

Introduction

Cultural and economic factors play critical roles in the etiology of obesity and the increase in obesity prevalence. Culture refers to the learned patterns of behavior and thought characteristic of a social group; culture forms the context of people's lives, and to a large extent that context is beyond an individual's control. Culture includes material aspects, such as diet and activity patterns that are directly causal to fat deposition and the causation of obesity. Culture also has social and cognitive components, including social pressures and ideals of beauty that are more indirectly related to obesity.

This paper examines economic, social and ideological factors that contribute to the causation of overweight and obesity, particularly in North America. Cultural context includes many unconscious and taken-for-granted circumstances that greatly limit individual choice and behavior. For example, some things are simply considered "normal" and unquestioned parts of life including driving cars instead of walking, eating calorie-dense industrially produced foods, and watching television for hours per day. In the daily life of "normal" people within the cultural mainstream, an individual's daily choices primarily involve what car they drive or what route they take, which energy-dense food they eat, and what they will watch on television. The cultural and economic context, historically shaped by powerful socioeconomic forces like corporations, constrain individual choices in habitual behaviors. At the same time, a consumer-oriented capitalist economy establishes an illusion of personal choice about work, diet and activity patterns. It is difficult for individuals to swim against the current of cultural forces that lead toward fatness; it is a culturally constructed "obesogenic" environment.

In North American society, it is remarkably easy to become fat and a large percentage of people do so. The incidence of obesity in the United States is rising at a striking rate, so that many Public Health leaders are calling it an epidemic (Mokdad, Serdula et al. 1999). In this context, thinness can be a marker of social distinction particularly for women, and increasingly so for men. In a capitalist economy, increased physical activity has become a commodity to be purchased (exercise equipment, health club membership) and lower calorie intake often involves the purchase of special commodity (diet foods). Thinness, like tanning, has been inverted in its historical symbolic association to poverty and manual labor to become a marker of excess leisure time and economic prosperity. Obesity and overweight, which are positively evaluated in many societies, have therefore become issues of social stigma and ridicule. The difficulty of losing weight or maintaining weight loss in the cultural context of North America cannot be minimized. The cultural and economic contexts predispose individuals to failure. Moreover, North American cultural ideologies overemphasize the power of the individual to make and sustain choices that do not conform to social norms. The paper uses television viewing as a central example of a cultural behavior, reinforced by a political economic system, that plays a role in the etiology of both pediatric and adult pediatric obesity.

Obesity is an important and growing public health issue. As a precursor of a variety of chronic diseases, obesity is a major cause of preventable morbidity and mortality, primarily in the developed world and increasingly in the developing world. In the United States, the problem of pediatric obesity has gained

a great deal of attention. The purpose of this chapter is to demonstrate how culturally patterned behaviors and beliefs play a critical role in the etiology of obesity and therefore have practical implications for its prevention and treatment. The etiology of obesity is complex. It is generally recognized that excess adiposity is caused by the interaction of genetic predispositions operating in necessary "environmental" conditions; it is a diathesis of genes and the particular human-made context or "environment," although the exact nature of the causal relationship is not understood (Price, Cadoret et al. 1987; Stunkard 2000). Genetic predispositions may affect a variety of possible physiological processes, including basal metabolic rates and leptin receptor activity influencing the deposition of fat during periods of positive energy imbalance. Individuals with "fat phenotypes" are likely to develop adult obesity but genetic inheritance does not cause obesity alone (Stunkard, Harris et al. 1987). Understanding the role of "environment," particularly teasing apart the diverse contributions of culture, economy and individual psychology remains an important research goal for the design of effective prevention and treatment programs. Distinguishing between levels of analysis – from the metabolic to the individual psyche, to various social groupings, to the wider political economic system – is an essential task that has not been adequately attempted.

The Descriptive Epidemiology of Obesity

Before discussing the role of culture in the etiology of obesity, it is valuable to outline some basic features of its epidemiological distribution in regard to time, place, and person. Like most diseases, obesity exhibits a non-random historical and social distribution; any theory of the etiology of obesity must account for those distributions.

From an anthropological or archaeological view of time, the current "epidemic" of overweight and obesity is very recent. For 99% of history, the exclusive productive economic pattern of human culture was one of hunting and gathering. Today, this original human lifestyle is rare, but a few such groups have been the subjects of intensive cultural and biological investigation. One important finding has been that there are no reported cases of obesity among people following a traditional hunting and gathering way of life. Such food foragers do not store surplus food and, in general, demonstrate an egalitarian distribution of food brought into camp. Obesity was essentially nonexistent until after the invention of farming some 10,000 years ago, and more specifically until after the Industrial Revolution. Throughout the developed world, the incidence of obesity has been climbing at an alarming rate. In the United States, there has been roughly a thirty percent increase in obesity prevalence in the decade of the Nineties alone (CDC 2000) and this large increase has brought a great deal of public health attention. An epidemiological paradox is that this dramatic increase in obesity has historically coincided with a gradual decrease in the prevalence of death due to heart disease (the leading cause of mortality in the U.S.), although most epidemiologists believe that this reflects a secular trend.

