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## **Socioeconomic Differentials in Health: A Review and Redirection\***

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*The social structure and personality perspective provides a theoretical and analytical framework for understanding the persisting association between socioeconomic status (SES) and health outcomes. Current research suggests that health behaviors, stress, social ties, and attitudinal orientations are critical links between social structure and health status. These psychosocial factors are linked more strongly to health status than is medical care and are related systematically to SES. The social distributions of these factors represent the patterned response of social groups to the conditions imposed on them by social structure. Accordingly the elimination of inequalities in health status ultimately may require changes not only in psychosocial factors or health care delivery, but also in socioeconomic conditions. Research is needed that will identify the critical features of SES which determine health, delineate the mechanisms and processes whereby social stratification produces disease, and specify the psychological and interpersonal processes that can intensify or mitigate the effects of social structure.*

One of the central tenets of sociology is that social stratification results in the unequal distribution of desirable resources and rewards in society. In keeping with this expectation, some of the earliest mortality records indicate the existence of a strong inverse association between socioeconomic status (SES) and mortality (Antonovsky 1967): persons of high social status lived longer than their less favored counterparts. During the last 40 years, however, several major changes occurred that were expected to reduce drastically, if not to eliminate, socioeconomic differentials in health. First, infectious diseases have declined as a major factor in producing mortality. Second, adequate nutrition, housing, water, and waste disposal have become available to most American families. Third, Medicaid and Medicare have placed medical treatment within the grasp of many of the poor. Nevertheless, in spite of all these developments, socioeconomic disparities in morbidity and mortality persist, and it is readily evident that the traditional explanations alone have limited power to explain the persisting association between social stratification and health. How and why SES is

linked in such pervasive ways to the risk of disease and death is not well understood.

This paper reviews the literature on the relationship between SES and physical health status and suggests directions for study that can increase our understanding of the determinants. The association between social stratification and health is viewed as a classic problem in the study of social structure and personality. This major paradigm in sociological social psychology provides a theoretical and analytic framework in which to study the relationship of macro social structures to individual characteristics and behavior (House 1981; Inkeles 1959). This perspective predicts that because social structures shape individual values and behavior, SES differentials in morbidity and mortality are due at least in part to conditions of life that derive from an individual's structural position.

Consequently, adequate understanding of the social status-health relationship is contingent on the theoretical identification and the empirical verification of the links between social structure and health outcomes. We will consider several lines of evidence pointing to social and psychological factors as prime candidates for a central role in explaining socioeconomic disparities in health. These lifestyle characteristics and living conditions, also referred to as psychosocial factors, are viewed not as individual characteristics but as the patterned response of social groups to the realities and constraints of the external

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environment. Such factors include health behaviors, stress in family, residential, and occupational environments, social integration and support, and perceptions of mastery and control.

It is generally recognized that variations in the type and quantity of stress at home and at work are linked to socioeconomic position. In contrast, smoking, alcohol use, social ties, and health-enhancing attitudes tend to be viewed as autonomous features of lifestyle, independent of social stratification and completely under individual control. Accordingly the discussion will focus especially on these latter factors and will seek to demonstrate that their distribution depends on the social and economic structures and arrangements of society.

Some researchers have questioned the evidence linking lifestyle factors to health (Navarro 1976; Sterling 1978). Navarro, for example, contends that the new focus on lifestyle is merely a ploy to divert attention away from the dramatic maldistribution of political and economic power in society. Some researchers tend to view psychosocial factors as distributed randomly in society (see, for example, Knowles 1977); in light of their perspective Navarro's (1976) criticism

of the lifestyle explanation is understandable. Yet in order to recognize the central role played by social structure, it is not necessary to deny the almost overwhelming evidence that lifestyle factors are predictive of changes in health status. An adequate theoretical understanding of the relationship between social stratification and health must include the role played by these psychosocial factors. Because such factors are concomitants of social status, they represent the pathways through which the effects of social stratification are mediated to individuals.

