1954; Table 8-10) shows the relationship between BMI and these two variables. The variable “weight categories match?” is significantly correlated with BMI, but the association is of low magnitude.

I also tested whether mean BMI differed significantly by either of these two variables. The mean BMI for people who did not correctly identify their weight category was significantly higher than that for people who did correctly identify their weight category (Table 8-11). The mean BMI for people who did not correctly identify their silhouettes was also higher than for those who correctly identified their silhouettes, but not significantly so (results not shown).

Based on these findings, it appears that people who are overweight or obese are less able (or less willing) to identify themselves as overweight or obese by name, but able to do so visually, that is, using the silhouettes. They misidentify themselves much more often—almost always by identifying themselves as smaller than they are—than people who are not overweight or obese. In research on this tendency, Steenhuis et al. (2006) found that higher BMI was significantly associated with underestimation of one’s own body weight. Qualifying this finding, Brug et al. (2006) and Paeratakul et al. (2002) found that misestimation of one’s own weight status varied with factors like age, sex, socioeconomic status, and intentions for weight maintenance.

The significance of the percent of network judged overweight or obese in predicting BMI and the tests showing that overweight and obese individuals misestimate

their own weight status more often than people of normal weight or underweight people are two separate, but related findings. To sum up: first, people who are overweight or obese are less able (or willing) to accurately classify themselves as to weight status, which is a possible indication that perceptions of body size have shifted for these individuals. Second, overweight and obese individuals report fewer overweight and obese alters in their social networks, which counters the findings of Christakis and Fowler (2007) and which may suggest that overweight and obese individuals judge others' weight status relative to their own body size.

What my interview data show more than anything is that for most laypeople, obesity is far more than the simple measurement of weight and height. Some statements about others' bodies support the idea that perceptions of body size have shifted, while other statements support a case of relative judgment. Yet other interview data indicate ignorance about what overweight and obesity look like. I consider qualitative interview data for each of these three ideas in turn.

I interviewed one married couple together, and the man, a 59-year-old local business owner, talked about his grandmother's body compared to bodies today. His BMI placed him in the category of obese, and his wife's BMI was normal. He categorized himself as overweight, and she categorized herself as of normal weight.

Husband: My grandmother on my father's side was like way overweight, huge, and she lived to 86….

Wife: Not huge by the standards that you see sometimes today.

Husband: No, not –

Wife: No, uh-uh.

Another man (68 years old, lawyer) discussed how people looked when he was younger and how they seem to look today. This man's BMI placed him in the category of overweight, which is also how he described himself.

Interviewee: … People who are fat today, seems to me in my mind, they're different fat. They are bigger all over. They are almost like they are being fattened up for being butchered, like the cows are… I think people are more solid than they used to be. … I just had the sense that when people were fat when I was growing up, they were blubbery fat. Today, many people are overweight, and I'm not sure if they went on the best diet in the world they could really lose a lot of it because a lot of it is muscle probably. Muscle is heavier than fat.

These two interview excerpts exhibit the perception that people are fatter or bigger than they used to be. The wife in the first interview even uses the word "standards" in describing what overweight and obesity look like today compared to when her mother-in-law was younger. The second interviewee describes a qualitative difference in fatness that has occurred over the years. People are now "bigger all over." These informants' statements hint that a shift in body size norms may have occurred.

The next set of interview excerpts better supports the idea that individuals judge others' weight status relative to their own. One man, a 38-year-old college professor, discussed the weight status of a woman whom he did not list as part of his social network. He said that none of his alters was obese, but discussed this woman instead. His BMI placed him in the category of overweight, but he stated that he thought he was of normal weight.

Interviewee: In graduate school, the one person I would describe as obese would've been my roommate. And my roommate was obese because she would make five cakes at the same time – like five layers of cake – and then eat the five containers of icing before putting them on the cake, and then eat all five cakes.… She weighed 450 to 500 pounds. She could barely walk.

To this man, obesity doesn't happen until a person is extremely morbidly obese and can barely function. He may be using as a reference (and thereby justifying) his perception of his own body weight when he judges his friend's weight. However, if she truly was 450 or 500 pounds, her weight far exceeded the minimum medical standards for obesity.

Two obese women's perspectives about what underweight looks like also show how others' bodies may be judged relative to their own. One woman (51 years old, social worker) explained to me that she would not call herself obese except she knows that medically her weight puts her in that category. She would say she is overweight. When I measured her, her BMI was over 35.

Interviewer: … One person, [female coworker], you said is underweight [when I asked her to categorize her coworker's size]. Do you know specifically [whether she is in fact underweight]?

Interviewee: I never see her eat. Is she anorexic, I don't know.

Interviewer: Does she exercise a lot too?

Interviewee: No, I don't see that either. She just looks very small to me. She could be anorexic, I'm not sure.

The fact that this woman's coworker looks small and is never seen eating is enough for her to categorize her as underweight. Compared to her obese body, which this woman does not perceive as such, a person that much smaller than she is appears abnormal, i.e., anorexic. Another woman, a 35-year-old courier who was obese and said so, told me about how some of the smaller alters in her social network looked to her. But she also recognized that her perception is distorted.

Interviewee: … they're all in their technical weight zones, according to the doctors and stuff, but they seem --

Interviewer: They look thin to you.

Interviewee: They look like really underweight. Like you look underweight to me, but you're probably normal, like. So, like My perception is really off. So, like now – yeah, but, they're probably healthy, but they look – they look like death to me.

This woman used both her alters and me as examples of people who she knows are of a normal weight but whom she would classify as underweight. I looked underweight to her, yet my BMI at the time was close to 21—almost right in the center of the range for normal.

Many people claimed not to know what obesity (or even overweight) looks like. This was true not only for overweight or obese respondents, but also for a few respondents of normal weight. People discussed their uncertainty of what is "technically" or "medically" obese and what weight would qualify someone as obese rather than overweight—note the specific use of words like "technically" or "medically" by respondents. One 29-year-old woman whose weight placed her in the category of obese did not perceive herself as such, but she stated a lack of knowledge about accepted medical definitions of obesity. She also had lost and gained significant amounts of weight as an adult over the years.

Interviewer: …would you classify yourself as obese or overweight or normal or –

Interviewee: Well, definitely overweight. I don't know what the technical range is for obesity.But yes, I would definitely classify myself as overweight right now.

The obese social worker cited earlier talked about her alters and obesity:

Interviewer: You don't have any obese people in your network. You told me when you sat down that you were now obese, does it surprise you that you didn't say that anyone was obese?

Interviewee: You know what; I wouldn't say I was obese unless I looked at the chart that said I was obese. Technically I guess my husband would technically fall within that category because the doctor did tell me he was obese. Looking at him I wouldn't say he was obese, I would say he is overweight. The doctor did tell me he was obese…. Technically speaking, I would probably say they [some of her social network members] really are by the definition. If you look at the chart they probably are all obese.

A 24-year-old graduate student discussed her father's weight in the context of her social network and what the definition of obesity is to her:

Interviewer: So the only person you said was obese was your father –and I don't know, why did you laugh?

Interviewee: Well it's hard to say what obese is, and what overweight is. It's hard to –

Interviewer: Well that's why I'm asking you.

Interviewee: He's the heaviest person of all those people out there. So that's why. But he's not 400 pounds. But he's well overweight…..I don't really even know if I'd say my dad was obese. I don't know. It's hard….Well I think obese is something where their weight would become a medical issue. And therefore I would say my dad, and nobody else, I don't think. Weight would be an issue medically.

The woman in the married couple cited earlier explained her difficulty with labeling some of her alters according to their weight status:

Interviewer: …. there is nobody in your network that you named as being obese. Does that seem unusual to you?

Interviewee: No, it is possible that a couple of people might be technically – I don't know though. I mean I don't really know what the definition of obese is. It's just, you know…..I think it's probably there's probably a feeling of not wanting to call your friend obese if you can really help it.

This claim of uncertainty or ignorance as to the definition of obesity appears to be an excuse for people to call themselves or alters overweight rather than obese, perhaps partly because obesity as a label still has much stigma attached to it. Appealing to

technical or official criteria for obesity, and lack of knowledge thereof, enables individuals to avoid making what they may perceive as harsh judgments of alters. Others seem to resist the authority of science and medical knowledge, which could be a way to compensate for lack of knowledge or could be a self-defense mechanism. One woman (62 years old, retired) talked with me about how surprised she was to hear from her doctor that she was obese. She knew that she was overweight, but she never thought of herself as obese. For her, to be obese is to be a really, really big person, and she did not see herself this way. It is also clear that for her, there is significant stigma attached to being officially (i.e., medically) identified as obese. During the social network interview, she alluded to how it made her feel:

Interviewer: … when your doctor tells you that you're obese, how does the conversation go after that?

Interviewee: Right. He says – he wrote, "Obese," at the top of my chart. I said, "That's really cruel." I said, "That is not warranted, [doctor]." I said, "Shame on you."

Related to individuals' claims that they do not know what obesity looks like, some people stated that they do not notice that people they care about are heavy, because they focus on the person's personality or other emotional characteristics as defining features. One young woman (26 years old) explained how in the case of both her close friend and her father (whom I also interviewed and whose BMI placed him in the category of obese), she only sees them for who they are inside and what their relationship is to her:

Interviewee: Well [female friend] has lost a ton of weight. That's one of things I don't notice on people. She'll talk about it sometimes to us; she will be like I lost seventy pounds. If it's someone I see every day, I am very likely to not notice that sort of thing at all. Then you see pictures from a year

ago and you're like, oh my God you really did. To me you just look like [female friend], you're my friend.

Interviewee: My dad eats very healthy food, but I think he overeats. He's better than he used to be and he gets tons of exercise. He might just be that way and there's nothing you can do about it. He's certainly not fat, he bikes everywhere. I know he's always dieting, that right there he obviously has a weight issue if he has to diet, he needs to lose weight. To me he always looks the same, but to him it's a big deal, his weight gain and weight loss, I would never know except to hear him talk about it.

A 55-year-old retired teacher also told me about her uncertainty as to how she should classify a friend's weight:

Interviewee: And some of them are, you know, ten pounds overweight and some might be twenty or thirty. So is twenty or thirty pounds obese as I look at it? I think by medical standards it probably is. So I might be off on, is it because I have, you know I look at them not for their outside. Like my friend, she probably, I should've said obese but you know, she's very active and she just has always been that way. I bet she could lose thirty pounds so I think technically she probably would be considered obese.

Finally, the interview data also suggest that for some interviewees, their perceptions of alters' weight status is not so much due to ignorance of the definition of obesity but instead is highly influenced by an alter's perception of his or her own body. For example, ego might explain that even though he feels an alter is of normal weight, if the alter talks constantly about being overweight, ego revises his judgment and calls the alter overweight, rather than of normal weight. One 41-year-old secretary whose BMI placed her in the category of overweight, though she described herself as normal, talked with me about one of her friends who was also a co-worker:

Interviewer: You seemed really conflicted when we got to [female co-worker and friend] about her weight.

Interviewee: I think with her, I don't know what it is, when I look at her I don't see her as being overweight, I just hear her talking that she thinks she has

a weight problem, to me I really don't see it. I think maybe it is her saying that she is that maybe made me think that she is, but looking at her I don't think she is.

The college professor cited earlier told me that one friend's perception of his own body influenced how he (the professor) rated his (the friend) weight status. He also mused about how he perceives his own weight might affect how his friend would categorize him, if asked.

Interviewer: ….so you have nobody in your network who you said is obese. Does that seem odd to you?

Interviewee: No.

Interviewer: Okay, and there are just a few that you said were overweight: [male friend] it looks like–

Interviewee: And [male friend] is on the line. He just – I think the reason I said that is he always talks, like me, about losing weight. I don't think that he's huge or anything like that.

Interviewer: Okay, but then you called your – you didn't call yourself overweight.

Interviewee: No, but you know, if [male friend] were asked if I was overweight, he might say yes because I complain about it all the time. Otherwise I would say, no, [male friend] is not overweight. Does that make sense? But because he says, "Oh, I need to lose weight, I'm so heavy," then I'll say that he is. And the same with [aunt] – she's not really – I don't think she's overweight. She just constantly talks about dieting.

These rich interview data show support for the possibility that the perception of what obesity looks like is changing, especially for people who have BMIs which place them in the category of obese. As the number of overweight and obese people in the United States has increased people have become less surprised by largeness; in fact largeness is now the norm, with over two-thirds of people in the United States overweight or obese. But being desensitized to size does not mean that the attributes people attach to those who are obese necessarily change or disappear. People also

resist the label of obese for themselves and for their family, friends and coworkers because there is still significant stigma attached to this label. People who are overweight or obese may have a heightened awareness of this stigma, and so for this reason too may be more likely assign a smaller size to those in their social network who are overweight and obese, whether they know they are doing this or not.

It is also possible that people are simply judging others' body size relative to their own. For example, being overweight or obese may cause one to view people of normal weight as underweight. This relative judgment may also hold for people of normal weight or underweight, who may judge people to be larger than they are, though this possibility finds little support in these data.

Obesity in the Network

Analyses so far have revealed that the percent of the network that ego deems to be overweight or obese is important in several ways. But an additional question is whether this variable stands as significant in predicting BMI when placed into a regression model with other non-network variables. I tested this by using the variables of cultural competence score, years of education, "silhouette of self correct", and "weight categories match", in addition to percent of the network ego deemed to be overweight or obese, to predict. BMI in a regression model (n=52). "Silhouette of self correct" and "weight categories match" were also shown earlier to be important variables. A stepwise model using these five variables finds "weight categories match" as the one variable significant in predicting BMI, with an R^2 of .086 (Table 8-12). However, if age is added as a sixth independent variable to the model, then a stepwise method finds age and percent of the network ego deemed to be overweight or obese

together as the significant predictor variables, with an R^2 of .181, and “weight categories match” falls out of the model (Table 8-13).

Outside of the regression models, the percent of the network ego deemed to be overweight or obese is significantly inversely correlated with BMI even when controlling for age. “Weight categories match” is also significantly inversely correlated with BMI, but when controlling for age, the significance disappears (statistical correlations not shown). As mentioned earlier, people tend to gain weight as they age, which makes it clear why this variable is significantly associated with and predictive of BMI. If age is not taken into account, then the variable “weight categories match” is more powerful than the percent of the network ego deemed to be overweight or obese in predicting BMI. However, what is notable is that both of these variables, “weight categories match” and percent of the network ego deemed to be overweight or obese have to do with misperception of weight, both ego’s and that of ego’s alters.

Differences in Social Networks by Weight Category

I conducted one more multivariate analysis using these social network variables and BMI. I considered whether the mean for any of the social network variables might vary by weight status using three categories: people who were underweight or of normal weight, overweight people, and obese people. I conducted analysis of variance (ANOVA) tests to check for significant differences in the ten social network variables listed in Table 8.5. For two of the variables, ‘average closeness of alters’ and ‘percent of the network ego judged to be overweight or obese’, F was significant. For the variable ‘percent of the network ego judged to be overweight or obese’, the groups did not have equal variances. While ANOVA is robust to this violation when groups are of near equal

size, I also report here Welch's statistic, which is more powerful than F when the sample sizes and variances are unequal. The test statistics are shown in Tables 8-14 and 8-15.

ANOVA post hoc tests shown in Tables 8-16 and 8-17 tell which groups significantly differed for these two variables. Tamhane's test, rather than Bonferroni, was used for the variable "percent of the network ego judged to be overweight or obese" because the population variances for the groups were unequal. Obese people had significantly higher average closeness with their network than people who were underweight or of normal weight (as a group). Obese people named a significantly lower percentage of their network as overweight or obese than underweight and normal weight people (as a group). There were no other significant differences between groups for either of these variables, although the difference between overweight and obese groups for the variable "percent of the network ego judged to be overweight or obese" was almost statistically significant.

The significant results for the variables "average closeness of alters" and "percent of the network ego judged to be overweight or obese" provide additional support for some of the results discussed earlier in Chapter 8. Recall that density was found to be positively but not significantly correlated with BMI. I discussed why this might be so, that closeness and density of social networks might both facilitate the spread of obesity. The fact that obese individuals feel significantly closer overall to the people in their social networks compared to people who are underweight or of normal weight suggests that closeness of a social network could play an important role in the lives of obese people in explaining obesity. It is also clear yet again that obese people

labeled significantly fewer people in their network as overweight or obese than people who are underweight or of normal weight did.

Summary

Chapter 8 has described how facets of the data gathered about the egocentric networks of individuals are or are not associated with overweight and obesity and does or does not predict it. I also discussed some of the ways my respondents perceived what obesity and overweight look like. Family membership in the social network and eating and talking with family members in individuals' social networks were not significantly associated with BMI, nor was density of the network significantly associated with BMI. Therefore there was no support for either of the two hypotheses in this chapter, that people whose family members figure centrally in their social networks would have lower BMI and that density of one's social network would vary inversely with BMI. The only social network variable that was significant in predicting BMI was "percent of the network ego judged to be overweight or obese."

People who are overweight or obese misestimated their own size significantly more than people who are underweight or normal weight, and obese people felt significantly closer to alters in their networks and judged significantly fewer alters to be overweight or obese than people who were underweight and of normal weight. Implications from these findings and those in Chapter 7 will be discussed further in Chapter 9, where I will also propose improvements and further research.

Table 8-1. Descriptive statistics for the 12 social network variables used in analyses. N=63.