Obesity is a serious and widespread health problem in only certain kind of societies -- ones characterized by economic modernization, some affluence, food surplus, and social stratification. Numerous studies of traditional societies undergoing the process of economic modernization demonstrate

rapid increases in the prevalence of obesity (West 1978;Page, Damon et al. 1974; Zimmet 1979; Phillips and Kubisch 1985). Trowell and Burkitt's volume of 15 case studies of epidemiological change in modernizing societies (1981) concludes that obesity is the first of the "diseases of civilization" to appear. The highest reported prevalence of obesity is on the Micronesian island of Nauru with the age standardized prevalence of adult of obesity being 84.7% for males and 92.8% of females (Collins, Dowse et al. 1990). The inhabitants of Nauru are extremely wealthy because of valuable mineral deposits on the island (Baba and Zimmet 1990; Pollack 1995). In Europe, there are higher prevalences of obesity in southern European countries than northern ones, and within those countries the risk of obesity is higher in rural than urban areas (Kluthe and Schubert 1985). Within the United States, a country with a high overall prevalence of overweight and obesity the behavioral risk factor surveys coordinated by the Centers for Disease Control indicate that East-South-Central region (Kentucky, Tennessee, Alabama, Mississippi) had the highest obesity rates (21.2%) and that West Virginia had the highest single state prevalence (23.9%) (Gurney and Gornstein 1988; CDC 2000).

The epidemiological question of person --what social groupings are most at risk for obesity-- is most important. There are three facts about this social distribution that are particularly cogent: 1) a gender difference in the total percent and site distribution of body fat, as well as the prevalence of obesity; 2) the concentration of obesity in certain ethnic groups; and 3) a powerful and complex relationship between social class and obesity. Of these three factors the relationship with social class is the most important, and the most closely related to culture and economy.

The greatest degree of sexual dimorphism in humans is in the site of distribution of fat tissue. Women have much more peripheral body fat in the legs and hips than men; this gender dimorphism has evolutionary roots, since energy storage in peripheral fat has an adaptive advantage in maintaining pregnancy and lactation during periods when diet cannot be supplemented. This pattern of gender differences appears to be universal since it is found in contemporary hunting and gathering groups like the !Kung San as well as in complex industrial countries (Brown 1991). When obesity is measured in terms of BMI rather than alternative measures of fat deposition like waist-hips ratio or waist circumference, the epidemiological significance of central body fat characteristic of males can be underestimated. In other words, peripheral body fat appears to be epidemiologically benign, so that the real medical concern should be concentrated on the phenomenon of central body fatness (Bjorntorp 1988). In this regard, the morbidity and mortality related to obesity may be more of a problem in men than women, despite the cultural phenomenon that psychological concern with weight is found predominantly in women (Attie and Brooks-Gunn 1987).

The relationship between the risk of obesity and social class has received substantial research attention. Social class is a powerful predictor of the prevalence of obesity in both modernizing and affluent societies, although the direction of the association is different. This relationship is the subject of a comprehensive review by Sobal and Stunkard (1989) that reviews more than one hundred separate studies. In developing countries, there is a strong and consistent positive association of social class and obesity for

men, women, and children; correspondingly, there is an inverse correlation between social class and protein-calorie malnutrition (Arteaga, Dos Santos et al. 1982). When examining health indicators within households in developing countries, there is a common finding of undernourished children living in the same household with obese adults (Goodman and Leatherman 1998; Pena and Bacallao 2000). Historically, the positive correlation between social class and fatness is a logical and expected pattern in that socially dominant groups with better access to resources should have better nutrition and better health. On the other hand, the contemporary processes of modernization are unfolding so that there is a relationship between poverty and obesity. This is increasingly the case in developing societies, as well as affluent societies, as a recent collection of studies from Latin America indicates (Pena and Bacallao 2000).

In heterogeneous and affluent societies like the U.S., there is a strong inverse correlation of social class and obesity for females (Goldblatt, Moore et al. 1965; Burnight and Marden 1967; Rolland-Cachera and Bellisle 1986; Sobal 1991). The association of obesity and social class among women in affluent societies is not constant through the life cycle. Garn and Clark (1976) have demonstrated a pattern of reversal in which economically advantaged girls are initially fatter than their poor counterparts, but as adults they show less overweight and obesity. The inverse correlation of obesity and social class for females in affluent societies is extremely strong and carries with it important socially symbolic associations. In the United States, ethnic groups with elevated rates of obesity include: African Americans (particularly in the rural south) (Gillum 1987; Liburd, Anderson et al. 1999), Southwestern Native Americans (Knowler, Pettitt et al. 1981), Hispanic Americans and Puerto Ricans (CDC 1989), Gypsies (Thomas, Douchette et al. 1987), and Pacific Islanders (Collins, Dowse et al. 1990). The high prevalence of obesity in ethnic groups probably reflects the interaction of genes, social class, and culture; it is a difficult task to disentangle the relative effects of these factors. The role of economy and the availability of resources for the purchase of foods with high fat contents should not be minimized. For example, Drewnowski and Popkin's review of the historical "nutrition transition" (1997) indicates that with improved economic purchasing power there seems to be a limit on the per capita demand for protein and carbohydrates, but no such limit in the demand for fat. In other words, there appears to be no limit for the demand for fat. This desirability of fat, both on an individual and social level, probably has strong evolutionary roots and is related to the neurophysiology of human preferences for the taste of sweetness (Dobbing 1987). These biological drives to prefer sweet and fat foods are exploited by the food industry to increase profits. As such, the etiology of obesity has to do with both biology and culture, and from an economic viewpoint with both supply and demand.