Figure 1 presents the general conceptual framework that guides this paper. This paradigm posits SES as an important determinant of health status. Psychosocial factors and medical care are viewed as linked to social status and as mediators of the association between SES and health outcomes. Both of these classes of factors are posited to affect health outcomes either by direct additive relationships (main effects are indicated by a solid line) or by interactive relationships with social status (interaction effects are indicated by a dotted line). That is, lower SES-persons not only may receive more exposure to psychosocial risk factors and deficits in medical care but also may be more vulnerable

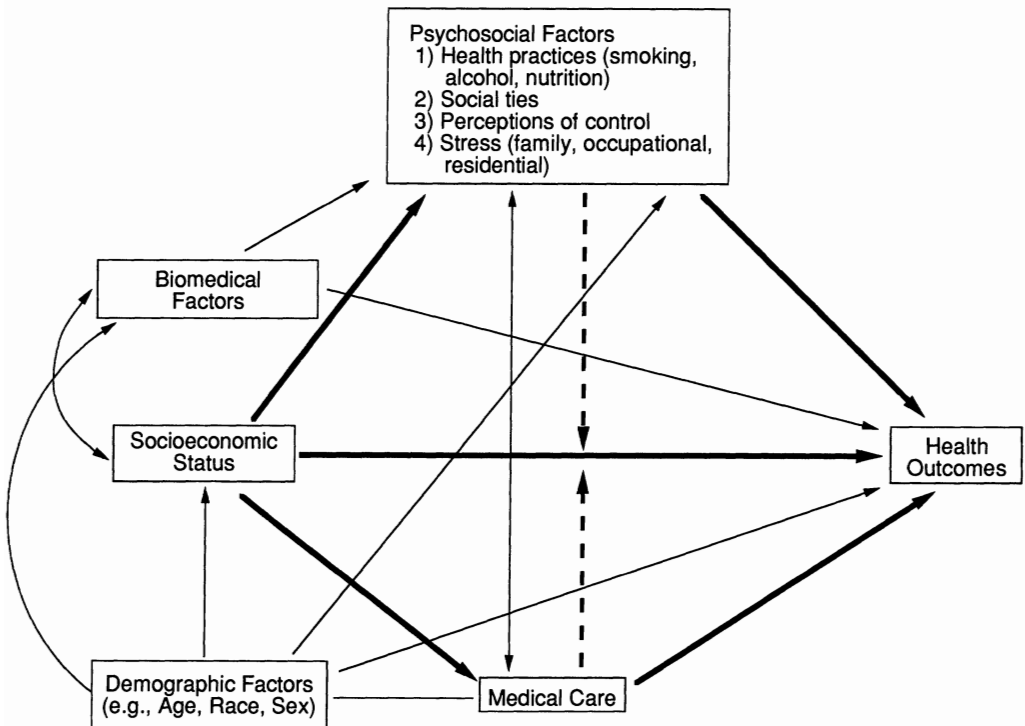


Figure 1. A Paradigm for Research on Socioeconomic Status and Health

to them (Kessler 1979). The relationship between these two classes of explanatory factors (medical care and psychosocial factors) also may be reciprocal. Psychosocial factors can affect patterns of health care utilization; medical care, especially preventive care, can influence psychosocial factors directly. This model accepts explicitly that health status is the result of complex causes; it includes controls for sociodemographic factors (such as age and sex) and for early environmental, genetic, and constitutional (biomedical) factors.

Figure 1 also provides the organizational framework for the discussion in this paper. First I consider the evidence that links social status to mortality and morbidity. Next I summarize the major explanations that have been proposed to account for this association and show why they cannot adequately explain SES differentials in health status. Third, I review and evaluate the evidence which suggests that psychosocial factors, such as health behavior, stress, and the resources to cope with stress, can account for a substantial part of the association between social stratification and health status. Finally, I outline briefly the research implications of this new perspective.

#### SOCIOECONOMIC STATUS AND HEALTH

“Social class” is the term most frequently employed in the literature to describe different social groups in studies of the associations between social positions and health. Yet because “social class” is meaningful only in the context of an explicit theory of class (cf. House 1981), the term “socioeconomic status” (SES) is used to describe inequality in ranking that exists in society. Education, income, and occupation are viewed as objective and distinctive dimensions of social stratification and not as indicators of social class. In view of the low average SES of black and Hispanic populations in the United States (U.S. Department of Health and Human Services [DHHS] 1985), minority-group status sometimes is included as an indicator of SES.

The relationship of SES to mortality has been a subject of intense study over the last 40 years. Although Stockwell's 1961 review of the literature concluded that the overall evidence supported an inverse relationship between SES and mortality, it stated that there

was no consensus as to whether the SES differential was narrowing. In a comprehensive review of more than 30 studies, Antonovsky (1967) found that in spite of the diverse populations studied and the wide variety of methods used, a consistent inverse relationship existed between social status and mortality. In addition, his review concluded that although the differential between mortality rates of the extreme SES groups had narrowed through the 1940s, “the closing of the class gap has been checked, if not halted” (Antonovsky 1967, p. 66). Further, despite evidence for a gradual decline of a clear class gradient, the lowest-SES group almost always had the highest mortality rates; the differential between that group and the other SES groups had not been reduced in recent years.