		Average age of alters	Average closeness to alters	Percent network overweight or obese	Percent network eat with at least once a month	Percent network talk with about food, eating or health at least occasionally	Percent network family	Percent network living locally	Density of network	Percent network has good diet	Percent network has bad diet	Percent network family and eat with at least once a month	Percent network family and talk with about food, eating or health at least occasionally
Mean		43.4630	2.8001	33.30	29.48	45.16	34.21	68.40	0.3988	58.83	26.81	11.10	16.41
Median		42.9300	2.7300	30.00	23.00	40.00	33.00	77.00	0.3793	57.00	27.00	10.00	13.00
Mode		41.17[a]	2.47	20[a]	23	30[a]	17	93	0.3793	53	30	7	7
Std. Deviation		7.74583	0.54182	13.837	16.535	22.257	18.092	24.667	0.1567	17.381	15.097	9.995	13.227
Percent-iles	25	37.0700	2.3700	23.00	17.00	30.00	57.00	0.2805	47.00	13.00	3.00	7.00	20.00
	50	42.9300	2.7300	30.00	23.00	40.00	77.00	0.3793	57.00	27.00	10.00	13.00	33.00
	75	49.1700	3.2000	43.00	40.00	60.00	87.00	0.4874	73.00	37.00	13.00	20.00	50.00

Table 8-2. Pearson correlation for BMI and one social network variable. N=63.

		Percent network family
BMI	r	0.115
	r^2	0.013
	Sig. (2-tailed)	0.368

Table 8-3. Spearman correlation for BMI and two social network variables. N=63.

		Percent network family and eat with at least once a month	Percent network family and talk with at least occasionally
BMI	r	-0.031	0.018
	r^2	0.001	0.0003
	Sig. (2-tailed)	0.810	0.889

Table 8-4. Pearson correlation for BMI and network density. N=62.

		BMI
Density of network	Pearson Correlation	0.101
	r^2	0.010
	Sig. (2-tailed)	0.436

Table 8-5. Social network variables considered for regression model.

Average age of alters
Average closeness of ego to alters, judged by ego
% of the network ego judged to be overweight or obese
% of the network ego ever eats with
% of the network ego ever talks with about food, eating and/or health
% of the network who are family members
% of the network who live locally (within the study recruitment area)
% of the network ego judged to have good or excellent diets
% of the network ego judged to have poor or terrible diets
Density of network

Table 8-6. Pearson correlations for the social network variables used in the research. N=58.

		BMI	Average age of alters	Average closeness to alters	Percent network overweight or obese	Percent network ever eat with	Percent network ever talk with about food, eating or health	Percent network family	Percent network living locally	Density of network	Percent network has good diet	Percent network has bad diet
BMI	r	1										
	r^2											
Average age of alters	r	0.091	1									
	r^2	0.008										
Average closeness to alters	r	0.156	-0.170	1								
	r^2	0.024	0.029									
Percent network overweight or obese	r	-0.280*	0.193	-0.093	1							
	r^2	0.078	0.037	0.009								
Percent network ever eat with	r	0.036	-0.179	0.516*	0.305*	1						
	r^2	0.001	0.032	0.266	0.093							
Percent network ever talk with about food, eating or health	R	0.019	0.124	0.428*	0.160	0.427*	1					
	r^2	0.0003	0.015	0.183	0.026	0.182						
Percent network family	r	0.111	-0.130	0.107	-0.024	-0.031	-0.140	1				
	r^2	0.012	0.017	0.011	0.0006	0.001	0.02					
Percent network living locally	r	0.008	0.114	-0.295*	0.171	0.012	-0.092	-0.426*	1			
	r^2	0.0006	0.013	0.087	0.04	0.0001	0.008	0.182				
Density of network	r	0.111	-0.219	0.342*	0.023	0.386*	0.026	0.153	-0.055	1		
	r^2	0.012	0.048	0.117	0.0005	0.149	0.0006	0.023	0.003			
Percent network has good diet	r	0.013	0.027	0.339*	-0.416*	0.057	0.156	0.089	-0.327*	0.033	1	
	r^2	0.0002	0.0007	0.115	0.173	0.003	0.024	0.008	0.107	0.001		
Percent network has bad diet	r	-0.164	0.002	-0.034	0.588*	0.005	0.090	-0.018	0.114	0.118	-0.599*	1
	r^2	0.027	0.000	0.001	0.348	0.00003	0.008	0.0003	0.013	0.014	0.359	

Table 8-7. Regression statistics: dependent variable BMI (stepwise method). N=57.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.329[a]	0.108	0.092	5.8194

a. Predictors: (Constant), percent network overweight or obese

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	225.592	1	225.592	6.661	0.013[a]
	Residual	1862.590	55	33.865		
	Total	2088.182	56			

a. Predictors: (Constant), percent network overweight or obese

b. Dependent Variable: BMI

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	32.401	2.102		15.412	0.000
	Percent network overweight or obese	-0.149	0.058	-0.329	-2.581	0.013

a. Dependent Variable: BMI

Table 8-8. Cross-tabulation and kappa test for whether individuals correctly identified their own weight categories. N=63.

		Self ascribed weight category				
		Underweight	Normal	Overweight	Obese	Total
True BMI category	Underweight	1	1	0	0	2
	Normal	2	17	2	0	21
	Overweight	0	7	11	0	18
	Obese	0	4	14	4	22
Total		3	29	27	4	63

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.320	.080	4.307	<.001

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 8-9. Cross-tabulation and kappa test for whether individuals correctly identified the appropriate silhouettes for their bodies. N=54.

		BMI category of silhouette chosen for self				
		Underweight	Normal	Overweight	Obese	Total
True BMI category	Underweight	1	1	0	0	2
	Normal	0	17	4	0	21
	Overweight	0	6	8	0	14
	Obese	0	0	9	8	17
Total		1	24	21	8	54

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Measure of Agreement	Kappa	.455	.094	5.163	<.001

a. Not assuming the null hypothesis.
b. Using the asymptotic standard error assuming the null hypothesis.

Table 8-10. Point biserial correlation between BMI and two weight judgment variables.

		Weight categories match?	Silhouette of self correct?
BMI	r	-0.320	-0.046
	r^2	0.070	0.002
	Sig. (2-tailed)	0.017	0.745
	N	55	53

Table 8-11. Descriptive statistics and means test for BMI by whether people correctly categorized their own weight status. N=56.

	Weight categories match?	N	Mean	Std. Deviation	Std. Error Mean
BMI	No	24	30.225	7.1300	1.4554
	Yes	32	25.719	5.2074	0.9205

	t-test for Equality of Means					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
BMI	2.735	54	0.008	4.5063	1.6474	1.2034	7.8091

Table 8-12. Regression statistics: dependent variable BMI (stepwise method). N=52.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.293[a]	.086	.067	6.0036

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	162.803	1	162.803	4.517	.039[a]
	Residual	1730.102	48	36.044		
	Total	1892.905	49			

a. Predictors: (Constant), weight categories match?

b. Dependent Variable: BMI

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	29.200	1.342		21.751	<.001
	weight categories match?	-3.683	1.733	-.293	-2.125	.039

Table 8-13. Regression statistics: dependent variable BMI (stepwise method). N=52.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.325[a]	.106	.087	5.9382
2	.426[b]	.181	.146	5.7426

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	200.307	1	200.307	5.680	.021[a]
	Residual	1692.598	48	35.262		
	Total	1892.905	49			
2	Regression	342.975	2	171.487	5.200	.009[b]
	Residual	1549.930	47	32.977		
	Total	1892.905	49			

a. Predictors: (Constant), age

b. Predictors: (Constant), age, % network ow or ob

c. Dependent Variable: BMI

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	20.539	2.834		7.248	<.001
	age	.153	.064	.325	2.383	.021
2	(Constant)	24.392	3.308		7.374	<.001
	age	.160	.062	.341	2.583	.013
	% network ow or ob	-.121	.058	-.275	-2.080	.043

Table 8-14. ANOVA test of average closeness to alters by three categories of weight: people who were underweight or of normal weight, overweight, or obese. N=58.

ANOVA

Average closeness to alters

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.805	2	0.902	3.201	0.048
Within Groups	15.503	55	0.282		
Total	17.308	57			

Table 8-15. ANOVA test and Welch's statistic of percent of the network ego judged to be overweight or obese by three categories of weight: people who were underweight or of normal weight, overweight, or obese. N=58.

ANOVA

Percent of the network ego judged to be overweight or obese

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1541.800	2	770.900	4.842	0.012
Within Groups	8757.045	55	159.219		
Total	10298.845	57			

Welch's test of Equality of Means

Percent of the network ego judged to be overweight or obese

	Statistic[a]	df1	df2	Sig.
Welch	6.702	2	34.125	0.004

a. Asymptotically F distributed.

Table 8-16. Bonferroni post hoc test for average closeness of alters by three categories of weight: people who were underweight or of normal weight, overweight, or obese. N=58.

Dependent Variable: Average closeness to alters
Bonferroni

(I) BMI category	(J) BMI category	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Underweight and normal	Overweight	-0.18529	0.16981	0.840	-0.6046	0.2340
	Obese	-0.42278	0.16708	0.043	-0.8354	-0.0102
Overweight	Underweight and normal	0.18529	0.16981	0.840	-0.2340	0.6046
	Obese	-0.23748	0.17956	0.574	-0.6809	0.2059
Obese	Underweight and normal	0.42278	0.16708	0.043	0.0102	0.8354
	Overweight	0.23748	0.17956	0.574	-0.2059	0.6809

Table 8-17. Tamhane post hoc test for percent of the network ego judged to be overweight or obese by three categories of weight: people who were underweight or of normal weight, overweight people, obese people. N=58.

Dependent variable: Percent of the network ego judged to be overweight or obese.
Tamhane

(I) BMI category	(J) BMI category	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
Underweight and normal	Overweight	0.972	4.556	0.995	-10.50	12.45
	Obese	11.524	3.459	0.006	2.89	20.16
Overweight	Underweight and normal	-0.972	4.556	0.995	-12.45	10.50
	Obese	10.552	4.177	0.053	-0.12	21.22
Obese	Underweight and normal	-11.524	3.459	0.006	-20.16	-2.89
	Overweight	-10.552	4.177	0.053	-21.22	0.12

CHAPTER 9
CONCLUSION

Demographic shifts over time have brought individuals in developed nations to a place where they now suffer overwhelmingly from chronic, degenerative diseases instead of acute, infectious ones. Obesity itself can be a chronic illness, and contributes to many others in the modern environment. The burden of obesity is increasingly being shifted to the poor, or in some places, the SES gradient for obesity may be disappearing. Globalization has contributed to the rise of obesity worldwide through mechanisms such as delocalization, and the nutrition transition is a global phenomenon. Recent anthropological research into topics surrounding food in the United States have tended not to focus on obesity but rather on more specific topics such as CSAs. This research project helps to fill this gap, and yielded a number of interesting results, which are summarized in Table 9-1.

In addition, the research methods and data collection techniques I used, while not novel in and of themselves, were employed in a way which linked all of them and led to an integrated dataset. The steps involved in the cultural consensus and behavior consonance data collection and analyses comprised a series of steps, with each set of data and its analysis being used to build the next instrument and analysis. This process included the freelists, structured interview, and food diaries. Had I not done this, there would have been no way to test the hypotheses about cultural models and behavior consonance. Because I asked people to complete multiple tasks, the social network data further informed individuals' structure interviews and food diary data. The social network data were used alone but also with the structured interview data for the findings about perception of weight status outlined in Chapter 8.

Major Research Findings

I found a statistically significant level of agreement for models of healthy and unhealthy foods, as well as some intracultural variation in models according to age, income, education and weight status. These models reproduced a large amount of public health information about healthy foods, for example, that fruits, vegetables, lean meats and low-fat dairy are healthy foods, and soda, candy and French fries are unhealthy foods. These models also showed respondents' ambiguity as to how healthy some foods are. Such foods possess characteristics that people consider to be both healthy and unhealthy, which results in disagreement over how healthy these foods are and therefore how they best fit in the diet. This ambiguity reveals the impossibility of defining healthy eating simply in terms of healthy/unhealthy foods, and also could help to account for the fact that cultural competence (knowledge) in the domains of healthy and unhealthy foods does not significantly impact BMI in this sample. Cultural competence was also not significantly correlated with intake of a set of twelve healthy and unhealthy foods, nor did intake of any these twelve foods significantly correlate with BMI. The variable that did correlate better (yet still not significantly) with food intake was age. That is, people who are older reported eating more foods deemed healthy and fewer of the foods deemed unhealthy by the cultural models.

The fact that cultural competence (knowledge) in the model of healthiness of foods did not correlate with behavior consonance (food intake) in this population speaks to the futility of the educational model of social change, or the idea that to create better behavior, all that needs to be done is to create better beliefs and attitudes (Bernard 2011:67-68). In this case, people know what foods are good and bad for them, but it makes little difference in their diets—people who know more about what foods are

healthy do not eat more of them than people who know less about what foods are healthy. Educating people about what foods they should eat will not turn the tide of obesity in the United States. Harris' (1979) cultural materialist theory explains why this should be so. The theory states that behavior (culture) change is located in the material conditions of life rather than in human systems of thought, and change is tied to basic biological needs of society. He outlines three levels of culture: the infrastructure (e.g., modes of production), the structure (domestic and political economy) and the superstructure (culture). The infrastructure of society determines the structure, which in turn determines the superstructure. If a behavior is rooted in the culture of society, that is, in the superstructure, it is easier to change it. Advertising works to get people to change brands — to switch from one brand of car to another, for example, but not to get people to stop driving; or to switch from one method of birth control to another once women have decided to limit their fertility (Bernard 2011:68). But if the behavior is rooted in the structure or infrastructure of society (driving a car to work to work when there is no public transportation), then education to change the behavior will not work. Eating is clearly a biological need, and how people eat is rooted in the infrastructure and the structure. For example, as mentioned in Chapter 4, the way that the federal Farm Bill keeps the price of commodities such as corn, soybeans, sugar, and meat artificially low allows for these foods and foods made from them to be priced very low in the marketplace: this is why hamburgers at fast food outlets are so cheap. As a related example, the rise of the fast food industry in the United States in the mid-20th century is directly linked to the increased number of women in the workforce. Most people know exactly what they should and shouldn't be eating, but if they cannot afford the healthier

food, they cannot eat it. If the household is working and nobody is at home to cook meals, they will be eaten away from home. In the case of food, there are many structural and infrastructural variables which determine how people eat.

For these people in upstate New York, education and income were only weakly linked to BMI. With such a large number of people in the United States now overweight or obese, it is conceivable that income, education, or other measures of socioeconomic status may no longer be as strongly associated with overweight and obesity as they were in the past. But it is also the case that, for example, twenty-eight (44%) of my sample of sixty-three social network interviewees reported their income as less than or equal to $25,000 a year after taxes, which, given the economic climate at the time this research took place, might partly explain the lack of association. That is, previous research has found low SES to be linked with obesity for some groups (see Chapter 4), so for example, if people who normally earn a median-level income are only recently out of work or earning significantly less money but are not obese, a relationship between SES and weight would not have emerged for this dataset. However, recent research has also demonstrated that the correlation between socioeconomic status and obesity in the United States has weakened since 1971 (Zhang and Wang 2004), and a French study (Vernay et al. 2009) found inconsistent trends in socioeconomic status and overall overweight or obesity (measured by BMI) and central obesity (measured by waist circumference) between sexes: the relationship between socioeconomic status and weight was more stable for women than for men. Alternatively, my results may support the position of researchers like Wilkinson, who see the relative distribution of income as the most influential factor for health outcomes.

Social networks were also not important in helping to predict who is overweight or obese in this dataset. This is contrary to expectations based on the work of Christakis and Fowler (2007). However, Christakis and Fowler studied a large sample of networks over time, while my data are snapshots of networks. For my dataset, variables related to family in the network and the network structural variable of density were not significant in predicting BMI. If family variables do significantly impact an individual's eating habits, it may be that they do so in ways more specific than I measured, or it may be that the sample size was insufficient to detect the effect.

The one social network variable that was significant in predicting BMI, the percent of ego's alters who were deemed by ego to be overweight or obese, alerted me to possibilities about how individuals perceive their own and their alters' weight status. The larger ego was, the fewer alters in his or her network that ego claimed were overweight or obese. People who were overweight or obese also misclassified themselves in terms of weight status more often than did people who were of normal weight or underweight. These two findings indicate two possibilities, both of which find additional support in the interview data: perceptions have shifted or are shifting for those who are overweight or obese as to what overweight and obese bodies look like; or, these larger individuals are judging others' size relative to their own.

Implications of the Research

Although I did not examine all the variables that could possibly impact BMI for this population (especially exercise, tobacco use, and additional disease burdens), the results of this research hold implications for health interventions and policy. The knowledge individuals displayed about the healthiness of foods, while framed here in terms of a shared cultural model, did mirror much public health information about

healthy foods. People who have more of this knowledge, however, do not eat significantly more of the healthier foods, nor do they have significantly lower BMIs. Therefore, for this sample, efforts to reduce body mass should be directed less toward education about diet and more toward changing material conditions which may induce people to eat poorly, for example,lack of transportation: a better bus system can help people get to grocery stores so that they do not have to shop at a gas station convenience store. Income and education also did not significantly impact BMI or intake of certain foods in this sample. Research efforts to understand the contributors to obesity in this population could be shifted to focus on other social structural variables, some of which may be related to income and education.

Behavior consonance, that is, intake of a set of twelve foods which covered a wide range of food categories, did not significantly impact BMI. This is not to say that what people eat makes no difference for BMI but that the foods selected for study here may have little impact. Future research, for example, could also determine whether cooking methods influence BMI, and education efforts could then be directed to improve those methods.

Older individuals' diets included more of the foods deemed healthy and fewer of the foods deemed unhealthy by the cultural model. It is important to understand why this should be so, and how this phenomenon could be used to effect change in younger people's diets. For example, older individuals identified as having better diets could serve as community mentors in this capacity.

Perceptions of overweight and obesity are different for heavier people in this population, though it is unclear why. If perceptions of overweight or obesity have shifted

or are shifting, rather than individuals simply judging others' weight relative to their own, this could be dangerous for public health in that such perceptions could contribute an additional factor to the already difficult task of weight reduction: if people do not see the problem, it is harder to make a change.

Finally, although most facets of individuals' social networks were not significantly correlated with BMI, the trend of obese people feeling closer to their alters holds potential for behavior change. Closeness may or may not indicate greater communication within a network or between ego and his or her alters, but if greater closeness does lead to increased communication and contact, these ties could be used to try to encourage and facilitate obese egos to lose weight via information transmission by and behavior modification of alters.