Culture, Economy and Individual Psychology

In the literature on the etiology of obesity, the idea of "environment" is often referred to as a causal factor. "Environment" is a vague term that refers to a host of factors that are not a part of human genetics or biology. It is also distinguished from an individual's psychological makeup, including aspects of personality. Differentiated in this way, "environment" refers to an incredibly wide variety of possible

causal factors, from diet to activity patterns to customs to ideology. The term “environment” sometimes invokes the field of Psychology, indirectly referring to early childhood experiences. This term reflects an analytical bias towards the level of the individual; many social scientists, including anthropologists, do not think that the individual human is the most cogent level for analysis. This is because individual behaviors are often strategic and contingent on social context – the behavior of others – as well as on local economic conditions and symbolic meanings that are socially constructed. The term “environment” also implies the ecological context. This has the unfortunate connotation that causal factors are not socially created – that they are fixed and not subject to change. “Environment” is therefore considered as the fixed context in which people live, like the geography and ecology. In reality, all aspects of the human environment are influenced by current and past human behaviors; it is historically contingent. Our “environment” has been created, not by a single individual but by the entire society. Examining the etiology of obesity from a social perspective orients hypotheses about why the epidemiological patterns of obesity are a certain way, and not why a particular individual is obese. Instead of the term "environment," it may be preferable to use the concept of culture, with both its material and cognitive aspects.

Culture refers to the learned patterns of behavior and belief characteristic of a social group. As such, culture encompasses *Homo sapiens'* primary mechanism of evolutionary adaptation that has distinct advantages of greater speed and flexibility than genetic evolution. Culture is a central concept in Anthropology even though the precise nature of culture has been a matter of considerable academic debate. Culture refers to a consensus of ideas, beliefs, and behaviors that is constantly changing. Simple societies that were traditionally studied by anthropologists were once thought to have single and unchanging culture that could be described from a single point of view; this notion is no longer accepted. In both "simple" and complex societies individuals may have multiple social roles in diverse social contexts in which they act and think differently. Because of this variation, there are often significant differences between what individuals say they ought to do, what they say they do, and what an independent observer may describe as their actual behavior.

In an important sense, the productive and distributive economy of a society is key to the overall cultural system. The mode of economic production (e.g. hunting and gathering, horticulture, agriculture or industrialism) determines the availability of surplus food. The social system used in the determination of the division of labor and the distribution of resources may also be considered part of culture. Such determinants of work and wealth influence energy input, expenditure and the possibility of excess calories that can be stored in fat. These economic aspects of culture, and one's position in the social structure, are generally beyond the control of an individual.

On the other hand, individual psychological attributes like personality, eating style, dietary restraint, or body image may reflect the diversity of thought and behavior found between people within a social group. The origin of such individual psychological attributes are not well understood, and may be genetic or due to early childhood experiences. A fundamental question is the extent to which individual psychological variation must fall within the parameters set by society and culture. The only way to

examine such a question is through cross-cultural comparison. Cultural behaviors and beliefs are usually learned in childhood and they are often deeply held and seldom questioned by adults who pass this "obvious" knowledge and habits to their offspring. In this regard, cultural beliefs and values are largely unconscious factors in the motivation of individual behaviors -- they are culturally constructed, deeply felt (embodied), and form the core of an individual's daily living pattern (*habitus*). Cultural beliefs define "what is normal" and therefore form the basis of peer pressure for social conformity, as well as consumer choices in a market economy. As such, culture shapes individual's beliefs and goals while at the same time constraining the choice of available and acceptable behaviors.

The concept of culture is clearly related to social categories like social class and ethnicity. It is not membership in a lower social class *per se* that causes higher rates of morbidity and mortality from both infectious and chronic diseases, but rather elements of the overall living conditions that characterize the group (e.g. levels of nutrition, hygienic conditions, crowding, or access to health care). As such, it is appropriate to think of cultural features of a particular social class. For members of the lower social classes, anthropologists have shown that their cultural beliefs and practices often (but not always) function as adaptations to conditions of economic deprivation (Valentine 1980). Obesity in the poor may therefore reflect their concern with economic insecurity.