More recent research documents the persistence of an inverse association between SES and mortality. In what is probably the most detailed and most exhaustive study of mortality differentials in the United States, Kitagawa and Hauser (1973) found that the lower-SES groups had higher death rates than their higher-status counterparts, whether income, education, or occupation was used as the indicator of SES. An inverse association between SES and mortality also has been reported in U.S. communities as diverse as Evans County, Georgia (Tyroler et al. 1984), Washington County, Maryland (Comstock and Tonascia 1977), Alameda County, California (Haan, Kaplan, and Camacho 1987), and Tecumseh, Michigan (Williams 1986).

As might be expected, rates of chronic illness also are higher among the less prosperous groups. This finding has been reported both in early studies (Jaco 1958) and in more recent reports (Haan and Kaplan 1986). National surveys reveal consistently that morbidity, impairments, and disability, especially chronic conditions requiring restriction of activity for extended periods, are most prevalent among the poorer social groups (Lerner 1975; Newacheck et al. 1980). This SES gradient in morbidity is evident for a broad range of diseases in the young, the middle-aged, and the elderly (Haan and Kaplan 1986).

Considerable research and policy attention have focused recently on infant mortality. Infant mortality rates frequently are used in international comparisons as crude indicators of the health status of the population. The U.S. infant mortality rate has declined

steadily during this century, but the United States has trailed other countries in reducing infant deaths. The U.S. infant mortality rate declined from sixth lowest in the world in 1950 to eighteenth lowest in 1983 (Nersesian 1988). This rate is related inversely to SES, and among blacks it is twice as high as among whites (DHHS 1985; Nersesian 1988). Socio-economic factors are responsible for most of the observed racial differences in infant mortality (Kleinman and Kessel 1987; Lieberman et al. 1987).

The persistence of SES differences in health status over time is striking. Behm and Vallin's (1982) review of mortality data for England, France, and the United States concluded that the excess mortality of the lower social groups in these countries has not changed since World War II. Moreover, available data shows that SES differences in health status are a fairly universal phenomenon. Recent reviews of this literature reveals that SES differences in mortality exist in Norway, Sweden, Denmark, Finland, Germany, the Netherlands, Australia, New Zealand, Canada, Japan, and several Third World countries (Department of Health and Social Security [DHSS] 1980; Haan and Kaplan 1986; Marmot, Kogevinas, and Elston 1987).

The case of England and Wales is especially instructive. It was expected that the combination of postwar economic growth and the introduction of the National Health Service eventually would lead to the elimination of the SES gradient in health status. On the contrary, recent data reveal that SES differences in England and Wales are widening (Hollingsworth 1981; Wilkinson 1986). Moreover, differential recruitment of immigrants into the lower-SES groups in the United Kingdom does not account for these findings (Marmot and McDowall 1986). Instead, although health status has improved for all groups in Britain, the higher-SES groups have enjoyed greater improvement than their less prosperous peers.

The power of SES as a determinant of adverse changes in health status is also illustrated by the secular trends that have been observed in the social distribution of certain diseases. That is, even when a particular illness initially was more prevalent among the higher-SES groups, over time it became more common among the less affluent. A well-known example is the case of coronary heart

disease (CHD). During the 1950s, the prevalence of CHD and CHD risk factors was associated positively with social status (Taylor 1967). As these risk factors (serum cholesterol, smoking, blood pressure, and sedentary lifestyle) became more pervasive throughout the society, the relationship between social status and CHD changed from a positive to an inverse gradient (Morgenstern 1980). AIDS provides a more recent example of this phenomenon. Most of the initial AIDS patients were white, middle-class homosexual or bisexual males. Currently, however, the incidence of this disease among black and Hispanic homosexual males is two to three times higher than among whites; for heterosexual males (the majority of new cases), the rate is 20 times higher among blacks and Hispanics than among whites (Peterson and Marin 1988).

#### TRADITIONAL EXPLANATIONS OF THE ASSOCIATIONS BETWEEN SES AND HEALTH

Early explanations of the link between SES and health focused on the lifestyle and living conditions of the poor. Overcrowding, poor housing, and malnutrition were some of the factors identified as responsible for excess morbidity and mortality among the poorer social classes (Jaco 1958). Noting the growing prosperity of the lower-SES groups and the continuing decline in the impact of infectious diseases on health status, Mechanic (1978) predicted that it would become increasingly difficult to characterize health risks through SES indicators. SES differentials in health status were expected to disappear as public health measures (such as improved sanitation and mass immunizations) became more widespread. When these optimistic expectations were not realized, other explanations gained wide currency. These explanations can be divided into two categories. One class contended that the association between social status and health was either artifactual or due to downward social mobility. A second class focused on the access to and/or utilization of medical care by the lower-SES groups.