I set out to test whether there existed a shared cultural model of the healthiness of individual foods, that is, to measure cultural consensus about healthiness of foods, and then measure, as Dressler (2007:30) put it, "the degree to which individuals incorporate shared meaning into their own beliefs and behavior." I did find the shared model, but the hypothesis that higher behavior consonance with the model would correlate with healthier (lower) BMI was not supported. Nor was it true that people who knew more about which foods were healthy ate consistently more of them and ate consistently fewer unhealthy foods.

I also set out to investigate the influence of social networks on individuals' BMI and food habits and to understand how the nature of the network as a whole might be linked with BMI or food habits. Just one of the social network variables under consideration was significantly linked with BMI, but I think of this as a good starting

point. Even if the attribute variables that I created about food, eating and health were not statistically significant predictors of BMI, I have much interview data that are suggestive about how individuals believe alters in their networks influence their feelings and actions about food. From here, I can refine social network variables and ask more specific questions. It may also be the case, of course, that social networks do not in fact account for much variation in obesity rates.

Lessons Learned and Future Research

Research involving diet and intake is always challenging. It is practically difficult to carry out, and isolation of relationships among certain foods and other variables is problematic due to so many additional variables that cannot be controlled easily or at all. While the food diaries were informative, they did not represent detailed intake of foods, nor was there any way to know how truthful or complete respondents were in their recordings. An additional possibility would be to have longer food diaries and to ask respondents to include photos of foods eaten (and not eaten).

There are improvements to be made using cultural consensus analysis and behavior consonance to study obesity and food. In this research I did not find ideal models of food behavior and therefore did not strictly follow Dressler's model to test for cultural consonance. Finding a model of the ideal healthy diet and using food diaries could be one possibility among many for testing cultural consonance in diet. There are other ways to measure behavior and behavior or cultural consonance, and there are other facets of healthy eating and healthy lifestyles that could be tested for consensus and intracultural variation. For example, it would be useful to elicit individuals' philosophies of eating, so to speak, to better understand food intake patterns and BMI.

Other structural measures of the social networks could be tested for significance for overweight and obesity or for food consumption habits, and other attribute variables could be added, such as whether ego likes alter. The influence of family should also be more closely examined with more detailed measurement of those relationships, contact, and food-related interactions with family members.

At the end of Chapter 7 I proposed additional research which called for closer examination of intracultural variation, and derivation of overall diet patterns and tests of their relationships to other variables. Another future avenue of research in terms of what people are eating, and which would require an interdisciplinary team, could focus on processed food intake. It has been shown that cooking (and other processing steps) significantly increases the net energy gain in foods consumed (Boback et al. 2007; Wrangham 2009), and anthropologists have hypothesized that the adoption of cooking would have led to an important increase in energy availability for early Homo and thus was likely of “substantial evolutionary significance” (Carmody and Wrangham 2009:379). Wrangham (2009) stated that “the less processed our food, the less intense we can expect the obesity crisis to be” (2009:206), and he argued for changing the current system (invented by W. O. Atwater) of calorie and nutrient content computation for foods. The Atwater system does not take into account the costs of digestion of foods, and assumes that the proportion of food digested is constant, whether the food is liquid, solid, cooked, or raw (Wrangham 2009:202-203). Wrangham also cited (2009:76-77) a study by Oka et al. (2003) in which ten rats were fed regular food pellets, which required substantial processing by the rats, and ten rats were fed the same food pellets that were softened by adding air to puff them up, which required far less processing

effort. The twenty rats ate an identical number of calories and exercised the same amount. The rats eating the softened food slowly became heavier than those eating the regular pellets. The soft pellets cost less, in terms of energy, to digest. Given this phenomenon, I can't help wonder to what extent consumption of these foods might contribute to obesity in this way.

Small scale research projects like this one yield results that might be used to tailor local-level interventions. Research of this kind can help uncover unique aspects of a problem in a community, the discovery of which then allows interventions to be tailored for culture. The results of this research spark ideas for such interventions, and also function as first steps for more anthropological research into the ever-evolving situation of overweight and obesity in the United States.

Table 9-1. Results, evidence, and implications of the research.

	Finding	Evidence	Potential policy implications
1.	There existed shared models of the healthiness of certain foods in this population, with little intracultural variation. These models reproduced much public health information about healthiness of foods.	Tables 7-11, 7-12	People know a lot about foods that are good for them, however, this level or kind of knowledge has little to do with food intake or BMI in this population. People who know more about which foods are healthier do not eat significantly more healthy foods or significantly fewer unhealthy foods. The focus for research and action should be on understanding and changing those material conditions which contribute to obesity in a community rather than on education efforts regarding healthy foods.
2.	Cultural competence in the domain of healthiness of foods contributed little to predicting BMI.	Tables 7-16, 7-17	
3.	Cultural competence in the domain of healthiness of foods was not significantly associated with behavior consonance, i.e., intake of twelve specific foods.	pp. 155-156, no table provided	
4.	None of the variables of sex, age, years of education or income were significant in predicting cultural competence.	Table 7-18	
5.	Years of education and income contributed little to predicting BMI.	Tables 7-16, 7-17	Research focus could shift to cultural, attitudinal, or other social structural variables
6.	Behavior consonance, i.e., intake of twelve specific foods, was not significantly associated with BMI.	Tables 7-13, 7-14, 7-15	In this population, research could focus on food preparation techniques, portion size, other foods eaten, and exercise and tobacco use.
7.	Age was the only variable for which there were any significant associations with behavior consonance, i.e., intake of twelve specific foods.	Table 7-19	Older individuals' diets appear to be qualitatively different from diets of younger people. Older people ate more foods deemed healthy and fewer foods deemed unhealthy by the cultural models. Research could focus on why this is so.
8.	Family membership in the social network and eating and talking with family members in individuals' social networks were not significantly associated with BMI.	Tables 8-2, 8-3	Family in the social network may influence eating and weight in more subtle ways than explored here. Future research should refine variables to uncover influence of family in social networks on individuals' weight status.
9.	The social network variable "percent of the network ego judged to be overweight or obese," was significant in predicting BMI.	Tables 8-4, 8-6, 8-7	If perceptions of what overweight and obesity look like have shifted for people who are larger, this could be dangerous for public health as these individuals may be less likely to see the need for weight loss or healthier lifestyle changes.
10.	People who are overweight or obese misestimate their own size significantly more than people who are underweight or normal weight.	Tables 8-8, 8-9, 8-10, 8-11	
11.	Obese people felt significantly closer to alters in their networks and judged significantly fewer alters to be overweight or obese than people who were underweight and of normal weight.	Tables 8-12, 8-13, 8-14, 8-15	This result is unexplained for this population and is a focus for future research. Plus, closer networks could be an advantage for health intervention for the most at risk individuals: closer networks may mean that more information may be transmitted to obese egos, thereby helping to facilitate behavior change for an obese ego.

APPENDIX A
RECRUITMENT POSTER

I used this poster at a table to recruit study participants in March 2009 at the Health and Fitness Expo, part of America's Greatest Heart Run & Walk in Utica, sponsored by the American Heart Association.

APPENDIX B
SOCIAL NETWORK INTERVIEW SCHEDULE

1. What is your sex?
    a. Male
    b. Female
2. How old are you? (text answer)
3. How would you describe your race/ethnicity?
    a. Black/African American
    b. White
    c. Latino/a
    d. Hispanic
    e. European
    f. Eastern European
    g. African
    h. Asian
    i. Southeast Asian
    j. Middle Eastern
    k. Other
4. How would you describe yourself in terms of your weight?
    a. Underweight
    b. Normal
    c. Overweight
    d. Obese
5. What is your current living situation?
    a. Live alone
    b. Married
    c. Divorced/Separated
    d. Live with partner/significant other
    e. Live with other family members
    f. Live with roommate/s not related
    g. Other
6. What is the highest level of education you have completed?
    a. Less than high school diploma
    b. GED
    c. High school diploma
    d. Some college
    e. Associate's degree
    f. 4-year degree
    g. Trade/vocational training
    h. Some graduate school
    i. Master's degree
    j. Ph.D.
    k. Medical degree
    l. Other
7. What do you do for a living? (text answer)
8. Please estimate your annual household income after taxes.

a. $1-$15,000
b. $16,000-$25,000
c. $26,000-$35,000
d. $36,000-$45,000
e. $46,000-$55,000
f. $56,000-$65,000
g. $66,000-$75,000
h. $76,000-$85,000
i. $86,000-$95,000
j. $96,000-$105,000
k. $106,000-$115,000
l. $116,000-$125,000
m. Over $125,000

9. In what town/village/city do you live? (text answer)
10. How tall are you? (measured with height rod by interviewer and entered as text)
11. How much do you weigh? (measured with scale by interviewer and entered as text)
12. Please list the names of 30 people that you know. Knowing means that you know the person by face and name, that you could contact him/her if you had to and that you have had some contact with him/her in the last two years.

THEN FOR EACH OF THE 30 PEOPLE (ALTERS) NAMED:

1. What is your relationship to [alter]?
    a. Spouse/partner
    b. Boyfriend/girlfriend
    c. Mother or father
    d. Sibling
    e. Other family member
    f. Friend
    g. Coworker/colleague
    h. Roommate/housemate
    i. Other
2. What is [alter's] age? If you are not sure, please estimate as well as you can. (text answer)
3. What is [alter's] sex?
    a. Male
    b. Female
4. How would you describe [alter's] race/ethnicity?
    a. Black/African American
    b. White
    c. Latino/a
    d. Hispanic
    e. European
    f. Eastern European
    g. African
    h. Asian

    i. Southeast Asian
    j. Middle Eastern
    k. Other
5. How much school has [alter] completed? If you are not sure, please estimate as best as you can.
    a. Less than high school diploma
    b. GED
    c. High school diploma
    d. Some college
    e. Associate's degree
    f. 4-year degree
    g. Trade/vocational training
    h. Some graduate school
    i. Master's degree
    j. Ph.D.
    k. Medical degree
    l. Other
6. What does [alter] do for a living? (text answer)
7. In what town does [alter] live?
8. Please rate on a scale of 1-5 your closeness with this person.
    a. Not close
    b. Minimally close
    c. Close
    d. Very close
    e. Extremely close
9. How would you describe [alter] in terms of his/her weight?
    a. Underweight
    b. Normal
    c. Overweight
    d. Obese
10. Do you ever eat with [alter]?
    a. No, never
    b. Just a few times per year
    c. About once a month
    d. 2 or 3 times a month
    e. Once a week
    f. A few times a week
    g. Daily
    h. I used to in the past, but not anymore
11. Do you ever talk about food, eating, and/or health with [alter]?
    a. No, never
    b. Rarely
    c. Only if there's a problem to be discussed
    d. Occasionally
    e. Frequently
    f. All the time, we love to talk about that stuff

12. Would you say that [alter] has a healthy diet?
    a. Yes, he/she's one of the healthiest eaters I know
    b. Yes, it seems good
    c. Not really
    d. No, it's terrible
    e. I don't know
13. What is the likelihood that [alter 1] and [alter 2] would talk to each other if you were not around? For example, if they ran into each other on the street or in a public place, would they talk to each other? THIS QUESTION WAS ASKED REGARDING EACH PAIR OF ALTERS POSSIBLE IN EACH PERSON'S NETWORK OF 30.

The visual representation of the interviewee's network was brought up on the computer screen, and the following script was used as a prompt to talk further about the interviewee's network. This is a modified version from the full original script, which contained more instructions for manipulating the visual representation in the software. The full original script was developed for use by trained interviewers other than the PI.

SOCIAL NETWORK VISUALIZATION INTERVIEW SCRIPT

On the screen you see dots and lines. The dots are labeled with the names of the people you said you know. A line between two people means they are "very likely" to talk to each other if you were not around. The dots that seem to be grouped together usually represent some kind of group.

1. Does this graph seem to show the people you know and how they know each other? Do the groupings make sense to you?

2. Please describe each group of dots to me. What about this group here? Why isn't it connected to anyone else? And of all the people in your network here, who do you really enjoy socializing with?

3. Now you can see the program has made some of your dots a different color. These dots are people who function as a kind of bridge between groups in your social network. Who is each of these dots? Why do you they seem to bridge groups in your network? (Interviewer: pick a couple of other dots). Why don't these people bridge any groups?

4. Now you can see the program has made the dots different colors according to people you said you eat with. Tell me about these people you eat with. Why don't you eat with (Interviewer: choose another two or three of the nodes labeled "never eat with" or "just a few times a year"). Do you feel like the people that you do eat with influence the way you eat at all? Is there anyone missing from this graph that you eat with? Is there anyone missing from this graph who you feel may influences the way you eat?

5. Now you can see the program has made the dots different colors according to people you said you talk about food, eating and/or health with. Tell me about these people you

talk about these things with. Why don't you talk about these things with (Interviewer: choose another two or three nodes labeled "never" or "rarely"). Do you feel like the people you talk about these things with influence your eating habits or health in any way? Is there anyone missing from this graph that you talk about these things with? Is there anyone missing from this graph who you feel may influences your eating habits or health? If someone in your network gave you advice about your health, or about what to eat, or about your weight, who would you trust, that is, who would you take advice about these things from?

6. Now you can see the program has made the dots different colors according to how you labeled people in terms of their weight. (Interviewer: based on what the graph looks like, for example, if there are groups of obese people, or nobody is obese in the network, you will find things to ask the person about, e.g., why do you think everyone in the group here is obese? Or Why do you think there are no obese people in your network? Etc.). Does this graph strike you in any way? Of the people who are obese (if there are any), please tell me for how long you would say each person has been obese. Have any of the people in this graph lost or gained a large amount of weight?

7. Now you can see the program has made the dots different colors according to whether you said people had a healthy diet. (Interviewer: Again, based on what the graph looks like, for example, nobody has a healthy diet, you will find what to ask, e.g., Do you think this group of people here, who you said have healthy diets, influence each other to eat healthfully in any way? Etc.). Does this graph strike you in any way? Has anyone in this graph drastically changed the way they eat?

APPENDIX C
FOOD DIARY SCHEDULE

Hello! Thank you so much for helping me with this project by agreeing to complete this food diary. Please remember that anything you write down will be kept completely confidential, and that it is not my intention to judge you in any way based on what you eat, how much you eat, or anything else. I simply want to understand the food culture in this area, and how food fits into your life.

Attached are a number of identical sheets that you will use to keep track of what you eat and the details about each time you eat. Use these instructions and keep in mind the following things:

1. Please set yourself up to keep track of your diet for **one complete week**. You may start on any day of the week, but make sure you get every day in there. There are a few questions to answer for each meal or thing that you eat, as you will see below.

2. Please remember to put down the **date on each and every sheet**! This is important.

3. For **each time you eat or drink something in a day, use a different sheet**. The sheets are printed front and back, so you should have plenty. If you do run out, lose sheets, or need more space to write, just attach a blank sheet, with the date marked clearly, and continue your record there. Do your best to answer each question.

4. Please **be as detailed as possible in everything you record**, for example: brand names or generic, is the milk 1% or whole, is the yogurt low-fat, what is in the dinner salad, is the fruit organic, are the vegetables frozen, canned or fresh, is the bread white or whole wheat, etc.

5. Please **estimate as well as you can how much of each thing you eat or drink**. However, I am not asking you to get out measuring cups or a scale to measure you food. Here are some examples: you ate one package of string cheese, one big bowl of cereal, half the box of macaroni and cheese, one half-pound hamburger, one chicken breast, one steak that said it was 6 ounces on the package. If you are eating things that are harder to estimate, like how many potato chips, or how much peanut butter you put on your toast, please use the guide below:

PORTION SIZE: VISUAL GUIDES Based on the size of an average adult

1/2 teaspoon = Fingertip
Butter, oil, margarine

1 teaspoon = Tip of thumb
Peanut butter, butter

1 tablespoon = 3 thumbtips
Peanut butter

1 ounce = Tip of thumb
Cubed meat, cheese

3 ounces = Palm of hand (Meat, fish)
1/4 cup = 1 layer on palm of hand (Mixed nuts)

1/2 cup = Rounded handful
(Cooked pasta, rice, ice cream)

1 cup = 2 cupped hands, two handfuls
(Cereal, popcorn, fruit)

1 cup = Tight fist (Vegetables, berries)

Sources: "The Portion Teller" by Lisa R. Young, Ph.D., R.D.; USDA dietary guidelines

Finally, I have attached a few pages in the front of this pack as examples for you to look at and use as reminders of what I am looking for. You do not have to type yours, of course.

If you have any questions at all, or if you lose the sheets, please call me at 315-765-1193 or email me at girouxs@ufl.edu.

DATE:

What did you eat and/or drink?

How much did you eat or drink (If the amount is not easy to describe, please refer to pictures in the instructions)?

How was the food or drink made?

What time did you eat or drink it?

Where and with whom did you eat or drink it?

Have you taken any vitamins or supplements today? If yes, please describe what they are and how much you took.

Please tell me any other details about this eating episode like was it a special occasion, how did you feel after you ate, were you eating something you don't like just to be polite, was this the first time eating this particular food, etc.

APPENDIX D
FINAL STRUCTURED QUESTIONNAIRE SCHEDULE

Hello! Thank you for taking the time to complete this final questionnaire for me. This questionnaire will take a little time to complete, so take your time, and I appreciate as much detail as you can give for each answer. Please remember that all information you provide to me is confidential and my intention is not to judge you in any way based on your answers to any of these questions.

For multiple choice questions, please only circle one answer, but feel free to write a comment in the margin if you like.

I know that some of these questions may repeat things that you and I have already talked about, but please answer them all anyway. If you need additional space write on the back or on another sheet of paper.