Some anthropologists' approach to culture emphasizes its cognitive dimensions. For example, Shore (1996) describes "cultural models" as learned templates (cognitive schema) used for thinking, meaning creation, and the construction of rituals and narratives. The identification of cultural models assists in the interpretation of social practices that are meaningful for members of a society. Shore does this for the American ritual of baseball that expresses, in part, the American ambivalence about the conflict of individual and society, between home and the field. In regard to obesity, American cultural models of abundance and innovation may be significant. Certain American adages, for example "bigger is better," or "more is better," may be salient in questions of food choices at restaurants, while notions of "newer is better," or "faster is better" may be cultural models relevant in choices of weight loss options. The aphorism "You can never be too rich or too thin" is often attributed to Wallace Simpson, Duchess of Windsor, for whom the king abdicated the British throne in order to marry. Today this cultural model has been used in advertising as an unquestionable fact. The assumption that you can never be too rich is almost a dogma in a capitalist and consumer oriented society. On the other hand, the idea that you can never be too thin is a cruel joke in light of the epidemic of anorexia nervosa and eating disorders. A woman like Wallace Simpson (or Nancy Reagan) had little individual control over being rich or powerful -- since that came primarily from her marriage to a rich and powerful man. Such a woman, however, can control, or should be able to control, her own body weight and self-presentation. In this sense, maintaining a thin body is both an attribute of sexual attractiveness and an indirect symbol of her ability to control her husband.

Another approach to the concept of culture is a cultural-materialist model, developed by Harris and primarily based on Marxist theory (Harris 1964). This model divides culture into three layers. The

material foundation of a cultural system is the economic mode of production that includes the technology utilized and the population size that the productive economy allows and requires. Population size is maintained by the social system, sometimes called the mode of reproduction. Contingent on the first layer is the system of social organization, which includes kinship patterns, marriage and family practices, politics, and status differentiation. Contingent upon the social structure is the ideology or belief system, including ideas, beliefs and values. Most anthropologists believe that the ideology is the most important part of culture, in part because it rationalizes and reinforces the economy and social structure. Ideology allows people to make sense of their world and to share their common worldview through symbols. As such, ideology includes both sacred concepts from religion as well as secular concepts (with symbolic components) like health or sexual attractiveness. A culture is an integrated system, so that a change in one part causes changes on the other layers. An economic change, like the invention of agriculture or the industrial revolution, had drastic implications for population size, social organization and associated beliefs. All three of these levels of a cultural system play a role in the etiology of obesity, as discussed below.

Obesity, Economics, and the Industrial Food System

In contemporary North American culture, food production is based on a highly mechanized agricultural system that is highly dependent on petroleum as an energy source. Bodley (1985) argues that this industrial food system is so inefficient from an energy standpoint that it would better if Americans could discover a way to eat oil directly. Industrial food production not only means that Americans eat at a higher trophic level on the food chain, primarily by eating meat, but also that we have a wide variety of energy-enhanced and calorie rich foods available to us. Our society's complex post-industrial economy, moreover, allows members access to high calorie diets without requiring physical energy expenditures in food production. To a large extent, it is the power of the economy, and our society's position within the global political economic system, that provides the material infrastructure for our current epidemic of obesity.

The industrial food production system also involves the processing of foods for storage, distribution, and purchase by consumers in a competitive market. The transformation of food through industrial processing often involves the addition of fat, sugar, salt or other preservatives to appeal to consumer taste preferences. The transformation of potatoes in potato chips is a good example – the potato serves primarily as a physical matrix for carrying fat and salt – so that they might be more honestly labelled “fat and salt chips.” Similarly, butter fat and sugar are industrially transformed into ice cream, a food that is rich in both symbolism and calories. One of the most important aspects of this food processing system is the fact that fat-added or value-added product provides a much higher margin of profit for food manufacturers. The food industry spends a remarkable amount on advertising, particularly on television, for high-calorie, high-profit products. This industry exploits the human evolutionary heritage that accounts for the consumer's “sweet tooth” and “fat tooth.” Ironically, the industrial food industry also processes a

wide variety of diet foods, most often containing expensive substitutes for fat and sugar that also have a high profit margin. The food industry's goal is to produce increased revenues and profit for capitalist owners, not to provide an adequate or healthy diet to society. This profit motive shapes both the availability of certain foods (it is hard to find fresh fruits and vegetables in a ghetto market), as well as the manipulative use of advertising to create consumer desire for certain food products. The industrial food system therefore changes culture. A good example of dual economic and cultural phenomenon is found in the area of fast foods and convenience foods.

Fast Food as a Fat Delivery System

It was a breakthrough in Public Health when some key members of the tobacco industry admitted that cigarettes function primarily as a "nicotine-delivery system" providing addicts access to a drug upon which they depend. The negative health consequences of cigarette smoking, therefore, are a by-product of a political economic system. In a very similar way, the North American fast-food industry, part of the industrial food complex, serves as a "fat delivery system" for millions. The appeal of fast food, restaurant food, and convenience food to middle class Americans caught in the "time squeeze" of frantic daily schedules is an important part of culture change. The number of restaurants in the United States is at an all-time high, as consumers have become increasingly dependent on them as a source of meals and snacks (Census 1994). Eating establishments in the United States increased by 75% between 1977 and 1991, and Americans are getting an increased proportion of daily energy from establishments outside the home. In 1977, about 16% of all meals and snacks were consumed outside the home, but by 1995, 29% of all meals and snacks in the U.S. were eaten away from home, accounting for 31% of daily energy intake (McCrorry, Fuss et al. 1999; Statistical Universe 2001). Throughout the 1990s, the fast food industry has expanded at a rate of about 5% per year, and one important area of expansion is "home replacement meals" (HRM) that are cooked industrially and eaten at home (Bossong-Martines, 2000). An increased proportion of household food income is spent on meals consumed outside the home, and an increasing consumption of fast food within that category, may be related to the rising prevalence of obesity. Men consume restaurant food nearly twice as often as women (McCrorry, Fuss et al. 1999).