#### *The Artifact and Drift Hypothesis*

Explanations too numerous to discuss in detail have been proposed, whereby reported

social status variations in disease are merely artifacts of the data (see Marmot et al. 1987 for a review). One of the most influential is that advanced by Kadushin (1964), who argued that there were differential *reactions* to illness depending on social status. That is, members of the lower-SES groups *feel* sicker than their more prosperous counterparts and thus report more illness. According to this view, several structural and cultural factors have combined to make the poor more concerned about illness and more likely to give undue attention to their symptoms. Careful reviews of the evidence and arguments offered by Kadushin show that his position is invalid (Conover 1973; Mechanic 1968). Similarly, none of the other artifactual explanations are likely to account for SES variations in health status (DHSS 1980).

The drift hypothesis states that health status is associated with SES because chronic illness prevents some individuals from obtaining or keeping jobs that would provide an adequate income. Thus disease causes people to drift downward in socioeconomic status. Early studies that provided evidence in support of the drift hypothesis were plagued by methodological problems (Mechanic 1968). Recent and more careful attempts to assess the drift hypothesis have concluded that although health-related downward mobility does occur, it is not sufficiently widespread to have a major effect on the SES gradient in mortality (Fox, Goldblatt, and Jones 1985; Wilkinson 1986).

### *Inadequate Medical Care*

Inadequate use of medical care, especially preventive medical care, by the poor is often linked causally to the SES differentials in health status. Attitudes towards health and health care (Suchman 1965), the costs of health services (Wan and Gray 1978), and characteristics of the health care system (Rundall and Wheeler 1979) all inhibit the use of health care services by the lower-SES groups. Medicaid and Medicare, federally funded programs providing care for some of the poor and for the elderly respectively, attempted to remove some of the financial barriers. Since the advent of these programs the traditional relationship between SES and health care has been reversed; low-income families now have the highest rates of physician visits per year (Mechanic 1978).

Even so, we must consider several caveats in order to place these findings in perspective. First, a disproportionate number of persons in the lowest income group are over age 65 (Mechanic 1978). Elderly persons with multiple chronic illnesses have greater needs for medical care. In fact, when the *need* for services is considered among different income groups, the poor continue to receive fewer services than the wealthy relative to medical need (Aday 1975). Second, the attenuation of the relationship between income and medical services is due primarily to decreasing average use among high-income persons (Bice, Eichhorn, and Fox 1972).

Third, data on the overall rate of physician utilization obscure the reality that some groups are particularly vulnerable to receiving inadequate medical care. These groups include children, pregnant women who are poor, and Mexican-Americans. Through age 14 there is a positive relationship between family income and physician visits; only in age groups beyond 35 do low-income persons use more services (Mechanic 1978). Poor pregnant women are less likely than the nonpoor to receive prenatal care (Nersesian 1988). Levels of health insurance coverage and the average annual number of visits to physicians are lower for Mexican-Americans than for other Anglos or for blacks (Anderson, Giachello, and Aday 1986).

Finally, data on the quantity of medical services do not address the important question of equality in the quality of services. Sociologists have long noted that persons of high SES receive better medical care than their low-SES peers (Duff and Hollingshead 1968). Similarly, in a careful review of the controversial literature on the quality of care in Britain's National Health Service, Brotherton (1976, p. 80) concluded that "the amount of use and effectiveness of use" of health care are related positively to social status. In the United States the settings in which persons receive ambulatory care vary by SES (Blendon et al. 1989). In contrast to the middle class, who receive ambulatory care from office-based physicians, the poor are more likely to receive care in hospital clinics and emergency rooms. Further, there are indications that the medical care received by the poor is inferior in quality. Compared to members of the middle class, the poor are more likely to see a different provider on each

visit and to receive care from nonboard-certified physicians (Nersesian 1988).

Blacks and Hispanics also report higher levels of dissatisfaction with the care received than do whites (Anderson et al. 1986; Blendon et al. 1989). Medical services are middle-class in origin, and there is little discrepancy between the culture and organization of health service delivery and that of middle-class clients (McKinlay 1975). In contrast, members of the lower-SES groups find that interaction with the medical system is a dehumanizing experience (Rundall and Wheeler 1979). Thus although the elimination of financial barriers can increase use of health services, the removal of economic barriers alone will not eliminate disparities in health care.