1. How much do you think what you eat affects your health in general?

a. What I eat is one of the most important things affecting my health
b. What I eat is very important for my health
c. What I eat is somewhat important for my health
d. What I eat doesn't make much difference for my health
e. What I eat doesn't make any difference for my health
f. What I eat is the least important thing affecting my health

1a. Please explain why you feel the way you do:

2. Where do you get most of your information about **food**? Please be specific.

3. Where do you get most of your information about **health**? Please be specific.

4. How much do you think each individual person is responsible for his or her own **weight**?
0-10% responsible
11-20%
21-30%
31-40%
41-50%
51-60%
61-70%
71-80%
81-90%
91-99%
100%

4a. Why do you think this?

5. How much do you think each individual person is responsible for his or her own **health**?

0-10% responsible
11-20%
21-30%
31-40%
41-50%
51-60%
61-70%
71-80%
81-90%
91-99%
100%

5a. Why do you think this?

6. How much does the **cost** of food matter in what you choose to eat? Please tell me why or how.

7. How much does **time** matter in what you eat? Please tell me why or how.

8. Do you feel overwhelmed by the choices of foods available to you to eat? Why or why not?

9. How many times a week would you say you normally eat outside of your home?

10. Where do you buy or get most of your food? Please give me specific names of places or people.

11. If you do not get any of your food from local farmers' markets, why not?

12. Do you know that there are community gardens in Utica where you can sign up to participate in taking care of the garden (even if you've never gardened before, they teach you) in exchange for some of the food you grow? Is this something you think you might ever do? Why or why not?

13. Are you currently trying to **lose** weight? If yes, why? And what are you doing to lose weight/what diet are you using?

14. Are you currently trying to **gain** weight? If yes, why? And what are you doing to gain weight?

15. Would you like to be a different weight than what you currently are? If yes, what would your ideal weight be?

16. How has the size and shape of your body changed during the course of your life? Why do you think it has or has not changed?

17. Do you think that being overweight or obese is dangerous to a person's health? Why or why not?

18. Do you have health insurance?

19. Has a doctor ever advised you to gain or lose weight to improve your health?

20. If yes to 19, did you follow or are you following that advice? Why or why not?

21. Have you ever gone to the doctor specifically for help with diet, exercise, or losing or gaining weight? If yes, please tell me a little about that time, for example, how it went, did you take the advice and why or why not, etc.

22. What do you think has **caused** the so-called "obesity epidemic" in our country?

23. What do you think **should be done** about the so-called "obesity epidemic" in our country?

24. Who lives in your household with you (please list relationship and gender)?

25. Do you know how to cook? If yes, how did you learn? If no, why do you think you don't know how?

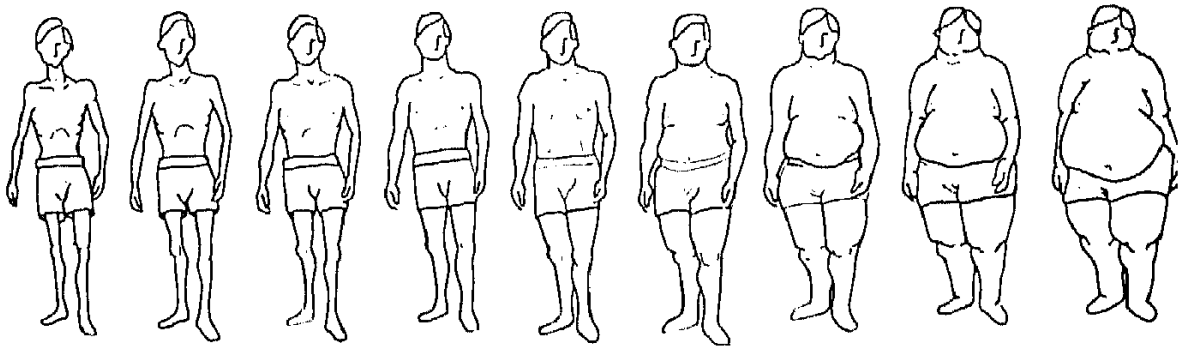
26. Who does most of the cooking in your household?

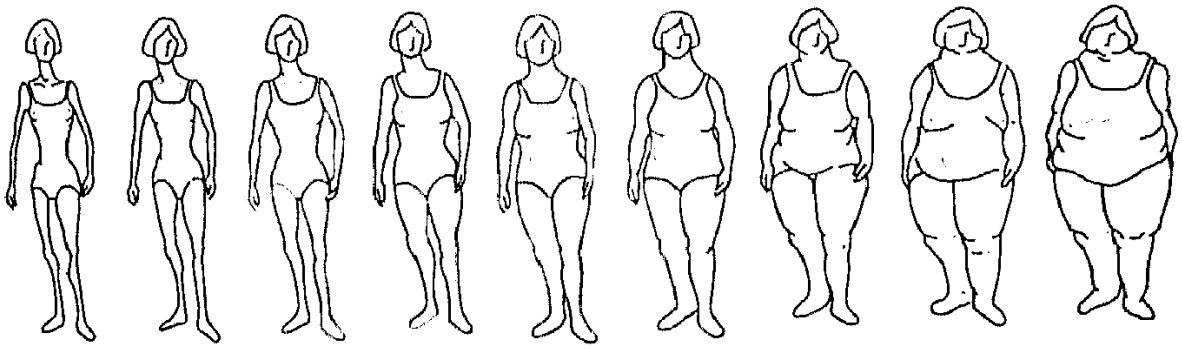
27. Please tell me a few of your most favorite foods to eat.

28. Do you or others in your household plan meals more than a day in advance? Do you write grocery lists?

29. During your interview about your social network, you named [alter] as being (obese or overweight). Please circle the silhouette that you think s/he looks most like.

30. During your interview about your social network, you named [alter] as being (obese or overweight). Please circle the silhouette that you think s/he looks most like.





(Silhouettes adapted from Stunkard, Sørensen and Schulsinger 1983)

For each of the foods underlined, you will circle the letter below it that best describes how healthy *you think* each food is. Please only circle one letter for each food item. There are also two questions underneath each multiple choice, asking you the last time you ate this food and how often you usually eat it. If you cannot remember the last time you ate the food or how often you eat it, please just try to estimate as well as you can.

HEALTHINESS
Butter

A. One of the healthiest foods you can eat
B. Very healthy
C. Somewhat healthy
D. Neither healthy nor unhealthy
E. Somewhat unhealthy
F. Very unhealthy
G. One of the worst foods you can eat
When was the last time you ate this food?

How often do you usually eat this food?

The rest of the foods I asked people to rate and describe consumption of:
Apples
Cheese
Steak
Peanut Butter
Eggs
Potatoes
Pizza
Pasta
Broccoli
French fries
Salmon
Soda

Iceberg lettuce
Tomatoes
Ice cream
Turkey
Pretzels
Spinach
Sausage
Candy
Fried haddock
Onions
Maple syrup
Cornflakes
Margarine
Rice a Roni
Strawberries
Triscuit crackers
Potato chips

APPENDIX E
COMPLETE LISTS OF HEALTHY AND UNHEALTHY FOODS

Healthy foods freelisted (N=336) alphabetical order:

2% milk
acai berry
acorn squash
almonds
apples
apricots
arugula
asparagus
avocado
baked food
baked potato chips
baked potatoes
bananas
barley
basil
bean sprouts
beans
beef
beets
berries
black beans
black eyed peas
black olives (not canned)
blackberries
blueberries
bok choy
bran
broccoli
broccoli rabe
bronzini
brown rice
brussels sprouts
bulgher
butter
butternut squash
cabbage
canola oil
canteloupe
carrots
carrots and dip
cashews
catfish

cauliflower
celery
celery and blue cheese
cereal
chard
cheerios
cheese
cherries
chicken
chicken soup
chickpeas
chili peppers
chocolate
chunky soup
cider
cilantro
citrus fruit
clams
clementines
coconuts
cold sandwich
collard greens
cooked cabbage
corn
cornflakes
cottage cheese
couscous
crab
crackers
crackers with pepperoni and cheese
cranberries
cranberry juice
cream of wheat
cucumbers
dark chocolate
dried beans
dried chickpeas
dried dates
dried peas
edamame
egg beaters
egg whites
eggplant
eggs
eggs (local)
elk

enriched cereal
escarole
escolar
falafel
feta cheese
figs
fish
fish broiled
fish low in mercury
flax
flaxseeds
free range happy animals
french fries
fresh herbs
fried meats
fried potatoes
frozen corn
frozen pizza
frozen yogurt
fruit juice
garlic
ginger
goat
grains
granola
grape juice
grapefruit
grapes
green beans
green tea
greens
grilled hamburger
haddock
haddock broiled
haddock not fried
ham
herbal tea
herbs
homemade chicken soup
homemade soup
homemade vegetable juice
honey
honeydew
hummus
ice cream
ice milk

jello
kale
kasha
kashi
kidney beans
kielbasa
kiwi
kolhrabi
lamb
lean bacon
lean beef
lean meat
lean pork
leeks
legumes
lemons
lentils
lettuce
lima beans
limes
liver
lobster
low cal cottage cheese
low salt ham
low salt sandwich meat
low sodium foods
low sodium V8
lowfat cheese
lowfat dairy
lowfat milk
lowfat muffins
lowfat salad dressing
lowfat yogurt
mahi mahi
mango
maple syrup
mashed potatoes
meat
melon
milk
molasses
mollusks
moose
multigrain bread
mushrooms
mussels

mustard
navy beans
nectarines
no trans fats
non starchy foods
nonfat yogurt
nuts
oat bran
oatmeal
oats
oil salad dressings
olive oil
olives
onions
opah
orange juice
oranges
organ meats
organic coffee
organic eggs
organic is better than commercial
organic kale
organic lettuce
oysters
papaya
parsley
parsnips
passion fruit
pasta
peaches
peanut butter
peanuts
pears
peas
pecans
peppers
pickled cucumber
pickles
pine nuts
pineapple
pinto beans
pita
pizza
plain bagels
plain popcorn
plain yogurt

plums
pomegranate
pomegranate juice
popcorn
pork
potatoes
poultry
pretzels
prunes
pumpkin
quinoa
radishes
raisins
raspberries
red meat
reduced fat cheddar
rhubarb
rice
rice and beans
rice noodles
rutabaga
rye
salad
salmon
salsa
sardines
scallions
scallops
seafood
seeds
sesame seeds
shallots
shellfish
shredded wheat
shrimp
skim milk
smart sense
smoothies
sorbet
soup
soy milk
soy products
soybeans
soynuts
spaghetti squash
spelt

spinach
splenda
sprouted bread
sprouts
squash
squid
squitsli
star fruit
steak
strawberries
sugar free candy
sugar free cookies
sugar free dip
sugar free jello
summer squash
sweet potatoes
swordfish
tabbouleh
tangerines
tea
tilapia
tilapia baked
tofu
tomatoes
trout
tuna
turkey
turnips
unsalted almonds
unsalted cashews
unsalted peanuts
unsulfured dried fruit
vegetable juice
veggie pizza
venison
vinegar
walnuts
water
watercress
watermelon
wheat
wheat bread
wheat germ
wheatgrass
white beans
white fishes

whole grain bread
whole grain cereal
whole grain crackers
whole grain pasta
whole grain tortillas
whole wheat bread
whole wheat cereal
whole wheat crackers
whole wheat pasta
wild salmon
wild scallops
wine
winter squash
yams
yellow beans
yellow squash
yogurt
zucchini

Unhealthy foods freelisted (N=194) alphabetical order:

alcohol
almost all the food in grocery stores
animal fats
anything with partially hydrogenated oils
arby's
artificial sweeteners
bacon
bagels
baked ribs
beans
beef
beef (more than once a week)
beer
bologna
bread
bread
breaded foods
brownies
burger king
butter
buttered popcorn
buttered prepackaged stuff
cake
candy
canned soup

celery
cheese
cheese dishes
cheeseburgers
cheesecake
cheetos
chicken sandwich
chicken wings
chocolate
chocolate candy
chocolate milk
coffee
coke
commercial chicken
commercial dairy products
commercial fruits
commercial grains
commercial meat
commercial pork
commercial veggies
cookies
corn chips
corn syrup
corned beef
crackers
cream
cream cheese
cream pasta sauces
cream soups
croissants
danish
desserts
donuts
doritos
duck
egg yolks
eggs
farmed fish
fast food
fatty beef
fatty ground beef
fatty meat
foods with additives
foods with colorings
foods with high additives
foods with high sodium

foods with nitrates
foods with pesticides
foods with preservatives
french fries
fried chicken
fried fish
fried food
fried meat
fried pork chops
fried shrimp
fried steak
fried vegetables
fritos
frozen dinners
frozen foods
fruit juice
fruit yogurts
fudge
full fat dairy
gmos
goose
grape jelly
gravy
greasy foods
gum
ham
hamburgers
high caffeine tea
high fructose corn syrup
high salt snacks
high sodium bread
hot dogs
ice cream
iceberg lettuce
injected chicken
injected turkey
instant foods
jam
jelly
ketchup
kfc
kool aid
lamb (more than once a week)
lard
little debbie
liver

lunch meat
macaroni and cheese
macaroni salad
maple syrup
marbled beef
margarine
marshmallow
mayonnaise
mcdonalds
meat
milkshakes
oil
oily olives
old produce
oxtails
packaged cake
packaged mixes like rice-a-roni
pasta
pastries
peanut butter
peanuts
peas
pepperoni
pepsi
pies
pizza
popcorn
pork
pork & beans
pork chops
potato chips
potato salad
potatoes
prepared foods
pretzels
prime rib
processed cheese
processed chips
processed foods
processed grains
processed meat
processed milk
processed oils
processed puddings
processed snack foods
raw meat

red meat
rice
salad dressing
salt
salted pretzels
salty foods
saturated fats
sausage
seafood high in mercury
smoked meat
soda
sour cream
steak
sugar
sugary cereal
sugary drinks
sugary snacks
sweetened juice
tacos
tea
twinkies
twizzlers
wendy's
whipped cream
white bread
white flour
white pasta
white rice
white sugar
whole milk
yogurt

APPENDIX F
SCORING OF FOOD DIARIES

Respondents were scored on the number of occasions during the week that they ate each food or food category. The twelve foods or food categories are

1. fast food (includes anything eaten or drunk from a fast food restaurant except for soda)
2. fish (includes all fish, seafood, shellfish, and fried fish)
3. poultry (includes turkey and chicken)
4. vegetables (includes all fresh, frozen or canned vegetables, but not potatoes or leafy green vegetables)
5. leafy green vegetables (does not include salad)
6. fruit (includes all fresh, frozen or canned fruit but not dried fruit products)
7. cheese (includes cream cheese)
8. salad (as defined by informants as long as some type of lettuce constituted the base)
9. soda
10. candy (includes chocolate candy but not dark chocolate)
11. processsed foods (includes all boxed, processed, frozen or prepared meals, foods, and snacks, but not dried pasta or breakfast cereals)
12. meat (includes all non-poultry meat items, cured meats, fried meats).

Soda drunk at a fast food restaurant was not counted as fast food but was counted as soda. Coffees, ice cream, breakfast confections, and other specialty drinks from fast food restaurants, however, I did count as occasions of fast food consumption. Foods that were eaten at fast food restaurants were also counted in the other appropriate categories, for example, a McDonald's hamburger with cheese counted in an individual's fast food tally as well as in the meat and cheese tallies. Potatoes occupied a more ambiguous position on the scale of healthy-unhealthy as evidenced by the freelists and interview data, so they are not included in the tallies for vegetables. Dried fruit products were not included in the tallies for fruits because on the few occasions where consumption of these items occurred in individuals' diaries, it was not clear whether they were eating just dried fruit or if they were eating some kind of processed fruit snack. Thus dried fruit products were not counted as processed food items either. Dark chocolate was named on freelists or discussed in interviews often enough as a separate (healthy) food item that I felt it should not be included in the scoring for candy consumption. Processed food items were also scored in other categories when necessary, for example, a processed meat item was included in both meat and processed food tallies.

APPENDIX G
TABLES G-1 AND G-2

Table G-1. Kolmogorov-Smirnov tests for normal distribution of 12 foods intake data. N=56.

	Fast food	Fish	Poultry	Vege-tables	Leafy greens	Fruit	Cheese	Salad	Soda	Candy	Meat	Process-ed foods
Kolmogorov-Smirnov Z	2.346	1.728	1.049	1.576	1.615	1.691	1.013	1.446	2.037	2.617	.979	.859
Asymp. Sig. (2-tailed)	.000	.005	.221	.014	.011	.007	.256	.030	.000	.000	.293	.451

Significant scores indicate non-normal distributions.

Table G-2. Descriptive statistics for 12 foods intake data. N=56

		Fast food	Fish	Poultry	Vege-tables	Leafy greens	Fruit	Cheese	Salad	Soda	Candy	Meat	Process-ed foods
Mean		1.11	1.38	2.04	7.13	1.36	4.38	3.95	1.82	2.36	.88	4.14	4.13
Median		.00	1.00	2.00	5.50	1.00	3.00	4.00	1.00	1.00	.00	4.00	4.00
Mode		0	0	0	6	0	0	4	0	0	0	5	6
Std. Deviation		2.278	1.396	1.695	6.592	1.554	5.051	2.857	1.887	3.549	1.466	2.445	2.835
Percen-tiles	25	.00	.00	.25	3.00	.00	1.00	2.00	.00	.00	.00	2.00	1.25
	50	.00	1.00	2.00	5.50	1.00	3.00	4.00	1.00	1.00	.00	4.00	4.00
	75	1.00	2.00	3.00	9.00	2.00	6.00	5.75	3.00	3.00	1.00	5.00	6.00

LIST OF REFERENCES

Acntx at the English language Wikipedia
2011 Map of New York highlighting Utica-Rome Metropolitan Statistical Area. http://en.wikipedia.org/wiki/Utica-Rome_metropolitan_area, accessed April 11, 2011.

Aguilar, J.
1981 On Anthropology "At Home." *In* Anthropologists at Home in North America. D. Messerschmidt, ed. Pp. 15-28. New York: Cambridge University Press.