Several studies have shown that the nutritional quality of foods consumed outside the home are inferior because they contain much more total fat, saturated fat, cholesterol, and sodium per unit energy (Lin and Frazao 1997). The frequency of eating at fast food restaurants was positively associated with total energy intake and percentage of energy from fat, as well as BMI in women (Jeffery and French 1998). People who ate more frequently at fast food restaurants also have lower dietary fiber intakes. McCrorry and colleagues (1999) demonstrate that, in particular, the consumption of fried chicken and hamburgers were both correlated with body fatness. They suggest four factors contributing to the increased energy derived from restaurant meals: (1) restaurant meals tend to be higher in fat and energy density, (2) restaurants usually serve large portions, (3) they serve food that is highly palatable, and (4) most fast food and restaurants provide the consumer with dietary variety.

Studies have shown that individuals who consume an excess amount of energy from fat, as opposed to carbohydrates or protein, have a propensity to store body fat at higher rates (Horton, Drougas, et al. 1995). These studies imply that individual dietary restraint and conscious control over food intake are a necessary protective mechanism against a high-fat, high-energy density diet. In other words, the “environment” of our material culture and political economy is “obesogenic,” and individuals must consciously and constantly fight against this cultural current to either lose weight or maintain a proper weight. Currently, nearly 40% of the average American intake is derived from fat. A study of meals purchased at McDonalds, Kentucky Fried Chicken, and Pizza Hut, demonstrated that typical meals from these menus would provide the consumer with an intake in excess of 1000 kcals per day over recommended levels (Malouf and Colaguirri 1995).

There has been a marked trend in recent decades for restaurant meals to increase portion size as a strategy both to attract consumers and increase profitability. This is readily noticeable in the drive-thru at the local fast food restaurant when, after having placed an order, the consumer is asked, “Would you like to ‘super-size’ that order for an additional 38 cents?” Super-sizing or value sizing has become commonplace in the restaurant industry today. Hill and Peters (1998) suggest that underlying these larger portion sizes is an American capitalist value of “getting the most for your buck.” The purchase of a meal in a restaurant is based upon a market principle of maximizing consumer value (Wansink 1996). This is a very different sociocultural context from a meal eaten with one’s family at home, where *sharing* a meal rather than getting a good deal or matching individual palates are central to the cognitive cultural model of food consumption. Moreover, increased portion sizes and increased caloric density of restaurant food increases profitability for the food industry. Drewnowski observes that higher fat content is synonymous with the price of the food product, often seen with steak, chocolate, and ice cream (Drewnowski 1997). Because of the desirability and palatability of energy dense foods, people eat larger portions per sitting (Stubbs, Harbron et al. 1995; Schiffman and Graham 1998). Much work has been done in the area of innate preferences for sweets and fat in infancy and early childhood. It is possible that preferences for or associations with “fat texture”, since there is no basic “fat taste” like a “sweet taste,” would be evolutionarily adaptive because of the energy-dense quality of fat (Birch 1992).

Settlement Pattern, Automobile Dependence and the Inactivity Epidemic

If an archaeologist were to examine North American culture, one of the most striking characteristics would be our settlement pattern. Although we have urban centers, Americans generally live in dispersed settlements, largely in unattached houses, in suburbs. One of the largest rooms in suburban houses is the garage. American settlements generally have distinct and segregated geographical areas for work or shopping, and large paved areas for parking that surround these buildings. From a historical standpoint, communities tend to spread farther apart at remarkable rates in a pattern called “sprawl.” Communities are linked by a complex system of wide and expensive roads that have been designed primarily for automobile traffic. The settlement pattern includes very few public spaces like parks or

plazas for social interaction. The size of the road system and parking facilities are some of the most impressive features of the landscape; most buildings are new and spread out. In *The Geography of Nowhere*, Kunstler (1993) describes the historical development of this American settlement pattern, particularly the suburbs. The physical structure of our communities reflects cultural and political power of the automotive and oil industries as well as society's "love affair" with the car. The power of these industries in shaping American life has been remarkable. Community design, zoning laws, and transportation funding are all oriented towards individual use of the automobile – and actively discourage both public and non-motorized transportation. For example, in the early twentieth century, automobile manufacturers bought out private street-car companies in order to tear out their tracks and the competition. Our socially created landscape means that there are few transportation alternatives to the car. Americans drive so much because they have to. The vast majority of trips taken by all members of society (more than 80%) are taken by car and the average number of cars owned by American households is 1.7 (Frank and Engelke 2000). The economic cost of creating and maintaining this settlement pattern – in purchasing cars, gasoline, insurance, new roads, road repair and auto repair is enormous; the long-term health and ecological consequences are also huge.