### *The Role of Medicine*

In discussions of access to medical care it is frequently assumed that equalizing medical care will eliminate disparities in health status. The available evidence, however, suggests that the attention given to medical care is disproportionate to its importance as a determinant of health status. Improvements in health status in the last 150 years, in both the United States and the United Kingdom, have been due more to improvements in the standard of living and the environment (public health measures) than to personal medical care (McKeown 1979; McKinlay and McKinlay 1977; Preston 1977). Currently, medical care can explain no more than 10 percent of the variation in health status (U.S. Department of Health, Education, and Welfare [DHEW] 1979). Hadley (1982) notes, for example, that a reduction in cigarette consumption would do more to improve health than would an increase in medical expenditure. Similarly, medical economists state that greater reductions in morbidity and mortality are possible through additional expenditures on formal education than through additional expenditures on medical care (Auster, Levenson, and Saracheck 1969; Fuchs 1979). The already noted persistence of SES differences in health status in the Western European countries where inequalities in access to medical care have been virtually eliminated also is consistent with the limited contribution of medical care to health status.

Given that the major determinants of health are environmental and behavioral, critics of

medicine argue that the current technological approaches of clinical medicine will have limited power to enhance health status (McKeown 1979; Powles 1973). Goldman and Cook (1984), for example, analyzing the decline in ischemic heart disease between 1968 and 1976, estimated that reductions in cholesterol and cigarette smoking were responsible for 54 percent of the decline in heart disease mortality, whereas medical interventions (coronary care units, prehospital resuscitation and care, coronary artery bypass surgery, medical treatment of clinical heart disease, and the treatment of hypertension) were responsible for only 40 percent.

Equality of access to medical care is still an important and desirable goal and is critical to preventing further deterioration of the health status of low-SES groups. Medical care can be crucial to promoting health and preventing disease in several ways. Preventive medical care, throughout the life cycle but especially during infancy and childhood, is important in preventing illnesses. Similarly, adequate prenatal care for pregnant women can play a role in preventing infant mortality and other adverse pregnancy outcomes (Nersesian 1988). Finally, early intervention in the course of a disease and medical management of chronic illness can affect both the survival rates and the quality of life. Blacks with cancer and with AIDS, for example, have shorter survival times than whites (Haan and Kaplan 1986; Primm 1987), probably because of racial differences in the quality of care, including later diagnosis and treatment of these diseases in blacks.

It also appears that medical care has a greater impact on the health status of lower-SES groups than on their higher-SES peers. For disadvantaged groups faced with multiple vulnerabilities, medical care may be the only health-protective resource. In contrast, the additional contribution of medicine may be negligible in groups that enjoy many social and environmental resources. Thus although prenatal care is critical to a poor mother with multiple risk factors for adverse pregnancy outcomes, it has little positive effect on a middle-class mother in favorable social circumstances (Nersesian 1988). Similarly, Hadley (1982) states that additional medical care will lead to larger reduction in mortality rates for blacks than for whites. Evidence of the sensitivity of the poor to medical care comes from the fairly dramatic

worsening of the infant mortality rates in poverty populations in the United States in the wake of the 1981 federal funding cuts in health and social services (Mandinger 1985). This last example also illustrates how medical care can be an intervening mechanism between larger sociopolitical processes and the health status of the poor.

#### PSYCHOSOCIAL RESOURCES: INTERMEDIATE MECHANISMS

The social structure and personality perspective provides a framework for describing how and why the SES-health relationship exists. This perspective seeks to understand the patterned response of social groups to conditions imposed on them by social structures. It affirms that both subjective reality and the objective conditions of life vary according to one's location in society; SES determines the living and working conditions of groups in different positions. Accordingly, understanding the relationship between social stratification and health status requires the identification of 1) the health-related links between social stratification and health status and 2) the characteristics of the individual and specific social situations that modify the effects of these proximal mechanisms (House 1981).

Current research on the determinants of health has psychosocial factors such as environmental stressors, health practices, social ties, and attitudinal orientations as the central determinants of health status. The U.S. Surgeon General estimates, for example, that whereas 20 percent of mortality is due to genetic factors and 10 percent to inadequate medical care, 20 percent is attributable to environmental factors and the remaining 50 percent to individual behavior and lifestyle (DHEW 1979). The Surgeon General's report, like much current theorizing, tends to view these lifestyle or psychosocial factors as autonomous individual behavior, distributed randomly in society and independent of working and living conditions.