Ahmed, A.S.
1980 Millenium and Charisma Among Pathans: A Critical Essay in Social Anthropology. London: Routledge.

American Institute for Cancer Research
2007 Food, Nutrition, Physical Activity and the Prevention of Cancer: A Global Perspective. Washington, D.C.: American Institute for Cancer Research.

Andersen, J.E. and A. Valyasevi
1989 Effective Communications for Nutrition in Primary Health Care: Report of the Asian Regional Workshop, Bangkok, Thailand, 3-7 October 1983. United Nations University. Also accessible at http://tinyurl.com/d7jkw.

Anderson, J.L., C.B. Crawford, J. Nadeau, and T. Lindberg
1992 Was the Duchess of Windsor Right? A Cross-Cultural Review of the Socioecology of Ideals of Female Body Shape. Ethnology and Sociobiology 13:197-227.

Anderson, M.
1978 Saami Ethnoecology: Resource Management in Norwegian Lapland. Ph.D. dissertation, Yale University.

Appadurai, A.
1981 Gastro-politics in Hindu South Asia. American Ethnologist 8(3):494-511.

Armelagos, G.J.
1998 The Viral Superhighway. Sciences 38(1):24-29.

2003 Bioarchaeology as Anthropology. Archaeological Papers of the American Anthropological Association 13(1):27-40.

2004 Emerging Disease in the Third Epidemiological Transition. *In* The Changing Face of Disease: Implications for Society. Society for the Study of Human Biology Series: 43. N. Mascie-Taylor, J. Peters and S.T. McGarvey, eds. Pp. 7-22. New York: Taylor & Francis.

Armelagos, G.J., K.C. Barnes, and J. Lin
1996 Disease in Human Evolution: The Re-emergence of Infectious Disease in the Third Epidemiological Transition. AnthroNotes 18(3):1-7.

Armelagos, G.J., A.H. Goodman, and K.H. Jacobs
1991 The Origins of Agriculture: Population Growth During a Period of Declining Health. Population and Environment 13:9-22.

Arnott, M., ed.
1976 Gastronomy: The Anthropology of Food Habits. The Hague: Mouton.

Backstrand, J.R., L.H. Allen, G.H. Pelto, and A. Chávez
1997 Examining the Gender Gap in Nutrition: An Example from Rural Mexico. Social Science and Medicine 44(11): 751-1759.

Baer, H., M. Singer, and J.H. Johnsen
1986 Toward a Critical Medical Anthropology. Social Science and Medicine 23(2):95-98.

Ball, G.V.
1971 Two Epidemics of Gout. Bulletin of the History of Medicine. 45(5): 401-408.

Barabási, A-L.
2002 Linked: The New Science of Networks. Cambridge, MA: Perseus Publishing.

Barker, D.J.P.
1992 Fetal and Infant Origins of Adult Disease. London: British Medical Journal Publishing.

Barker, D. and J. Mander
2000 The WTO and Invisible Government. Peace Review 12(2):251-255.

Barrett, R., C.W. Kuzawa, T. McDade, and G.J. Armelagos
1998 Emerging and Re-emerging Infectious Diseases: The Third Epidemiologic Transition. Annual Review of Anthropology 27:247-271.

Barry, C.L., V.L. Brescoll, K.D. Brownell, and M. Schlesinger
2009 Obesity Metaphors: How Beliefs about the Causes of Obesity Affect Support for Public Policy. The Milbank Quarterly 87(1):7-47.

Beaton, G.H.
1989 Small but Healthy? Are We Asking the Right Question? Human Organization 48(1):30-39.

Bell, F.L.S.
1931 The Place of Food in the Social Life of Central Polynesia. Oceania 2:117-135.

Bennett, J.W.
1943 Food and Social Status in a Rural Society. American Sociological Review 8(5):561-568.

Bennett, J.W., H.L. Smith, and H. Passin
1942 Food and Culture in Southern Illinois--A Preliminary Report. American Sociological Review 7:645-660.

Bennett, P.H., W.C. Knowler, N.B. Rushforth, R.F. Hammon, and P.J. Savage
1979 The Role of Obesity in the Development of Diabetes of the Pima Indians. In Diabetes and Obesity: Proceedings of the Vth International Meeting of Endocrinology, Marseilles, June 19-21, 1978. J. Vague, P. H. Vague and F.J.G. Ebling, eds. Pp. 117-126. Amsterdam: Excerpta Medica.

Berkman, L.F., L. Leo-Summers, and R.I. Horowitz
1992 Emotional Support and Survival After Myocardial Infarction. Annals of Internal Medicine 117:1003–1009.

Berkman, L.F. and S.L. Syme
1979 Social Networks, Host Resistance, and Mortality: A Nine-Year Follow-Up Study of Alameda County Residents. American Journal of Epidemiology 109(2):186-204.

Bernard, H.R.
1988 Research Methods in Cultural Anthropology. California: Sage.

2011 Research Methods in Anthropology: Qualitative and Quantitative Approaches. 5th ed. Walnut Creek, CA: Altamira.

Bernard, H.R., P. Killworth, D. Kronenfeld, and L. Sailer
1984 The Problem of Informant Accuracy: The Validity of Retrospective Data. Annual Review of Anthropology 13:495-517.

Blazer, D.G .
1982 Social Support and Mortality in an Elderly Community Population. American Journal of Epidemiology 115:684–694.

Bloch, M.
1999 Commensality and Poisoning. Social Research 66(1):133-149.

Bloomfield, S.F.
2002 Illness and Cure in Tonga: Traditional and Modern Medical Practice. Nuku'alofa, Tonga: Vava'u Press.

Boas, F.
1921 Ethnology of the Kwakiutl. Washington, D.C.: United States Government Printing Office.

Boback, S.M., C.L. Cox, B.D. Ott, R. Carmody, R.W. Wrangham, and S.M. Secor
2007 Cooking and Grinding Reduces the Cost of Meat Digestion. Comparative Biochemistry and Physiology, Part A 148:651-656.

Borgatti, S.P., M.G. Everett, and L.C. Freeman
2002 Ucinet for Windows: Software for Social Network Analysis. Harvard, MA: Analytic Technologies.

Boserup, E.
1965 The Conditions of Agricultural Growth: The Economics of Agriculture Under Population Pressure. Chicago: Aldine.

Boster,James S.
1986 Requiem for the Omniscient Informant: There's Life in the Old Girl Yet. *In* Directions in Cognitive Anthropology. J. Dougherty, ed. Urbana: University of Illinois Press.

Bourdieu, P.
1990 In Other Words: Essays Towards a Reflexive Sociology. M. Adamson, trans. Stanford, CA: Stanford University Press.

Bray, G.
1998 What is the Ideal Body Weight? The Journal of Nutritional Biochemistry 9(9):489-492.

Brockerhoff, M. and P. Hewett
2000 Inequality of Child Mortality Among Ethnic Groups in Sub-Saharan Africa. Bulletin of the WHO 78(1):30-41.

Brown, P.J.
1991 Culture and the Evolution of Obesity. Human Nature 2(1):31-57.

Brown, P.J. and M. Konner
1987 An Anthropological Perspective on Obesity. Annals of the New York Academy of Sciences 499:29-46.

Brug, J., B. Wammes, S. Kremers, K. Giskes, and A. Oenema
2006 Underestimation and Overestimation of Personal Weight Status: Association with Socio-demographic Characteristics and Weight Maintenance Intentions. Journal of Human Nutrition and Dietetics 19(4):253-262.

Buchanan, M.
2002 Nexus—Small Worlds and the Groundbreaking World of Networks. New York: Norton.

Buikstra, J.E.
1992 Diet and Disease in Late Prehistory. *In* Disease and Demography in the Americas. J.W. Verano and D.H. Ubelaker, eds. Washington D.C.: Smithsonian Institution Press.

Buikstra, J.E., L.W. Konigsberg and J. Bullington
1986 Fertility and the Development of Agriculture in the Prehistoric Midwest. American Antiquity 51(3):528-546.

Bulik, C.M., T.D. Wade, A.C. Heath, N.G. Martin, A.J. Stunkard and L.J. Eaves
2001 Relating Body Mass Index to Figural Stimuli: Population-based Normative Data for Caucasians. International Journal of Obesity 25:1517-1524.

Burgess, A. and R.F.A. Dean, eds.
1962 Malnutrition and Food Habits. New York: Macmillan.

Burkhauser, R.V. and J. Cawley
2008 Beyond BMI: The Value of More Accurate Measures of Fatness and Obesity in Social Science Research. Journal of Health Economics 27(2):519-529.

Burnett, D.
2007 Second Chance City. Reader's Digest, August 2007:116-123.

Cai, L. and J. Lubitz
2007 Was There Compression of Disability for Older Americans from 1992 to 2003? Demography 44(3):479-495.

Carmody, R.N. and R.W. Wrangham
2009 The Energetic Significance of Cooking. Journal of Human Evolution 57:379-391.

Cassel, J.
1957 Social and Cultural Implications of Food and Food Habits. *In* Culture, Disease, and Healing. D. Landy, ed. New York: MacMillan.

Cassell, J. A.
1995 Social Anthropology and Nutrition: A Different Look at Obesity in America. Journal of the American Dietetic Association 95(4):424-427.

Cassidy, C.M.
1982 Protein-Energy Malnutrition as a Culture-Bound Syndrome. Culture, Medicine and Psychiatry 6(4):325-345.

Cawley, J. and C. Meyerhoefer
2010 The Medical Care Costs of Obesity: An Instrumental Variables Approach. NBER Working Paper 16467. Cambridge, MA: National Bureau of Economic Research.

Cawley, J., J.A. Rizzo and K. Haas
2007 Occupation-Specific Absenteeism Costs Associated with Obesity and Morbid Obesity. Journal of Occupational Environmental Medicine 49:1317-1324.

CDC
n.d. Data 2010: The Healthy People 2010 Database. Online searchable database http://wonder.cdc.gov/data2010/ABOUT.HTM, accessed April 11, 2011.

2005 Health, United States 2005. National Center for Health Statistics. Washington, D.C.: United States Government Printing Office.

2010 Overweight and Obesity (BMI) Nationwide – 2010. http://apps.nccd.cdc.gov/brfss/display.asp?cat=OB&yr=2010&qkey=4409&state=US, accessed October 5, 2011.

Chang, V.W.
2006 Racial Residential Segregation and Weight Status Among US Adults. Social Science and Medicine 63:1289-1303.

Chapman, A.E., G. Kiroff, P. Game, B. Foster, P. O'Brien, J. Ham, and G.J. Maddern
2004 Laparoscopic Adjustable Gastric Banding in the Treatment of Obesity: A Systematic Literature Review. Surgery 135:326-351.

Chavez, L.R., F.A. Hubbell, J.M. McMullin, R.G. Martinez, and S.I. Mishra
1995 Structure and Meaning in Models of Breast and Cervical Cancer Risk Factors: A Comparison of Perceptions among Latinas, Anglo Women, and Physicians. Medical Anthropology Quarterly 9(1):40-74.

Childe, V.G.
1951 Man Makes Himself. New York: Mentor.

Chopra, M. and I. Darnton-Hill
2004 Tobacco and Obesity Epidemics: Not so Different After All? Lancet 328:1558-1560.

Christakis, N.A. and J.H. Fowler
2007 The Spread of Obesity in a Large Social Network over 32 Years. The New England Journal of Medicine 357:370-379.

Christensen, K., M. McGue, I. Petersen, B. Jeune, and J.W. Vaupel
2008 Exceptional Longevity Does Not Result in Excessive Levels of Disability. PNAS 105(36):13274-13279.

Clarke, T. W.
1952 Utica for a Century and a Half. Utica, New York: The Widtman Press.

Clendenen, V.I., C. P. Herman, and J. Polivy
1994 Social Facilitation of Eating Among Friends and Strangers. Appetite 23:1-13.

Cohen, M.N. and G.J. Armelagos, eds.
1984 Paleopathology at the Origins of Agriculture. Orlando: Academic Press.

Cohen-Cole, E. and J.M. Fletcher
2008 Is Obesity Contagious? Social Networks vs. Environmental Factors in the Obesity Epidemic. Journal of Health Economics 27:1382-1387.

Committee on Food Habits
1943 The Problem of Changing Food Habits. Washington, D.C.: National Academy of Sciences.

1945 Manual for the Study of Food Habits. Washington, D.C.: National Academy of Sciences.

Cooper, Elizabeth
2011 Census ’10: Region’s Population Stabilizes. The Utica Observer-Dispatch, March 24, 2011.

Cosminsky, S.
1975 Changing Food and Medical Beliefs and Practices in a Guatemalan Community. Ecology of Food and Nutrition 4:183-191.

1977 Alimento and Fresco: Nutritional Concepts and Their Implications for Health Care. Human Organization 36(2):203-207.

Counihan, C.
1999 The Anthropology of Food and Body: Gender, Meaning and Power. New York: Routledge.

2004 Around the Tuscan Table: Food, Family and Gender in Twentieth-Century Florence. New York: Routledge.

2009 “A Tortilla is Like Life”: Food and Culture in the San Luis Valley of Colorado. Austin: University of Texas Press.

Counihan, C. and P. Van Esterik, eds.
1997 Food and Culture: A Reader. New York: Routledge.

Critser, G.
2004 Fat Land: How Americans Became the Fattest People in the World. New York: Mariner Books.

Cussler, M.T. and M.L. DeGive
1942 The Effect of Human Relations on Food Habits in the Rural Southeast. Applied Anthropology 1:13-18.

1943 Foods and Nutrition in Our Rural Southeast. Journal of Home Economics 35:280-282.

Cutter, J., B. Y. Tan, and S. K. Chew
2001 Levels of Cardiovascular Disease Risk Factors in Singapore Following a National Intervention Programme. Bulletin of the WHO 79(10):908-915.

D’Andrade, R.G.
1981 The Cultural Part of Cognition. Cognitive Science 5(3):179-195.

Davey, R.C.
2004 The Obesity Epidemic: Too Much Food for Thought? British Journal of Sports Medicine 38:360-363.

Davis, C.A., P. Britten, and E.F. Myers
2001 Past, Present, and Future of the Food Guide Pyramid. Journal of the American Dietetic Association 101(8):881-885.

DeBeaumont, R.
2009 Occupational Differences in the Wage Penalty for Obese Women. The Journal of Socio-Economics 38:344-349.

de Castro, J.M.
1994 Family and Friends Produce Greater Social Facilitation of Food Intake than Other Companions. Physiology & Behavior 56:445-455.

de Castro, J.M., E.M. Brewer, D.K. Elmore and S. Orozco
1990 Social Facilitation of the Spontaneous Meal Size of Humans Occurs Regardless of Time, Place, Alcohol or Snacks. Appetite 15:89-101.

de Garine, I. and N.J. Pollock eds.
1995 Social Aspects of Obesity. Luxembourg: Gordon and Breach.

DeGive, M.L. and M.T. Cussler
1941 Interrelations Between the Cultural Pattern and Nutrition. Washington, D.C.: USDA.

De Graer, A.M.
1929 The Art of Healing Among the Azande. *In* Congo. Vol. 10, part 1. Pp. 361-408. Brussels: Goemaere.

DeWalt, K.M., B.R. DeWalt, J. Escudero, and D. Barkin
1990 Shifts From Maize to Sorghum Production. Food Policy 15(5):395-407.

Djurfeldt, G. and S. Lindberg
1975 Pills Against Poverty: A Study of the Introduction of Western Medicine in a Tamil Village. Stockholm: Studentlitt.

Doak, C.M., L.S. Adair, M. Bentley, C. Monteiro, and B.M. Popkin
2005 The Dual Burden Household and the Nutrition Transition Paradox. International Journal of Obesity 29:129-136.

Douglas, M.
1966 Purity and Danger. Baltimore: Penguin Books.

1972 Deciphering a Meal. Daedalus 101:61-81.

1974 Food as an Art Form. Studio International 188(969):83-88.

Dressler, W.W.
1980 Ethnomedical Beliefs and Patient Adherence to a Treatment Regimen: A St. Lucian Example. Human Organization 39:88-91.

1982 Hypertension and Culture Change: Acculturation and Disease in the West Indies. South Salem, New York: Redgrave.

1984 Hypertension and Culture Change in the Caribbean. *In* Health Care in the Caribbean and Central America. F. McGlynn, ed. Pp. 69-93. Studies in Third World Societies, Pub. No. 30. Williamsburg, VA: College of William and Mary.

2001 Medical Anthropology: Toward a Third Moment in Social Science? Medical Anthropology Quarterly 15(4):455-465.

2005 What's Cultural about Biocultural Research? Ethos 33(1):20-45.

2007 Meaning and Structure in Research in Medical Anthropology. Anthropology in Action 14(3):30-43.

Dressler, W.W. and J.R. Bindon
2000 The Health Consequences of Cultural Consonance: Cultural Dimensions of Lifestyle, Social Support, and Arterial Blood Pressure in an African American Community. American Anthropologist 102(2):244-260.

Drewnowski, A.
2000 Nutrition Transition and Global Dietary Trends. Nutrition 16(7/8):486-487.

Drewnowski, A. and B.M. Popkin.
1997 The Nutrition Transition: New Trends in the Global Diet. Nutrition Reviews 55(2):31-43.

Drewnowski, A. and B.J. Rolls
2005 How to Modify the Food Environment. Journal of Nutrition 135:898-899.

Du Bois, C.
1941 Food and Hunger in Alor. *In* Language, Culture, and Personality: Essays in Memory of Edward Sapir. L. Speir, A. I. Hallowell and S. S. Newman eds. Menasha, Wisconsin, Sapir Memorial Publishing Fund: 272-281.

1944 The People of Alor: A Social-Psychological Study of an East Indian Island. Minneapolis: University of Minnesota Press.

Duranti, A.
1994 From Grammar to Politics: Linguistic Anthropology in a Western Samoan Village. Los Angeles: University of California Press.