The public health consequences of this settlement pattern are very significant. Injuries and mortality from automobile crashes remain one of the most important sources of misery and suffering for Americans, despite significant improvements in traffic and automobile safety in recent decades. Putnam (2000) has argued that the social isolation declining social integration related to this settlement pattern results in increased rates of depression and other mental health problems. For present purposes, the dependence on the automobile for nearly all transportation needs is a significant factor in physical inactivity and therefore the current epidemic of overweight and obesity. Street and community design features of suburbs privilege automobile safety and have been shown by Frank and Engelke (2000) to discourage walking and bicycle riding activities – both for daily errands and recreation. A consequence of our settlement pattern is that physical activity is not a normal part of daily life. Instead of being related to daily work, physical activity in the form of workouts becomes another thing that has to be squeezed into an already over-scheduled life. The settlement pattern also means a long commuting time for many individuals, and that adds to the difficulty of finding time for physical activity. Our material culture provides relatively little choice about these matters. It is ironic that many people feel constrained, for reasons of convenience, custom, and safety, to drive to the gym in order to exercise.

Television, Behavior Patterns and Obesity

In the past half-century, the introduction and expansion of new technologies, as elements of material culture, have radically changed patterns of social behavior. Behavioral changes, in turn, influence the prevalence of obesity. A major influence in American culture is the television – a technological device present in nearly all American homes and the center of our most common recreational activity. As Putnam

notes in *Bowling Alone*, “Nothing else in the twentieth century so rapidly and profoundly affected our leisure”(2000:283).

There has been much research on the relationship between television viewing, physical activity, and body composition of both children (Dietz and Gortmaker 1985; Gortmaker, Dietz et al. 1990; Robinson 1999; DuRant, Baranowski et al. 1994; Gortmaker 1996; Andersen, Crespo et al., 1998; Gupta, Saini et al. 1994; Dietz 1990, 1991, 1993; Dietz, Gortmaker et al. 1993; Klesges, Shelton et al.1993; Stafford, Wells et al. 1998) and adults (Tucker and Friedman 1989; Tucker and Bagwell 1991; Crawford, Jeffery et al. 1999); (Mokdad, Serdula et al.1999; Buchowski and Sun 1996; Kuczmarski, Flegal et al. 1994; Jeffery and French 1998). The central question in these studies is the role that television viewing plays in the etiology of obesity, although the problem of the validity of self-reported measures of both physical activity and television viewing has been a persistent problem (Dietz and Gortmaker 1993; Robinson, Hammer et al. 1993) Nevertheless, the correlations are strong enough that a dose-response effect between time spent watching television and obesity prevalence has been suggested (Dietz and Gortmaker 1985). The exact mechanisms that explain the correlation between television viewing time and obesity risk is not completely understood, but it obviously involves physical activity, energy expenditure, dietary intake, or a combination of these (Buchowski and Sun 1996). Two primary mechanisms have been suggested: reduced energy expenditure from displacement of physical activity, and increased intake either during viewing or in response to food advertising (Robinson 1998). The effect of television watching on inactivity and obesity has also been demonstrated in developing societies like India (Gupta, Saini et al. 1994)

The amount of time spent in television viewing is impressive. If the Nielsen ratings are to be believed, U.S. children spend more time watching television than in any other activity except sleep, including time spent in school (Gortmaker, Must et al. 1996). Average per capita viewing by adults has continued to steadily increase by 7-8% per decade since the 1960s. Gortmaker and colleagues suggest that one third of young Americans between 10 and 15 years old watch more than 5 hours per day -- the average amount of viewing in 1990 being 4.8 hours per day, or roughly 34 hours per week. This research group attributes roughly two-thirds of the increased incidence of childhood obesity in the late 80s to be the result of inactivity linked to television viewing (Gortmaker, Must et al. 1996). By the late 1990s, three-quarters of all U.S. homes had more than one television set, whereas less than 25% did in 1970. The proportion of sixth-graders with a television set in their bedrooms grew from 6% in 1970 to 77% by 1999 (Putnam 2000).

A remarkable prospective study in northern Canada in the 1970s provides evidence of a negative association between television and physical activity. Williams studied the effects of introducing television in three isolated and demographically similar communities, named Notel, Unitel, and Multitel by the researchers (Williams and Handford 1986). The primary difference was that Notel was situated in a valley so that the transmitter meant to provide most residents with reception could not be received properly. Television reception in Unitel went from the single channel CBC (Canadian Broadcasting Corporation) to an additional three American commercial networks during the course of the study. Multitel was similar in respect to the other two towns except for the fact that its residents could receive all four channels

throughout the entire two years of the research. The study's findings indicated that television displaced participation in vigorous physical activities and decreased Notel residents' participation in local, community-based activities. Televisions' major effect was to privatize leisure time, reducing participation in recreational activities among all ages (Putnam 2000).