Even when it is recognized that these nonmedical predictors of disease are disproportionately prevalent among the lower-SES groups, inadequate attention is given to the ways in which the social distribution of risk factors is constrained by societal norms and structures (Williams and House forthcoming). Mechanic and Cleary (1980, p. 813), for

example, noting the high rates of pathogenic behavior among lower-SES groups, explain that "poor health behavior is part of a lifestyle or orientation reflecting a poor ability to anticipate problems, mobilize to meet them, and cope actively." In contrast, the social structure and personality perspective calls for the lifestyles of the poor to be understood within the social context of their lives. Thus it seems accurate to portray the poor as concentrating more on the daily struggle of meeting their basic needs for food, clothing, and shelter than on more distant health concerns (cf. Fobair and Cordoba 1982). Why should the poor "give priority to a danger which is potential and probabilistic" when they are confronted every day with "other dangers (that) are more immediate and certain"? (Gold 1977, p. 165).

Current research on psychosocial factors and health fails to examine systematically the links between psychosocial factors and SES. The potential utility of the social structure and personality perspective is illustrated by a review of the evidence which suggests that psychosocial factors are not only predictive of morbidity and mortality but also are related systematically to SES.

#### *Psychosocial Factors and Health*

The Alameda County Study provides striking evidence that five habits of daily living (not smoking, drinking moderately if at all, maintaining normal weight, physical exercise, and getting seven to eight hours of sleep) are associated positively with a self-report index of good health and are predictive of lower mortality (Berkman and Breslow 1983). The Framingham Heart Study, the Tecumseh Community Health Study, and the Duke Longitudinal Study of Aging provide similar evidence relating health habits to morbidity and mortality (Kannel 1971; Metzner, Carman, and House 1983; Palmore 1971). In addition to the studies that link several health habits to health status, a larger literature relates physical activity and substance use to health status. Physical exercise, especially the manual labor associated with some blue-collar occupations, has long been identified as a factor promoting better health (Morris et al. 1953). Smoking causes about 390,000 deaths annually, and 10 million Americans suffer from chronic diseases because of smoking (McGinnis, Shopland, and



Brown 1987). The annual death toll from alcohol is estimated at 200,000 (Walsh and Hingson 1987). In addition to liver cirrhosis, the ninth leading cause of death in the United States, alcohol use is associated with a large proportion of accidents and with increased risk for several chronic diseases.

The association between stress and adverse changes in health status has been investigated intensively for several decades (see Elliot and Eisdorfer 1982 for a review). Most of these studies have measured stress in the form of major life events such as divorce, unemployment, and death of loved ones. More recently, increasing attention has been given to the health effects of chronic role-related strains (e.g. occupations, marital, parental, financial) and of daily irritations and hassles (Kanner et al. 1981; Pearlin et al. 1981). Although the stress literature is plagued with methodological difficulties, the overall evidence shows clearly that a positive relationship exists between stress and a broad range of disease outcomes (Elliot and Eisdorfer 1982).

The literature also suggests that the association between stress and health can be modified by a variety of protective factors, including social ties and perceptions of mastery and control. Social relationships have been one of the psychosocial factors most studied in recent years (House, Umberson, and Landis 1988). Large-scale prospective studies of diverse communities have provided impressive evidence that social ties are predictive of lower mortality risk (Berkman and Breslow 1983; Blazer 1982; House, Robbins, and Metzner 1982; Schoenbach et al. 1986). Other studies reveal that social ties are associated with a wide range of health outcomes (Cohen and Syme 1985), suggesting that these ties operate through multiple biological pathways and/or have a generalized effect of decreasing vulnerability to disease (Berkman and Breslow 1983). This research complements earlier studies of the health effects of marriage. Shurtleff reported in 1955 that "among men and women at every age, the married have lower death rates than the single, widowed, or divorced" (Shurtleff 1955, p. 248). More recent data show that this relationship has not changed over time (Kitagawa and Hauser 1973; Ortmeyer 1974). Ortmeyer, for example, found that marital status was a stronger predictor of mortality than was race or gender.

Attitudinal orientations such as beliefs about personal control are another psychosocial factor that may enhance health and well-being directly and may interact with stress to reduce the negative impact of stress on health. Various defined and measured in cross-sectional, experimental, and longitudinal studies, a sense of control has strong positive associations with physical and mental health (House and Cottingham 1986; Rodin 1986; Rowe and Kahn 1987), in part because it may facilitate more adaptive strategies in dealing with potential stressors (Rowe and Kahn 1987; Syme 1989). Mirowsky and Ross (1987) explain that a sense of powerlessness is demoralizing in itself and reduces the will and motivation to cope actively with problems.