Eaton, C.
1977 Diabetes, Culture Change, and Acculturation: A Biocultural Analysis. Medical Anthropology 2:41-63.

Eaton, S.B. and M. Konner
1985 Paleolithic Nutrition: A Consideration of Its Nature and Current Implications. The New England Journal of Medicine 312(5):283-289.

Egger, G.
2008 Dousing our Inflammatory Environment(s): Is Personal Carbon Trading an Option for Reducing Obesity—and Climate Change? Obesity Reviews 9:456-463.

Elbel, B., R. Kersh, V.L. Brescoll, and L.B. Dixon
2009 Calorie Labeling and Food Choices: A First Look at the Effects on Low-Income People in New York City. Health Affairs 28(6):w1110-w1121.

Ember, C.R., M. Ember, A. Korotayev, and V. de Munck
2005 Valuing Thinness or Fatness in Women: Reevaluating the Effect of Resource Scarcity. Evolution and Human Behavior 26:257-270.

Evans-Pritchard, E.E.
1971 The Azande: History and Political Institutions. Oxford: Clarendon Press.

Ezzati, M., S. Vander Hoorn, C.M.M. Lawes, R. Leach, W.P.T. James, A.D. Lopez, A. Rodgers, and C.J.L. Murray
2005 Rethinking the “Diseases of Affluence” Paradigm: Global Patterns of Nutritional Risks in Relation to Economic Development. PLoS Med 2(5):0404-0412.

Fairbanks, C.H.
1973 The Florida Seminole People. Phoenix: Indian Tribal Series.

FAO
2009 Number of Hungry People Rises to 963 Million. Electronic document, http://www.fao.org/news/story/en/item/8836/, accessed June 1, 2011.

FAO/WHO
1992 World Declaration and Plan of Action for Nutrition. International Conference on Nutrition, Rome: FAO/WHO.

Farrales, L.L. and G.E. Chapman
1999 Filipino Women Living in Canada: Constructing Meanings of Body, Food, and Health. Health Care for Women International 20(2):179-194.

Fauci, A.S.
1998 New and Reemerging Disease: The Importance of Biomedical Research. Emerging Infectious Diseases 4(3):374-378.

Feeley, S.D.
2007 Tuscarora Trails: Indian Migrations, War, and Constructions of Colonial Frontiers. Ph.D. dissertation, Department of History, The College of William and Mary.

Fine, M.J., S.A. Ibrahim, and S.B. Thomas
2005 The Role of Race and Genetics in Health Disparities Research. American Journal of Public Health 95(12):2125-2128.

Finkelstein, E.A., I.C. Fiebelkorn, and G. Wang
2003 National Medical Spending Attributable to Overweight and Obesity: How Much, and Who's Paying? Health Affairs W3:219-226.

Finkelstein, E.A., C.J. Ruhm, and K.M. Kosa
2005 Economic Causes and Consequences of Obesity. Annual Review of Public Health 26:239-257.

Firth, R.
1934 The Sociological Study of Native Diet. Africa 7(4):401-414.

Fischler, C.
1979 Gastro-nomie et Gastro-Anomie: Sagesse du Corps et Crise Bioculturelle de l'Alimentation Moderne. Communications 31:189-210.

1980 Food Habits, Social Change, and the Nature/Culture Dilemma. Social Science Information 19(6):937-953.

Fischer, J.L., A. Fischer and F. Mahony
1959 Totemism and Allergy. International Journal of Social Psychiatry 5(1):33-40.

Fitzgerald, T.K., ed.
1977 Nutrition and Anthropology in Action. Assen, Netherlands: van Gorcum.

Flegal, K.M., M.D. Carroll, R.J. Kuczmarski, and C.L. Johnson
1998 Overweight and Obesity in the United States: Prevalence and Trends, 1960-1994. International Journal of Obesity 22:39-47.

Flegal, K.M., M.D. Carroll, C.L. Ogden, and L.R. Curtin
2010 Prevalence and Trends in Obesity Among US Adults, 1999-2008. JAMA 303(3):235-241.

Flegal, K.M., B.I. Graubard, D.F. Williamson, and M.H. Gail
2005 Excess Deaths Associated with Underweight, Overweight, and Obesity. JAMA 293:1861-1867.

2007 Cause-Specific Excess Deaths Associated with Underweight, Overweight, and Obesity. JAMA 298:2028-2037.

Fleuret, P. and A. Fleuret
1980 Nutrition, Consumption, and Agricultural Change. Human Organization 39(3):250-260.

Flodmark, C-E, C. Marcus, and M. Britton
2006 Interventions to Prevent Obesity in Children and Adolescents: A Systematic Literature Review. International Journal of Obesity 30:579-589.

Ford, C.L. and C.O. Airhihenbuwa
2010 Critical Race Theory, Race Equity, and Public Health: Toward Antiracism Praxis. American Journal of Public Health 100(S1):S30-S35.

Førde, O.H.
1998 Is Imposing Risk Awareness Cultural Imperialism? Social Science and Medicine 47(9):1155-1159.

Fortes, M. and S.L. Fortes
1936 Food in the Domestic Economy of the Talensi. Africa 9:237-276.

Freedman, D.S., L.K. Kahn, M.K. Serdula, W.H. Dietz, S.R., Srinivasan and G. Berenson
2005 The Relation of Childhood BMI to Adult Adiposity: The Bogalusa Heart Study. Pediatrics 115:22-27.

Freeman, L.C.
2004 The Development of Social Network Analysis: A Study in the Sociology of Science. Vancouver, British Columbia: Empirical Press.

Fries, J.F.
1980 Aging, Natural Death, and the Compression of Morbidity. New England Journal of Medicine 303:130-135.

Garb, P.
1984 From Childhood to Centenarian. Moscow: Progress Publishers. Moscow: Progress Publishers. Moscow: Progress Publishers.

Garbarino, M.S.
1972 Big Cypress: A Changing Seminole Community. New York: Hold, Rinehart and Winston.

Garn, S.M., W.R. Leonard, and V.M. Hawthorne
1986 Three Limitations of the Body Mass Index. American Journal of Clinical Nutrition 44(6):996-997.

Garro, L.C.
1995 Individual or Societal Responsibility? Explanations of Diabetes in an Anishinaabe (Ojibway) Community. Social Science and Medicine 40(1):37-46.

1996 Intracultural Variation in Causal Accounts of Diabetes: A Comparison of Three Canadian Anishinaabe (Ojibway) Communities. Culture, Medicine and Psychiatry 20:381-420.

2000 Remembering What One Knows and the Construction of the Past: A Comparison of Cultural Consensus Theory and Cultural Schema Theory. Ethos 28(3):275-319.

Gibson, S.
2008 Sugar-Sweetened Soft Drinks and Obesity: A Systematic Review of the Evidence from Observational Studies and Interventions. Nutrition Research Reviews 21:134-147.

Gillman, M.W., S.L. Rifas-Shiman, A. L.Frazier, H.R.H. Rockett, C.A. Camargo, Jr., A.E. Field, C.S. Berkey, and G.A. Colditz
2000 Family Dinner and Diet Quality Among Older Children and Adolescents. Archives of Family Medicine 9(3):235-240.

Glanz, K., M. Basil, E. Maibach, J. Goldberg, and D. Snyder
1998 Why Americans Eat What They Do: Taste, Nutrition, Cost, Convenience, and Weight Control Concerns as Influences on Food Consumption. Journal of the American Dietetic Association 98:1180-1126.

Goel, M.S., E.P. McCarthy, R.S. Phillips, and C.C. Wee
2004 Obesity Among US Immigrant Subgroups by Duration of Residence. JAMA 292(23):2860-2867.

Goldschmidt, W.
1995 The Unfamiliar in the Familiar. NAPA Bulletin 16(1):17-21.

Goodenough, W.H.
1957 Cultural Anthropology and Linguistics. *In* Report on the Seventh Annual Round Table Meetings on Linguistics and Language. P. Garvin, ed. Pp. 167-173. Georgetown University Monograph Series on Language and Linguistics 9. Georgetown: Georgetown University.

Goodman, A., D.L. Dufour, and G.H. Pelto, eds.
2000 Nutritional Anthropology: Biocultural Perspectives on Food and Nutrition. Mountain View, California: Mayfield Publishing Company.

Goodman, A. and T.L. Leatherman
1998 Building a New Biocultural Synthesis: Political-Economic Perspectives on Human Biology. Ann Arbor: University of Michigan Press.

Goody, J.
1982 Cooking, Cuisine, and Class: A Study in Comparative Sociology. New York: Cambridge University Press.

Gravlee, C.C.
2005 Ethnic Classification in Southeastern Puerto Rico: The Cultural Model of "Color". Social Forces 83(3):949-970.

2009 How Race Becomes Biology: Embodiment of Social Inequality. American Journal of Physical Anthropology 139:47-57.

Gravlee, C.C. and W.W. Dressler
2005 Skin Pigmentaion, Self-Perceived Color, and Arterial Blood Pressure in Puerto Rico. American Journal of Human Biology 17:195-206.

Gravlee, C.C., W.W. Dressler, and H.R. Bernard
2005 Skin Color, Social Classification, and Blood Pressure in Southeastern Puerto Rico. American Journal of Public Health 95:2191-2197.

Greene, L.S., ed.
1977 Malnutrition, Behavior, and Social Organization. New York: Academic Press.

Greunberg, E.M.
1977 Failures of Success. Milbank Quarterly/Health and Society 55:3-24.

Gross, D.R. and B.A. Underwood
1971 Technological Change and Caloric Costs: Sisal Agriculture in Northeastern Brazil. American Anthropologist 73:725-740.

Guinot, C., J. Latreille, D. Malvy, P. Preziosi, P. Galan, S. Hercberg, and M. Tenenhaus
2001 Use of Multiple Correspondence Analysis and Cluster Analysis to study Dietary Behaviour: Food Consumption Questionnaire in the SU.VI.MAX. Cohort. European Journal of Epidemiology 17: 505-516.

Gusinde, M.
1931 The Fireland Indians: Vol. 1. The Selk'nam, On the Life and Thought of a Hunting People of the Great Island of Tierra del Fuego. Mödling bei Wein: Verlag der Internationalen Zeitschrift.

Gusinde, M. and Schütze, F.
1937 The Yahgan: The Life and Thought of the Water Nomads of Cape Horn. *In* Die Feuerland-Indianer—Vol. 2. Mödling bei Wein: Anthropos-Bibliothek.

Hadley, C., T. Belachew, D. Lindstrom, and F. Tessema
2009 The Forgotten Population? Youth, Food Insecurity, and Rising Prices: Implications for the Global Food Crisis. NAPA Bulletin 32:77-91.

Halliday, T.J. and S. Kwak
2007 Identifying Endogenous Peer Effects in the Spread of Obesity. Working Paper 7-27. University of Hawaii at Manoa, Department of Economics.

Harris, M.
1968 The Rise of Anthropological Theory. New York: Thomas Y. Crowell Company.

1979 Cultural Materialism: The Struggle for a Science of Culture. New York: Random House.

1985 Good to Eat: Riddles of Food and Culture. New York: Simon and Schuster.

Harris, M. and E.B. Ross, eds.
1987 Food and Evolution: Toward a Theory of Human Food Habits. Philadelphia: Temple University Press.

Hegele, R.A., H. Cao, S.B. Harris, A.J.G. Hanley, and B. Zinman
1999 The Hepatic Nuclear Factor 1-α G319S Variant is Associated with Early-Onset Type 2 Diabetes in Canadian Oji-Cree. The Journal of Clinical Endocrinology & Metabolism 84(3):1077-1082.

Heller, C.
2001 From Risk to Globalization: Discursive Shifts in the French Debate about GMOs. Medical Anthropology Quarterly 15(1):25-28.

2002 From Scientific Risk to Paysan Savoir-Faire: Peasant Expertise in the French and Global Debate over GM Crops. Science as Culture 11(1):5-37.

Henry, J. and H. Macbeth
2004 Studying Food Intake Frequency: A Macrosurvey Technique for Anthropologists. In Researching Food Habits: Methods and Problems. H. Macbeth and J. MacClancy, eds. Pp. 135-148. New York: Berghahn.

Herman, C.P. and J. Polivy
2005 Normative Influences on Food Intake. Physiology & Behavior 86:762-772.

Herman, C.P., D.A. Roth, and J. Polivy
2003 Effects of the Presence of Others on Food Intake: A Normative Interpretation. Psychological Bulletin 129(6):873-886.

Herndon, A.M.
2005 Collateral Damage from Friendly Fire?: Race, Nation, Class and the “War Against Obesity”. Social Semiotics 15(2):127-141.

Heurtin-Roberts, S. and E. Reisin
1990 Folk Models of Hypertension among Black Women: Problems in Illness Management. *In* Anthropology and Primary Health Care. J. Coreil and J.D. Mull, eds. Boulder: Westview Press.

Hill, J.O., H.R. Wyatt, G.W. Reed, and J.C. Peters
2003 Obesity and the Environment: Where Do We Go From Here? Science 299(5608):853-855.

Himmelgreen, D.A., R. Pérez-Escamilla, D. Martinez, A. Bretnall, B. Eells, Y. Peng, and A. Bermúdez
2004 The Longer You Stay, the Bigger You Get: Length of Time and Language Use in the U.S. are Associated with Obesity in Puerto Rican Women. American Journal of Physical Anthropology 125:90-96.

Hoehner, C.M., L.K. Brennan Ramirez, M.B. Elliott, S.L. Handy, and R.C. Brownson
2005 Perceived and Objective Environemtanl Measures and Physical Activity Among Urban Adults. American Journal of Preventive Medicine 28(2 Suppl. 2):105-116.

Holtgrave, D. R. and R. Crosby
2006 Is Social Capital a Protective Factor Against Obesity and Diabetes? Findings from an Exploratory Study. Annals of Epidemiology 16(5):406-408.

House, J.S., C. Robbins, and H. L. Metzner
1982 The Association of Social Relationships and Activities with Mortality: Prospective Evidence from the Tecumseh Community Health Study. American Journal of Epidemiology 116:123–140.

Hruschka, D.J., L.M. Sibley, N. Kalim, and J.E. Edmonds
2008 When There is More Than One Answer Key: Cultural Theories of Postpartum Hemorrhage in Matlab, Bangladesh. Field Methods 20:315-337.

Hymes, D.
1972 On Communicative Competence. *In* Sociolinguistics. J.B. Pride and J. Holmes, eds. Pp. 269-285. Harmondsworth, UK: Penguin.

Inagami, S., D.A. Cohen, B.K. Finch, and S.M. Asch
2006 You Are Where You Shop: Grocery Store Locations, Weight, and Neighborhoods. American Journal of Preventive Medicine 31(1):10-17.

Institute of Medicine
2002 The Future of the Public's Health in the 21st Century. Committee on Assuring the Health of the Public in the 21st Century. Washington, D.C.: The National Academies Press.

2009 State of the USA Health Indicators: Letter Report. Washington, D.C.: The National Academies Press.

Jackson, M.O.
2008 Social and Economic Networks. Princeton, NJ: Princeton University Press.

2009 Networks and Economic Behavior. Annual Review of Economics 1:489-511.

Jacobs-Huey, L.
2002 The Natives Are Gazing and Talking Back: Reviewing the Problematics of Positionality, Voice, and Accountability among "Native" Anthropologists. American Anthropologist 104(3):791-804.

Janssen, B.
2010 Local Food, Local Engagement: Community-Supported Agriculture in Eastern Iowa. Culture & Agriculture 32(1):4-16.

Jeffcoate, W.
1998 Obesity is a Disease: Food for Thought. Lancet 351:903-904.

Jia, H. and E.I. Lubetkin
2010 Obesity-Related Quality-Adjusted Life Years Lost in the U.S. from 1993 to 2008. American Journal of Preventive Medicine 39(3):220-227.

Johnson, W.B.
2011 575-Pound Heart Attack Grill spokesman Dies at 29. The Arizona Republic. March 4, 2011.

Johnston, F.E.
2011 The Obesity Culture: A Problem of Access and Excess. *In* Access Not Excess: The Search for Better Nutrition. C. Pasternak, ed. Pp. 121-132. Cambs, UK: Smith-Gordon and Company.

Jutel, A.
2006 The Emergence of Overweight as a Disease Entity: Measuring Up Normality. Social Science and Medicine 63:2268-2276.

Kan, S.
1989 Symbolic Immortality: The Tlingit Potlatch of the Nineteenth Century. Washington, D.C.: Smithsonian Institution Press.

Kawachi, I., G.A. Colditz, A. Ascherio, E.B. Rimm, E. Giovannucci, M.J. Stampfer, and W.C. Willett
1996 A Prospective Study of Social Networks in Relation to Total Mortality and Cardiovascular Disease in Men in the USA. Journal of Epidemiology and Community Health 50(3):245-251.

Kay, S.J. and M.A. Fiatarone Singh
2006 The Influence of Physical Activity on Abdominal Fat: A Systematic Review of the Literature. Obesity Reviews 7:183-200.

Keith, S.W., D.T. Redden, P.T. Katzmarzyk, M.M. Boggiano, E.C. Hanlon, R.M. Benca, D. Ruden, A. Pietrobelli, J.L. Barger, K.R. Fontaine, C. Wang, L.J. Aronne, S.M. Wright, M. Baskin, N.V. Dhurandhar, M.C. Lijoi, C.M. Grilo, M. DeLuca, A.O. Westfall, and D.B. Allison
2006 Putative Contributors to the Secular Increase in Obesity: Exploring the Roads Less Traveled. International Journal of Obesity 30(11):1-10.

Kemp, W.
1971 The Flow of Energy in a Hunting Society. Scientific American 225(3):105-115.

Kim, K.H., J. Sobal and E. Wethington
2003 Religion and Body Weight. International Journal of Obesity 27:469-477.

Kleinman, N.L., R.A. Brook, P.A. Patel, A.K. Melkonian, T.J. Brizee, J.E. Smeeding, and N. Joseph-Ridge
2007 The Impact of Gout on Work Absence and Productivity. Value in Health 10(4):231-237.