Television is also linked to changes in diet, particularly for children. Simply put, culturally "normal" television habits predisposed children to activity patterns and diets that can result in obesity. In one intervention study in San Jose, California, a program that reduced television viewing time for children also resulted in an improvement of their diet (Robinson 1999). People snack while they view hundreds of advertisements about energy-dense industrially-produced foods per hour of television viewing. Food is the most heavily advertised product on television programs aimed for children, although roughly 40% of all advertisements concern food, with breakfast cereals, soda and snack foods being the most common products (Barcus 1971; Barcus and McLaughlin 1978). There is a major inconsistency between nutritional messages contained in commercials and the official nutrition guidelines. Content analysis of television advertisements and the eating behavior of television characters indicates that eating what is seen on TV will result in energy imbalance and obesity (Wilson, Quigley et al. 1999). There is clear evidence that people change their eating behavior to consume what they see on TV (Taras, Sallis et al. 1989). Obviously, this is why advertisements are made -- because eating these products are good for the profits of the food companies, even if they are not necessarily good for our health.

If excessive television viewing adds to the risk of obesity and chronic disease, why are North Americans watching more television than ever before? From a political economic perspective, the reason why we have televisions in our homes is because they have the latent function of an "advertisement delivery system." The ubiquity of advertising, a form of communication that shapes cultural attitudes and desires, is remarkable. It has been estimated that the average American sees between 400 and 600 ads a day (in all forms of media), amounting to between 40-50 million ad exposures by the time a person is 60 years old (Nichter 1991). Advertisements, as well as mass television programming, shape popular culture. There is social pressure to watch certain programs, because people at work or school the next day are going to be talking about it.

On a surface level, we may choose to watch television as entertainment -- because we enjoy the programming. The reason why most television programs are produced and transmitted, however, is to sell advertisements that create consumer demand and sell products. Without the potential for profit, little cultural content would be created. Moreover, the interests of the companies that buy advertising time help shape the content of television programs. From an individual psychological point of view, as suggested by Robinson and Godbey (2000) television's attraction is that "it is ubiquitous and undemanding: as an activity, television requires no advance planning, costs next to nothing, requires no physical effort, seldom shocks or surprises, and can be done in the comfort of one's own home." Putnam argues that the decline in social capital and community participation in contemporary American society is linked, in a large measure, to the attractiveness of television and consequent social isolation. Television allows individuals to

passively “feel engaged in their community without the effort of actually being engaged” (Putnam 2000). Excessive television watching is correlated with feelings of loneliness, depression and other affective disorders. There is some evidence that people who suffer seasonal affective disorder also experience significant seasonal weight gain during winter months; this may be a case of individuals "self medicating" their dysphoria through eating (Yanovski, Yanovski et al. 2000).

The Ideology of Fat and Thin

Television is a major source of American cultural beliefs and attitudes about a wide variety of topics, besides food, like beauty and body image (Nichter 1991; Nichter 2000). Culture encompasses cultural symbols, beliefs and values; aspects of cultural ideology relevant to the etiology obesity include the symbolic meaning of fatness, eating, ideal body types, and perceived risks of food shortages.

Fatness is symbolically linked to psychological dimensions such as "self-worth," sexuality and fertility in many of societies of the world, but the nature of that symbolic association is not constant. In mainstream U.S. culture, obesity is socially stigmatized (Cahnman 1968; Allon 1981), but for most cultures of the world, fatness is viewed as a welcome sign of health and prosperity (Brown 1991). Given the rarity of obesity in preindustrial societies, it is not surprising that they lack ethnomedical terms for obesity. There is much more attention placed on thinness as a symptom of starvation, as in societies of contemporary Africa where thinness is a sign of AIDS. In the context of that epidemic, as well as the general ubiquity of infectious disease, plumpness is indeed a marker of health. In many traditional peasant societies, as Teti (1995) describes for southern Italy, plumpness was a symbolic marker of prosperity and power whereas thinness was a symbol of poverty, misery, and evil.

Studies about weight gain across the life cycle demonstrate that there are periods of fattening can be culturally acceptable. The most obvious example of this is the seclusion of adolescent girls of elite families in parts of Africa (Malcom 1925; Brink 1995) in preparation for their "coming out" and marriage. Similarly, de Garine describes male fattening sessions, both for groups (during the dry season) and individuals (in the rainy season), among Maasa pastoralists of Cameroon, in which by gorging on milk and sorghum porridge men can increase their perceived body volume, strength, beauty, goodness, health and wealth (de Garine 1995). The advantages of plumpness or obesity can be significant in many traditional societies (Pollack 1995; Schrimshaw and Dietz 1995) and individuals of extreme body size, for example Sumo wrestlers in Japan, can become cultural icons (Hattori 1995). In developed countries like the U.S., weight gain has been identified as being typical during certain times, including winter holidays (Yanovski, Yanovski et al. 2000), the first year in college (the "freshman fifteen") (Megel, Wade et al. 1994), and following marriage (Kahn and Williamson 1990; Kahn, Williamson et al. 1991).