### *Psychosocial Factors and SES*

The limited available evidence suggests that these psychosocial predictors of health status are embedded in the structural conditions that shape the life experiences of social groups. In Alameda County, persons in the lower-SES groups were three to four times more likely to report negative health habits than were their higher-SES peers (Berkman and Breslow 1983). This relationship was strongest for the 30-to-49 age group. In a 16-year follow-up study of 350 fourth through eighth graders Mechanic and Cleary (1980) found a positive association between education and good health practices. Similarly, the health-enhancing habits of Alameda County were associated positively with SES in a recent national study (Schoenborn 1986).

Data for individual health practices reveal the same trend. A strong inverse relationship between SES and obesity has been reported frequently; the association is stronger for women than for men (Stunkard 1975). Persons with fewer than 12 years of education are more likely to smoke cigarettes and to smoke brands high in tar and nicotine than those with more education (National Center for Health Statistics 1981). Between 1974 and 1985 the prevalence of smoking in the United States declined five times faster among college graduates than among persons with less than a high school education; furthermore, persons with more education are both more likely to quit and less likely to start than their peers with less education (Pierce et al. 1989). Alcohol use is associated positively

with social status, but heavy consumption of alcohol is associated inversely with SES (Makela et al. 1981).

The structural arrangements of society also give rise to life experiences that vary in both type and quantity of stress. Poor socioeconomic environments can impose socioecological stresses such as high rates of crime, unemployment, residential mobility, and marital instability, which can have harmful effects on the health status of area residents (Harburg et al. 1973). Lower-SES persons also receive greater exposure to physical hazards including air and water pollutants, accidents, hazardous waste, pesticides, and industrial chemicals (Calnan and Johnson 1985).

Stressful life events including unemployment, marital difficulties, divorce, and adult and infant morbidity and mortality are all associated inversely with SES (Dohrenwend and Dohrenwend 1970; Kessler 1979). In addition, lower-SES blacks in the United States experience higher rates of some stressors (such as unemployment) than lower-SES whites (Dohrenwend and Dohrenwend 1970); this finding suggests that exposure to both poverty and discrimination may be especially productive of stress (cf. Kessler and Neighbors 1986). Similarly, even after educational level and job experience are controlled, black workers are more likely than white workers to be exposed to occupational carcinogens and other occupational hazards (Robinson 1984).

Although some observers argue that at least some of the poor are enmeshed in a supportive system of friends and relatives (Liebow 1967, Stack 1975), the available empirical data show clearly that persons in the lower social strata have limited access to social support and stable community ties. In The Alameda County study (Berkman and Breslow 1983), low scores on the social network index were more common at low levels of SES (although for one component of the index—contact with friends and relatives—low-SES persons compared favorably with those at higher levels). Nonetheless, other researchers report that even the frequency of contact with friends and relatives is related positively to SES (Liem and Liem 1978).

Levels of organizational involvement and church attendance increase with socioeconomic status (Comstock and Partridge 1972; Dohrenwend and Dohrenwend 1970). Dohren-

wend and Dohrenwend note that the divorce rate is related inversely to SES, and that even when a marriage is not broken, spouses in the lower social strata are less emotionally supportive of each other than are their higher-SES peers. Likewise, Belle (1982) reports that one-half of all families living in poverty do not include a husband-father, lower-SES persons are less likely to be happily married, and lower-SES women are less likely to turn to their husbands as confidants. In addition, Belle notes that even when the poor are involved in an informal network of mutual aid, these networks can be extremely stressful. In fact, the social networks of the lower-SES women that Belle studied "provided stress and support in almost equal quantities" (Belle 1982, p. 99).

Mirowsky and Ross (1986) review the evidence suggesting that a sense of control is shaped by the conditions under which people live and work. They conclude that low-SES persons are exposed disproportionately to experiences that lead to a sense of powerlessness. Not surprisingly, income, occupational status, education, high-status jobs, and subjective ratings of social class are all associated positively with a sense of control (Gurin and Gurin 1976; Mirowsky and Ross 1986). A sense of a high level of control could be illusionary for a person trapped at the bottom of society.

As noted earlier, inadequate medical care appears to have more adverse effects on the poor than on higher-SES groups. It also appears that lower-SES persons are more vulnerable to psychosocial deficits than are their higher-SES peers. Researchers have noted that comparable stressful events have stronger negative effects on lower-SES individuals than on those of higher status (Kessler 1979; Turner and Noh 1983). Similarly, Pratt (1971) found that low-SES individuals with poor health practices had worse health than their higher-SES peers with the same health behavior. We must assess the extent to which differential vulnerability to psychosocial deficits exists, and gauge the possible contribution of this differential to the SES gradient in health status.