Klumbytė, N.
2010 The Soviet Sausage Renaissance. American Anthropologist 112(1):22-27.

Koch, G.
1955 The South Seas—Yesterday and Today: Cultural Change Among the Tongans and an Attempt to Interpret this Development. Braunschweig: A. Limbach.

Kolasa, K.
1978 "I Won't Cook Turnip Greens if you Won't Cook Kielbasa": Food Behavior of Polonia and its Health Implications. *In* The Anthropology of Health. E. E. Bauwens, ed. St. Louis: Mosby.

Komlos, J. and M. Brabec
2010 The Trend of Mean BMI Values of US Adults, Birth Cohorts 1882-1986 Indicates that the Obesity Epidemic Began Earlier than Hitherto Thought. American Journal of Human Biology 22:631-638.

Kulick, D. and A. Meneley
2005 Fat: The Anthropology of an Obsession. New York: Penguin.

Kupillas, L.M. and M.A. Nies
2007 Obesity and Poverty: Are Food Stamps to Blame? Home Health Care Management Practice 20(1):41-49.

LaDuca, R.
2009 Day 1: The Mob Files. The Utica Observer-Dispatch, May 3, 2009.

La Russo, M.G.
1988 A Portrait of Third Generation Italian-American Family Life: Interviews and Observations with Six Families. Ed.D. dissertation, Fairleigh Dickinson University.

LaVeist, T.A.
1994 Beyond Dummy Variables and Sample Selection: What Health Services Researchers Ought to Know about Race as a Variable. Health Services Research 29(1):1-16.

Leatherman, T.L. and A. Goodman
2005 Coca-Colonization of Diets in the Yucatan. Social Science and Medicine 61:833-846.

Ledikwe, J.H., H.M. Blanck, L.K. Khan, M.K. Serdula, J.D. Seymour, B.C. Tohill, and B.J. Rolls
2006 Dietary Energy Density is Associated with Energy Intake and Weight Status in US Adults. The American Journal of Clinical Nutrition 83(6):1362-1368.

Lee, R.
1968 What Hunters do for a Living, or, How to Make Out on Scarce Resources. *In* Man the Hunter. R. Lee and I. DeVore, eds. Pp. 30-48. Chicago: Aldine.

1979 The !Kung San: Men, Women, and Work in a Foraging Society. Cambridge: Cambridge University Press.

Lee, R. and I. DeVore, eds.
1968 Man the Hunter. Chicago: Aldine.

1976 Kalahari Hunter-Gatherers. Cambridge: Harvard University Press.

Leeder, S.
2005 A Plague on all your Houses: The Rise and Rise of Non-Communicable Disease. Presentation to the Department of History, UCLA, 25 October 2005. www.ahpi.health.usyd.edu.au/pdfs/srlpresentations2005/plague.pdf. Accessed February 24, 2006.

Levenstein, H.
2002 The American Response to Italian Food, 1880-1930. *In* Food in the USA: A Reader. C. Counihan, ed. Pp. 75-89. London: Routledge.

Levi, J., L.M. Segal, R. St. Laurent, and D. Kohn
2011 F as in Fat: How Obesity Threatens America's Future. Washington, D.C.: Trust for America's Health.

Lévi-Strauss, C.
1969 The Raw and the Cooked. Chicago: University of Chicago Press.

Lewontin, R. and R. Levins
1996 The Return of Old Diseases and the Appearance of New Ones. CNS 7(2):103-107.

Lieberman, L.S.
1991 The Biocultural Consequences of Contemporary and future diets in developed countries. Collegium Antropologicum 15:73-85.

2006 Evolutionary and Anthropological Perspectives on Optimal Foraging in Obesogenic Environments. Appetite 47:3-9.

Lieblich, A.
1996 Some Unforeseen Outcomes of Conducting Narrative Research with People of One's Own Culture. *In* Ethics and Process in the Narrative Study of Lives. R. Josselson, ed. Pp. 172-186. Thousand Oaks, CA: Sage Publications, Inc.

Lin, S.S. and J.L. Kelsey
2000 Use of Race and Ethnicity in Epidemiologic Research: Concepts, Methodological Issues, and Suggestions for Research. Epidemiologic Reviews 22:187-202.

Luke, D.A. and J.K. Harris
2007 Network Analysis in Public Health: History, Methods, and Applications. Annual Review of Public Health 28:69-93.

Ma, Y., E.R. Bertone, E.J Stanek, III, G.W. Reed, J.R. Hebert, N.L. Cohen, P.A. Merriam, and I.S. Ockene
2003 Association Between Eating Patterns and Obesity in a Free-Living US Adult Population. American Journal of Epidemiology 158(1):85-92.

Mackay, J. and G. Mensah
2004 The Atlas of Heart Disease and Stroke. Geneva: WHO.

Maletnlema, T.N.
2002 A Tanzanian Perspective on the Nutrition Transition and its Implications for Health. Public Health Nutrition 5:163-168.

Malinowski, B.
1929 The Sexual Life of Savages in Northwestern Melanesia: Vol. 1 and 2. New York: Horace Liveright.

Mallery, G.
1888 Manners and Meals. American Anthropologist 1(3):193-207.

Malterud, K. and K. Ulriksen
2010 "Norwegians fear fatness more than anything else"—A Qualitative Study of Normative Newspaper Messages on Obesity and Health. Patient Education and Counseling 81:47-52.

Manton, K.G.
1982 Changing Concepts of Morbidity and Mortality in the Elderly Population. Milbank Quarterly/Health and Society 60:183-244.

Margolis, M.
1984 Mothers and Such: Views of American Women and Why They Changed. Berkeley: University of California Press.

Marmot, M.
2002 The Influence of Income on Health: Views of an Epidemiologist. Health Affairs 21(2):31-46.

Martorell, R.
1989 Body Size, Adaptation and Function. Human Organization 48(1):15-20.

2001 Early Nutrition and Later Adiposity. Journal of Nutrition 131:874S-880S.

Martorell, R., U. Ramakrishnan, D.G. Schroeder, P. Melgar and L. Neufeld
1998 Intrauterine Growth Retardation, Body Size, Body Composition and Physical Performance in Adolescence. European Journal of Clinical Nutrition 51:S43-S53.

Massara, E.B.
1989 Qué Gordita! A Study of Weight Among Women in a Puerto Rican Community. New York: AMS Press.

Maurer, J., D.L. Taren, P.J. Teixeira, C.A. Thomson, T.G. Lohman, S.B. Going, and L.B. Houtkooper
2006 The Psychosocial and Behavioral Characteristics Related to Energy Misreporting. Nutrition Reviews 64(2):53-66.

McCarty, C.
2005 EgoNet. Gainesville, FL.

McCarty, C. P.D. Killworth, and J. Rennell
2007 Impact of Methods for Reducing Respondent Burden on Personal Network Structural Measures. Social Networks 29(2):300-315.

McGrath, B.B.
2004 Tongans. *In* Encyclopedia of Medical Anthropology: Health and Illness in the World's Cultures, Vol. 2. C.R. Ember and M. Ember, eds. New York: Kluwer Academic/Plenum Publishers.

McKenzie, D.C., R.K. Johnson, J. Harvey-Berino, and B.C. Gold
2002 Impact of Interviewer's Body Mass Index on Underreporting Energy Intake in Overweight and Obese Women. Obesity Research 10:471-477.

McKeown, T.
1976 The Modern Rise of Population. New York: Academic Press.

1978 Determinants of Health. Reprinted in Understanding and Applying Medical Anthropology. P. Brown ed. 1998. Pp. 70-76. Mountain View: Mayfield Publishing. Originally in Human Nature Magazine, April 1978.

McLaren, L.
2007 Socioeconomic Status and Obesity. Epidemiologic Reviews 29:29-48.

McMillan, D. and J. Harlow, eds.
1991 Anthropology and Food Policy: Human Dimensions of Food Policy in Africa and Latin America. Athens: University of Georgia Press.

Mead, M.
1964 Food Habits Research: Problems of the 1960s. Washington, D.C.: National Academy of Sciences.

Meara, E., S. Richards, and D. Cutler
2008 The Gap Gets Bigger: Changes in Mortality and Life Expectancy by Education, 1981-2000. Health Affairs 27(2):350-360.

Messer, E.
1984 Anthropological Perspectives on Diet. Annual Review of Anthropology 13:205-249.

1986 The "Small but Healthy" Hypothesis: Historical, Political, and Ecological Influences on Nutritional Standards. Human Ecology 14(1):57-75.

1989 Small but Healthy? Some Cultural Considerations. Human Organization 48(1):39-52.

1997 Intra-Household Allocation of Food and Health Care: Current Findings and Understandings--Introduction. Social Science and Medicine 44(11):1675-1684.

Miller, M.L., J. Kaneko, P. Bartram, J. Marks, and D.D. Brewer
2004 Cultural Consensus Analysis and Environmental Anthropology: Yellowfin Tuna Fishery Management in Hawaii. Cross-Cultural Research 38(3):289-314.

Mintz, S.W.
1985 Sweetness and Power: The Place of Sugar in Modern History. New York: Penguin.

1996 Tasting Food, Tasting Freedom. Boston: Beacon.

1998 L'Appétit Vient en Mangeant. American Anthropologist 100(4):1039-1042.

Mintz, S.W. and C.M. Du Bois
2002 The Anthropology of Food and Eating. Annual Review of Anthropology 31:99-119.

Moffat, M.
1992 Ethnographic Writing about American Culture. Annual Review of Anthropology 21:205-229.

Mokhtar, N., J. Elati, R. Chabir, A. Bour, K. Elkari, N.P. Schlossman, B. Caballero, and H. Aguenaou
2001 Diet, Culture and Obesity in Northern Africa. The Journal of Nutrition 131(3):8875-8925.

Monsivais, P., J. Mclain, and A. Drewnowski
2010 The Rising Disparity in the Price of Healthful Foods: 2004-2008. Food Policy 35:514-520.

Monteiro, C.A., E.C. Moura, W.L. Conde, and B.M. Popkin
2004 Socioeconomic Status and Obesity in Adult Populations of Developing Countries: A Review. Bulletin of the WHO 82:940-946.

Montgomery, E. and J.W. Bennett
1979 Anthropological Studies of Food and Nutrition: The 1940s and the 1970s. *In* The Uses of Anthropology. W. Goldschmidt, ed. Pp. 124-144. Washington, D.C., American Anthropological Association.

Murtagh, M.
1985 The Practice of Arithmetic by American Grocery Shoppers. Anthropology and Education Quarterly 16:186-192.

Neel, J.V.
1962 Diabetes Mellitus: A "Thrifty Genotype" Rendered Detrimental by "Progress." American Journal of Human Genetics 14:353-362.

Neel, J.V., A.B. Weder, and S. Julius
1998 Type II Diabetes, Essential Hypertension, and Obesity as "Syndromes of Impaired Genetic Homeostasis": The "Thrifty Genotype" Hypothesis Enters the 21st Century. Perspectives in Biology and Medicine 42(1):44-74.

Neovius, K., K. Johansson, M. Kark, and M. Neovius
2008 Obesity Status and Sick Leave: A Systematic Review. Obesity Reviews 10:17-27.

Neovius, M., K. Johansson, and S. Rössner
2008 Head-to-Head Studies Evaluating Efficacy of Pharmaco-Therapy for Obesity: A Systematic Review and Meta-Analysis. Obesity Reviews 9:420-427.

Nestle, M.
2003 Food Politics: How the Food Industry Influences Nutrition and Health. Berkeley and Los Angeles: University of California Press.

2007 What to Eat: An Aisle-by-Aisle Guide to Savvy Food Choices and Good Eating. New York: North Point Press.

Nestle, M., R. Wing, L. Birch, L. DiSogra, A. Drewnowski, S. Middleton, M. Sigman-Grant, J. Sobal, M. Winston, and C. Economos
1998 Behavioral and Social Influences on Food Choice. Nutrition Reviews 56(5):S50-S74.

Neumark-Sztainer, D., P.J. Hannan, M. Story, J. Croll, and C. Perry
2003 Family Meal Patterns: Associations with Sociodemographic Characteristics and Improved Dietary Intake Among Adolescents. Journal of the American Dietetic Association 103(3):317-322.

Nevill, A.M., A.D. Stewart, T. Olds and R.L. Holder
2006 Relationship Between Adiposity and Body Size Reveals Limitations of BMI. American Journal of Physical Anthropology 129(1):151-156.

New York State Department of Health
n.d. Obesity Statistics by County. Online searchable database http://www.health.state.ny.us/statistics/prevention/obesity/index.htm accessed April 11, 2011.

2008 Overweight and Obesity: New York State Adults 2008. BRFSS Brief No. 0904. Albany, New York. Accessed online at http://www.health.state.ny.us/nysdoh/brfss/reports/docs/0904_overweight_and_obesity.pdf, April 11, 2011.

Nicolaisen, J.
1963 Ecology and Culture of the Pastoral Tuareg: With Particular Reference to the Tuareg of Ahaggar and Ayr. Copenhagen: The National Museum of Copenhagen.

Novotny, J.A., W.V. Rumpler, H.Riddick, J.R. Hebert, D. Rhodes, J.T. Rudd, D.J. Baer, M. McDowell, and R. Briefel
2003 Personality Characteristics as Predictors of Underreporting of Energy Intake on 24-Hour Dietary Recall Interviews. Journal of the American Dietetic Association 103:1146-1151.

Oka, K., A. Sakuarae, T. Fujise, H. Yoshimatsu, T. Sakata,, and M. Nakata.
2003 Food Texture Differences Affect Energy Metabolism in Rats. Journal of Dental Research 82:491-494.

Oliver, J.E. and T. Lee
2005 Public Opinion and the Politics of Obesity in America. Journal of Health Politics, Policy and Law 30(5):923-954.

Olshansky, S.J. and A.B. Ault
1986 The Fourth Stage of the Epidemiologic Transition: The Age of Delayed Degenerative Diseases. Milbank Quarterly 64(3):355-391.

Olshansky, S.J., B.A. Carnes, R.G. Rogers, and L. Smith
1998 Emerging Infectious Diseases: The Fifth Stage of the Epidemiologic Transition? World Health Statistics Quarterly 51:207-217.

Olshansky, S.J., D.J. Passaro, R.C. Hershow, Je. Layden, B.A. Carnes, J. Brody, L. Hayflick, R.N. Butler, D.B. Allison, and D.S. Ludwig
2005 A Potential Decline in Life Expectancy in the United States in the 21st Century. The New England Journal of Medicine 352(11):1138-1145.

Olshansky, S.J., M.A. Rudberg, B.A. Carnes, C.K. Cassel, and J.A. Brody
1991 Trading Off Longer Life for Worsening Health: The Expansion of Morbidity Hypothesis. Journal of Aging and Health 3(2):194-216.

Omran, A.R.
1971 The Epidemiologic Transition: A Theory of the Epidemiology of Population Change. Milbank Memorial Fund Quarterly 49:509-538.

1977 A Century of Epidemiologic Transition in the United States. Preventive Medicine 6:30-51.

1983 The Epidemiologic Transition Theory. A Preliminary Update. Journal of Tropical Pediatrics 29:305-316.

Orth-Gomer, K. and J.V. Johnson
1987 Social Network Interaction and Mortality: A Six-Year Follow-Up Study of a Random Sample of the Swedish Population. Journal of Chronic Diseases 10:949–957.

Paeratakul, S., M.A. White, D.A. Williamson, D.H. Ryan, and G.A. Bray
2002 Sex, Race/Ethnicity, Socioeconomic Status, and BMI in Relation to Self-Perception of Overweight. Obesity Research 10:345-350.

Pagan, J.A. and A. Davila
1997 Obesity, Occupational Attainment, and Earnings: Consequences of Obesity. Social Science Quarterly 78(3):756-770.

Pagezy, H.
1991 Fatness and Culture Among the Southern Mongo (Zaire): The Case of the Primparous Nursing Woman. *In* African Study Monographs, Vol. 12, no. 3. Pp. 149-160. Kyoto: Research Committee for African Area Studies.

Papas, M.A., A.J. Albert, R. Ewing, K.J. Heizisouer, T.L. Gary, and A.C. Klassen
2007 The Built Environment and Obesity. Epidemiologic Reviews 29:129-143.

Parker, S., M. Nichter, M. Nichter, N. Vuckovic, C. Sims, and C. Ritenbaugh
1995 Body Image and Weight Concerns among African American and White Adolescent Females: Differences that Make a Difference. Human Organization 54(2):103-114.

Paxson, H.
2008 Post-Pasteurian Cultures: The Microbiopolitics of Raw-Milk Cheese in the United States. Cultural Anthropology 23(1):15-47.

Pelto, G.H. and P.J. Pelto
1983 Diet and Delocalization: Dietary Changes Since 1750. Journal of Interdisciplinary History 14(2):507-528.

1989 Small but Healthy? An Anthropological Perspective. Human Organization 48(1):11-15.

Pelto, G.H., P. Pelto, and E. Messer, eds.
1989 Research Methods in Nutritional Anthropology. Tokyo: The United Nations University.

Popenoe, R.
2004 Feeding Desire: Fatness, Beauty, and Sexuality Among a Saharan People. London: Routledge.

Popkin, B.M.
1993 Nutritional Patterns and Transitions. Population and Development Review 19(1):138-155.

1999 Urbanization, Lifestyle Changes and the Nutrition Transition. World Development 27(11):1905-1916.

2001 The Nutrition Transition and Obesity in the Developing World. Journal of Nutrition 131:871S-873S.

2002 An overview on the nutrition transition and its health implications: The Bellagio meeting. Public Health Nutrition 5(1A):93-103.

2004 The Nutrition Transition: An Overview of World Patterns of Change. Nutrition Reviews 62(7):S140-S143.

Popkin, B.M. and P. Gordon-Larsen
2004 The Nutrition Transition: Worldwide Obesity Dynamics and their Determinants. International Journal of Obesity 28:S2-S9.