It may be large body size rather than obesity *per se* which in agricultural societies becomes admired symbol of health, prestige, prosperity or maternity. The agricultural Tiv of Nigeria, for example, distinguish between a very positive category "too big" (*kehe*) and an unpleasant condition "to grow fat" (*ahon*) (Bohannon and Bohannon 1969). The first is a compliment because it is a sign of prosperity; the

second term is a rare and undesirable condition. For women, fatness may also be a symbol of maternity and nurturance. In traditional societies where women attain status only through motherhood, this symbolic association increases the cultural acceptability of obesity (Powdermaker 1960). A fat woman, symbolically, is well taken care of, and she in turn takes good care of her children. Fellahin Arabs in Egypt describe the proper woman as fat because she has more room to bear the child, lactates abundantly and gives warmth to her children (Ammar 1954). The cultural ideal of thinness in developed societies, in contrast, is found in societies where motherhood is not the sole or even primary means of status attainment for women. In terms of pediatric obesity, it is important to note that the idea that fat babies and children are healthy children is very widespread. Food can be treated as a symbol of love and nurturance; in some cultures it may be impolite for a guest to refuse some offered food, but it is taboo to refuse food from one's mother.

In the industrialized U.S., there is significant ethnic variation in definitions of obesity. Some Mexican-Americans have coined a new term, *gordura mala* (bad fatness) because the original term *gordura* continues to have positive cultural connotations (Ritenbaugh 1982; Ritenbaugh 1991). Among Mexican Americans, Hazuda and colleagues (Hazuda, Haffner et al. 1988) have shown that cultural identity has a stronger and independent effect from SES in relation to the prevalence of obesity. Massara's (1989) ethnographic study of the cultural meanings of weight in a Puerto Rican community in Philadelphia documents the positive associations and lack of social stigma of obesity. In addition, quantitative evidence suggests that there are significant differences in ideal body preferences between this ethnic community and mainstream American culture (Massara 1980). Positive evaluations of fatness may also occur in lower class Black Americans (Styles 1980; Liburd, Anderson et al. 1999; Leonard and Liburd 2000), and Mexican Americans (Ross and Mirowsky 1983). It is important to remember that these ethnic groups are heterogeneous, and that upwardly mobile ethnics more closely resemble mainstream American culture in attitudes about obesity and ideal body shape (Stunkard 2000).

Recently, the relationship between obesity and poverty has received more attention, in part because it is being found in developing countries and therefore represents a new challenge to Public Health (Aguirre 2000; Pena and Bacallao 2000). The role of material cultural factors, particularly diet and activity patterns, obviously play a role in this development, but cultural ideologies are also operating. Marginalized groups may resist "buying into" a dominant cultural belief in the desirability of thinness as a body type. For example, in Nichter's work on "fat talk" discourse among teenage girls, she found that African-American girls dismissed such standards of beauty, preferring locally important emphasis on "attitude" reflected in fashion (Nichter 2000). An interest in dieting may symbolically reflect a lack of loyalty to one's ethnic origins. A similar phenomenon may be at play when poorer people reject mainstream standards of ideal body types.

The poor in developed societies might be considered well off by worldwide standards, and this access to resources is reflected in obesity prevalence. Yet in the context of perceived relative deprivation and economic stability, the poor in rich societies live in stressful conditions - often, just one paycheck away

from hunger. In terms of their life's priorities, economic security may be a more important and immediate objective than more elusive goals like an "ideal body" or even long-term health. In the daily stresses of poverty, food made be the most common avenue of pleasure and psychological relief. Ethnographic studies of the poor urban black communities in the U.S. show a social emphasis on food sharing as a tool for marking family ties and demonstrating community cohesiveness (Stack 1976). For example, post-worship church activities often involve communal eating of foods like fried chicken.

When one is a member of a social group, it is customary to follow the rules of thought and behavior characteristic of that group. "Deviant" behavior or thought will typically be met by peer pressure to conform. Membership in many social groups is often not a matter of voluntary individual choice --for example ethnicity, gender and to a large degree social class -- and therefore conforming to the beliefs and behaviors of these groups is not a matter of individual choice. Particularly in American society, individuals are provided with illusions of choice in diet and activity patterns, but this overemphasizes the empowerment of people to resist the currents of culture.

Conclusion

This paper has argued that culture plays a necessary role in the etiology of obesity, and that the social distribution of obesity must be understood in regard to cultural differences. Rather than the vague term "environment," it has identified material cultural factors in obesity, specifically diet and activity patterns, that are learned and shared by social groups. North American settlement patterns, historically shaped by the automobile -- and manipulated by the automobile and petroleum industries -- is a good example of how material culture that is outside of control of individuals can become an important factor in the causation of increased obesity. A second example is television viewing, a behavior that is linked with increased eating of energy dense food and physical inactivity, is therefore a cause of obesity. Cognitive aspects of culture, including beliefs about ideal body type, the symbolic meanings of food and exercise, also play an important role in the etiology of obesity. The capitalist consumer culture of North America creates the illusion that individuals have a good deal of choice in their diet and behavior patterns. In reality, individual choices are often severely limited by political economic constraints. As such, this paper has described the fast food industry as a delivery system for fat, and television as a delivery system for advertisements. The economy and culture has changed so that people no longer expend sufficient physical energy in their daily work, but have to add daily workouts to an already busy schedule. The overall cultural system of modernity tends to be "obesogenic," and although it is possible for an individual to consciously resist the mainstream flow of culture, it is very difficult to do so.

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