Porter, D.
1999 Health, Civilization, and the State: A History of Public Health from Ancient to Modern Times. London: Routledge.

Pottier, J.
1999 Anthropology of Food: The Social Dynamics of Food Security. Cambridge: Polity Press.

Poudrier, J.
2007 The Geneticization of Aboriginal Diabetes and Obesity: Adding Another Scene to the Story of the Thrifty Gene. Canadian Review of Sociology 44(2):237-261.

Press, I.
1975 Tradition and Adaptation: Life in a Modern Yucatan Maya Village. Westport, CT: Greenwood Press.

Puhl, R.M. and K.D. Brownell
2006 Confronting and Coping with Weight Stigma: An Investigation of Overweight and Obese Adults. Obesity 14:1802-1815.

Putnam, R.D.
2000 Bowling Alone: The Collapse and Revival of American Community. New York: Touchstone.

Quesenberry, C.P., Jr., B. Caan, and A. Jacobson
1998 Obesity, Health Services Use, and Health Care Costs Among Members of a Health Maintenance Organization. Archives of Internal Medicine 158(5):466-472.

Ramesh, P. and S. Jareena
2009 Overweight Exceeds Underweight Among Women in Kerala: An Analysis of Trends and Determinants. Journal of Human Ecology 25(2):93-103.

Rappaport, R.A.
2000[1968] Pigs for the Ancestors: Ritual in the Ecology of a New Guinea People. Long Grove, IL: Waveland Press.

Rasmussen, S.J.
2010 Remaking Body Politics: Dilemmas Over Female Fatness as Symbolic Capital in Two Rural Tuareg Communities. Culture, Medicine and Psychiatry 34:615-632.

Reichel-Dolmatoff, G. and S. Muirden
1951 The Kogi: A Tribe of the Sierra Nevada de Santa Marta, Colombia. Vol. 2. Bogota: Editorial Iqueima.

Richards, A.
1939 Land, Labour and Diet in Northern Rhodesia: An Economic Study of the Bemba Tribe. Oxford University Press.

2004 [1932] Hunger and Work in a Savage Tribe. London, Routledge. First published in 1932 by George Routledge & Sons, Ltd.

Ries, N.
2009 Potato Ontology: Surviving Postsocialism in Russia. Cultural Anthropology 24(2):181-212.

Ritenbaugh, C.
1982 Obesity as a Culture-Bound Syndrome. Culture, Medicine and Psychiatry 6(4):347-361.

Robine, J., I. Romieu, and J. Michel
2003 Trends in Health Expectancies. *In* Determining Health Expectancies. J. Robine, C. Jagger, C.D. Mathers, E.M. Crimmins and R.M. Suzman, eds. Pp. 75-104. West Sussex: John Wiley & Sons Ltd.

Rogers, R.G. and R. Hackenberg
1987 Extending Epidemiologic Transition Theory: A New Stage. Social Biology 34(3-4):234-243.

Romney, A.K., S.C. Weller, and W.H. Batchelder
1986 Culture as Consensus: A Theory of Culture and Informant Accuracy. American Anthropologist 88(2):313-338.

Rosen, G.
1952 Political Order and Human Health in Jeffersonian Thought. Bulletin of the History of Medicine 26:32-44.

Rosén, M. and B. Haglund
2005 From Healthy Survivors to Sick Survivors – Implications for the Twenty-First Century. Scandinavian Journal of Public Health 33:151-155.

Rosenberg, C.E.
2002 The Tyranny of Diagnosis: Specific Entities and Individual Experience. The Milbank Quarterly 80(2):237-260.

Rozin, P., C. Fischler, S. Imada, A. Sarubin, and A. Wrzesniewski
1999 Attitudes to Food and the Role of Food in Life in the U.S.A., Japan, Flemish Belgium and France: Possible Implications for the Diet-Health Debate. Appetite 33(2):163-180.

Saag, K.G. and H. Choi
2006 Epidemiology, Risk Factors and Lifestyle Modifications for Gout. Arthritis Research and Therapy 8(S1):S2-S8.

Sahlins, M.D. and D.B. Barrère
1992 Historical Ethnography. *In* Anahulu: The Anthropology of the History in the Kingdom of Hawaii. P.V. Kirch and M.D. Sahlins, eds. Chicago: University of Chicago Press.

Scheder, J.C.
1988 A Sickly-Sweet Harvest: Farmworker Diabetes and Social Equality. Medical Anthropology Quarterly 2(3):251-277.

Schlesinger, M.
2005 Weighting for Godot. Journal of Health Politics, Policy and Law 30(5):785-801.

Schneeman, B.O.
2003 Evolution of Dietary Guidelines. Journal of the American Dietetic Association 103:S5-S9.

Schoenbach, V.J., B.H. Kaplan, L. Fredman, and D.G. Kleinbaum
1986 Social Ties and Mortality in Evans County, Georgia. American Journal of Epidemiology 123:577–591.

Schoonover, H.
2007 A Fair Farm Bill for Public Health. Minneapolis: Institute for Agriculture and Trade Policy.

Scott, J.
2000 Social Network Analysis: A Handbook. 2nd ed. London: Sage Publications Ltd.

Scrimshaw, N.S.
2003 Historical Concepts of Interactions, Synergism and Antagonism Between Nutrition and Infection. Journal of Nutrition 133(supplement):316S-321S.

Scrimshaw, N.S. and M. Béhar
1961 Protein Malnutrition in Young Children. Science 133:2039-2047.

Scrimshaw, N.S., C.E. Taylor, and J.E. Gordon
1959 Interactions of Nutrition and Infection. American Journal of Medical Science 237(3):367-403.

1968 Interactions of Nutrition and Infection. Geneva: WHO.

Scrimshaw, N.S. and V.R. Young
1989 Adaptation to Low Protein and Energy Intakes. Human Organization 48(1):20-30.

Seckler, D.
1980 Malnutrition: An Intellectual Odyssey. Western Journal of Agricultural Economics 5:219-227.

Shaya, F.T., D. Flores, C.M. Gbarayor, and J. Wang
2008 School-Based Obesity Interventions: A Literature Review. Journal of School Health 78(4):189-196.

Shepherd, R. and G. Towler
1992 Nutrition Knowledge, Attitudes and Fat Intake: Application of the Theory of Reasoned Action. Journal of Human Nutrition and Dietetics 5(6):387-397.

Silverman, P., L. Hecht, and J.D. McMillin
2002 Social Support and Dietary Change Among Older Adults. Ageing & Society 22:29-59.

Singer, M.
1989 The Coming of Age of Critical Medical Anthropology. Social Science and Medicine 28(11):1193-1203.

Singh, D., B.J. Dixson, T.S. Jessop, B. Morgan, and A.F. Dixson
2010 Cross-Cultural Consensus for Waist-Hip Ratio and Women's Attractiveness. Evolution and Human Behavior 31:176-181.

Smalley, K.J., A.N. Knerr, Z.V. Kendrick, J.A. Colliver, and O.E. Owen
1990 Reassessment of Body Mass Indices. American Journal of Clinical Nutrition 52(3):405-408.

Smith, K.P. and N.A. Christakis
2008 Social Networks and Health. Annual Review of Sociology 34:405-429.

Smith, W.R.
1889 Lectures on the Religion of the Semites. New York: Appleton.

Sobal, J.
1991 Obesity and Socioeconomic Status: A Framework for Examining Relationships Between Physical and Social Variables. Medical Anthropology 13:231-247.

Sobal, J., B. Rauschenbach, and E.A. Frongillo
2003 Marital Status Changes and Body Weight Changes: A US Longitudinal Analysis. Social Science and Medicine 56:1543-1555.

Sobal, J. and A.J. Stunkard
1989 Socioeconomic Status and Obesity: A Review of the Literature. Psychological Bulletin 105(2):26-275.

Sobal, J. and B. Wansink
2007 Kitchenscapes, Tablescapes, Platescapes, and Foodscapes: Influences of Microscale Built Environments on Food Intake. Environment and Behavior 39(1):124-142.

Söderlund, A., A. Fischer, and T. Johansson
2009 Physical Activity, Diet and Behaviour Modification in the Treatment of Overweight and Obese Adults: A Systematic Review. Perspectives in Public Health 129(3):132-142.

Sondik, E.J., D.T. Huang, R.J. Klein, and D. Satcher
2010 Progress Toward the Healthy People 2010 Goals and Objectives. Annual Review of Public Health 31:271-281.

Speakman, J.R.
2006 Thrifty Genes for Obesity and the Metabolic Syndrome – Time to Call Off the Search? Diabetes and Vascular Disease Research 3:7-11.

Spring, A.
1995 Agricultural Development and Gender Issues in Malawi. Lanham, Maryland: University Press of America.

2001 Agricultural Commercialization: Its Positive Effects on African Women Farmers. Development Economics and Policy 23:13-36.

Spring, A., ed.
2000 Women Farmers and Commercial Ventures: Increasing Food Security in Developing Countries. Boulder, Colorado: Rienner.

Steenhuis, H.M., A.E.R. Bos, and B. Mayer
2006 (Mis)interpretation of Body Weight in Adult Women and Men. Journal of Human Nutrition and Dietetics 19(3):219-228.

Steenland, K., J. Henley, and M. Thun
2002 All-Cause and Cause-Specific Death Rates by Educational Status for Two Million People in Two American Cancer Society Cohorts, 1959-1996. American Journal of Epidemiology 156(1):11-21.

Stunkard, A.J., T. Sørensen, and F. Schulsinger
1983 Use of the Danish Adoption Register for the Study of Obesity and Thinness. *In* Genetics of Neurological and Psychiatric Disorders. S.S. Kety, L.P. Rowland, R.L. Sidman and S.W. Matthysse, eds. Pp. 115-120. New York: Raven Press.

Swinburn, B A., G. Egger, and F. Raza
1999 Dissecting Obesogenic Environments: The Development and Application of a Framework for Identifying and Prioritizing Environmental Interventions for Obesity. Preventive Medicine 29:563-570.

Swora, M.G.
2003 Using Cultural Consensus Analysis to Study Sexual Risk Perception: A Report on a Pilot Study. Culture, Health & Sexuality 5(4):339-352.

Tate, R.F.
1954 Correlation Between a Discrete and a Continuous Variable. Point-Biserial Correlation. The Annals of Mathematical Statistics 25(3):603-607.

Taveras, E.M, S.L. Rifas-Shiman, C.S. Berkey, H.R.H. Rockett, A.E. Field, A. Lindsay Frazier, G.A. Colditz, and M.W. Gillman
2005 Family Dinner and Adolescent Overweight. Obesity Research 13:900-906.

Tepper, B.J., Y-S. Choi, and R.M. Nayga, Jr.
1997 Understanding Food Choice in Adult Men: Influence of Nutrition Knowledge, Food Beliefs and Dietary Restraint. Food Quality and Preference 8(4):307-317.

Thompson, D., J.B. Brown, G.A. Nichols, P.J. Elmer, and G. Oster
2001 Body Mass Index and Future Healthcare Costs: A Retrospective Cohort Study. Obesity Research 9(3):210-218.

Tillotson, J.E.
2004 America's Obesity: Conflicting Public Policies, Industrial Economic Development, and Unintended Human Consequences. Annual Review of Nutrition 24:617-643.

Trogdon, J.G., E.A. Findelstein, T. Hylands, P.S. Dellea and S.J. Kamal-Bahl
2008 Indirect Costs of Obesity: A Review of the Current Literature. Obesity Reviews 9:489-500.

Truswell, A.S. and J.D.L. Hansen
1976 Medical Research Among the !Kung. *In* Kalahari Hunter-Gatherers: Studies of the !Kung San and Their Neighbors. R. Lee and I. DeVore, eds. Pp. 166-194. Cambridge, MA: Harvard University Press.

Ulijaszek, S.J.
2004 Dietary Intake Methods in the Anthropology of Food and Nutrition. *In* Researching Food Habits: Methods and Problems. H. Macbeth and J. MacClancy, eds. Pp. 119-134. New York: Berghahn.

2007 Frameworks of Population Obesity and the Use of Cultural Consensus Modeling in the Study of Environments Contributing to Obesity. Economics and Human Biology 5:443-457.

United States Census Bureau
n.d. State and County Quickfacts, Utica, New York. Online searchable database http://quickfacts.census.gov/qfd/states/36/3676540.html accessed on April 11, 2011.

United States Department of Health and Human Services
n.d. Healthy People 202 Nutrition and Weight Status Objectives. http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=29, accessed October 4, 2011.

2000 Healthy People 2010. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: United States Government Printing Office.

2010 HHS Announces the Nation's New Health Promotion and Disease Prevention Agenda. HHS News press release, December 2, 2010.

United States Department of Justice
2009 Federal Bureau of Investigation Uniform Crime Reporting Statistics. Online searchable database http://www.ucrdatatool.gov/Search/Crime/State/StateCrime.cfm, accessed October 5, 2011.

Unwin, N.
2001 Commentary: Non-Communicable Disease and Priorities for Health Policy in Sub-Saharan Africa. Health Policy and Planning 16(4):351-352.

van Duijvenbode, D.C., M.J.M. Hoozemans, M.N.M. van Poppel, and K.I. Proper
2009 The Relationship Between Overweight and Obesity, and Sick Leave: A Systematic Review. International Journal of Obesity 33:807-816.

Vernay, M., A. Malon, A. Oleko, B. Salanave, C. Roudier, E. Szego, V. Deschamps, S. Hercberg, and K. Castetbon
2009 Association of Socioeconomic Status with Overall Overweight and Central Obesity in Men and Women: The French Nutrition and Health Survey 2006. BMC Public Health 9:215-222.

Wang, Y. and M.A. Beydoun
2007 The Obesity Epidemic in the United States—Gender, Age, Socioeconomic, Racial/Ethnic, and Geographic Characteristics: A Systematic Review and Meta-Regression Analysis. Epidemiologic Reviews 29:6-28.

Wang, Y., M.A. Beydoun, L. Liang, B. Caballero, and S.K. Kumanyika
2008 Will All Americans Become Overweight or Obese? Estimating the Progression and Cost of the US Obesity Epidemic. Obesity 16:2323-2330.

Watts, D..J.
2004 The “New” Science of Networks. Annual Review of Sociology 30:243-270.

Welin L., G. Tibblin, K. Svärdsudd, B. Tibblin, S. Ander-Peciva, B. Larsson, and L. Wilhelmsen
1985 Prospective Study of Social Influences on Mortality: The Study of Men Born in 1913 and 1923. Lancet 325(8434):915–918.

Weller, S.C.
1984a Cross-cultural Concept of Illness Variation and Validation. American Anthropologist 86(2):341-351.

1984b Consistency and Consensus Among Informants: Disease Concepts in a Rural Mexican Town. American Anthropologist 86(4):966-975.

1987 Shared Knowledge, Intracultural Variation, and Knowledge Aggregation. American Behavioral Scientist 31(2):178-193.

Welsh, S.
1994 Atwater to the Present: Evolution of Nutrition Education. The Journal of Nutrition 124:1799S-1807S.

Whincup, P.H, J.A Gilg, O. Papacosta, C. Seymour, G.J Miller, K.G.M.M. Alberti, and D.G. Cook
2002 Early Evidence of Ethnic Differences in Cardiovascular Risk: Cross Sectional Comparison of British South Asian and White Children. BMJ 324(7338):635-640.

Whiteford, M.B.
1982 The Interface of Cultural Factors with Nutritional Well-Being: The Case of Moroceli, Honduras. Medical Anthropology 6(3):221-228.

WHO
2000 Obesity: Preventing and Managing the Global Epidemic. Geneva: WHO.

2002 The World Health Report 2002: Reducing Risks, Promoting Healthy Life. Geneva: WHO.

WHO/FAO
2003 Diet, Nutrition and the Prevention of Chronic Diseases. Report of a Joint WHO/FAO Expert Consultation. WHO Technical Report Series 916. Geneva: WHO.

Wilkinson, R.G.
1996 Unhealthy Societies: The Afflictions of Inequality. London: Routledge.

Wilkinson, R.G. and K. Pickett
2010 The Spirit Level: Why Greater Equality Makes Societies Stronger. New York: Bloomsbury Press.

Williams, F.E. and H. Murray
1930 Orokaiva Society. London: Oxford University Press.

Wilson, C.S.
1971 Food Beliefs Affect Nutritional Status of Malay Fisherfolk. Journal of Nutrition Education 2:96-98.

1973 Food Taboos of Childbirth: The Malay Example. Ecology of Food and Nutrition 2(4):267-274.

Wonderley, A.
2002 The Oneida Indian Nation. *In* Ethnic Utica. James S. Pula, ed. Pp. 152-172.Utica, New York: Ethnic Heritage Studies Center at Utica College.

Wrangham, R.
2009 Catching Fire: How Cooking Made Us Human. New York: Basic Books.

Yusuf, S., S. Reddy, S. Ôunpuu, and S. Anand
2001 Global Burden of Cardiovascular Disease: Part I: General Considerations, the Epidemiologic Transition, Risk Factors, and Impact of Urbanization. Circulation 104:2746-2753.

Zhang, Q. and Y. Wang
2004 Trends in the Association between Obesity and Socioeconomic Status in U.S. Adults: 1971 to 2000. Obesity Research 12:1622-1632.

Zielbauer, P.
1999 Looking to Prosper as a Melting Pot; Utica, Long in Decline, Welcomes an Influx of Refugees. The New York Times, May 7, 1999.

BIOGRAPHICAL SKETCH

Stacey Giroux grew up in Missouri and attended the University of Missouri-Columbia, earning degrees in anthropology and classical studies. After working as a research assistant in the anthropology department at the University of Missouri-Columbia and at the Missouri Department of Health and Senior Services, she enrolled as a graduate student in anthropology at the University of Florida. She received her Ph.D. from the University of Florida in the spring of 2012 and currently works as Project Director of the Sociological Research Practicum in the Schuessler Institute for Social Research at Indiana University in Bloomington, Indiana.