#### PSYCHOSOCIAL DETERMINANTS OF SES DIFFERENTIALS IN HEALTH: THE PROMISE AND THE LIMITATIONS

The literature contains clear suggestions

that psychosocial factors account for at least part of the association between SES and health status. Marks (1967) reviewed data which show that when controls for physical exercise are introduced, the relationship between CHD and occupational status frequently disappears. Comstock et al. (1971) report a strong positive relationship between father's education and infant birth weight in The Washington County study only in families in which the mother smoked. There were no SES differentials among nonsmoking mothers. Ruberman et al (1984) state that controlling for social integration and stress largely eliminated the inverse relationship between education and mortality in their three-year survival study of male heart attack victims. Males with low education reported more stress and were more isolated socially than their peers with high education. In a similar fashion, controlling for smoking, obesity, and alcohol use in the Tecumseh Community Health Study explained a substantial part of educational differences in bronchitis and in mortality (Williams 1986). In the area of mental health, Turner and Noh (1983) documented that variations in social ties and in personal control are responsible for a large part of the relationship between social status and psychological distress; when both social ties and control were high, the inverse association between SES and distress disappeared.

The age pattern of mortality differentials also is consistent with the interpretation of a major role for psychosocial factors. Several researchers have noted that SES differentials are consistently largest in the middle years but tend to disappear after age 65 (Antonovsky 1967; Goldsmith and Hirschberg 1976). Goldsmith and Hirschberg explain that until age 35 mortality tends to reflect traumatic and accidental deaths. In contrast, chronic disease becomes the important factor in the middle years and beyond. In other words, mortality differentials are most evident precisely at the time that holds the greatest potential for preventable deaths: the middle years, when psychosocial resources are most potent (Antonovsky 1967).

Despite the contention presented here that psychosocial factors are the major mechanisms responsible for social status-based variations in health, it is important to recognize that attempts to modify the behavior and lifestyle of the poor while leaving

social structures intact are unlikely to be effective in eliminating SES differentials in health. We now consider three lines of evidence that support this perspective. These data also inform social structure and personality analysis by highlighting the ultimate power and importance of social structure.

### *The Limits of Health Education*

First, whether the targeted behavior is quitting smoking, initiating breast feeding, or eating nutritiously, health education campaigns achieve only limited success and are more effective in producing behavior change in higher-SES persons than in their lower-SES peers (Pursall et al. 1978; Townsend 1978; Wilkinson 1986). Researchers in diverse disciplines have noted that more educated persons are more aware of health risks and more likely to initiate actions to reduce these risks (Fuchs 1979; Grossman 1976; Rosenstock 1975). Thus although there were no SES differentials in cigarette smoking during the 1940s, smoking currently is concentrated among disadvantaged groups (Pierce et al. 1989). Similarly, as information on the health benefits of exercise became available, the association between physical activity and SES changed from inverse (e.g. Skinner et al 1966) to positive (Schoenborn 1986). Parallel changes have been reported for nutritional behavior such as the consumption of sugar and refined foods (Wilkinson 1986).

Although some researchers argued that formal education makes the individual more attentive to health information and more trusting of the claims of science (Lefcowitz 1973), the "fit" between SES and health-enhancing activities is not simply the result of greater health knowledge. Education, for example, has pervasive effects on health apart from health knowledge (Coburn and Pope 1974). Compared to their higher-SES counterparts, people with less education face different structural constraints and truncated options. Consider, for example, the data reviewed earlier, which show that quitting smoking is associated positively with education, although some awareness of the health effects of smoking is present throughout the population. Cigarettes are used widely to alleviate stress and tension (Guttmacher 1979); lower-SES persons face more stress and have fewer resources to cope with it than

do their better-educated peers (Williams and House forthcoming).

This finding suggests clearly that the intervening mechanisms between social structure and health status are adaptive to the living and working conditions of the poor. Health behaviors are induced and constrained by the social and material context. Risk factors for distant health outcomes may be the basic survival strategies of day-to-day existence for low-SES persons. Accordingly, McKinlay (1975) warns that efforts to change the lifestyle of the poor without also altering social structure and life chances not only may be ineffective, but also may do more harm than good.

### *The Primacy of SES*

Second, socioeconomic position rather than psychosocial factors or medical care is the fundamental cause of SES differences in health. Stress, health behaviors, and other psychosocial factors are the superficial causes, the current intervening mechanisms, that link social status to health outcomes. Lieberson (1985, chapter 9) emphasizes the importance of distinguishing basic causes from surface causes. Basic causes are those factors which are responsible for generating a particular outcome. Changes in these forces effect change in the outcome. In contrast, surface causes are related to the outcome, but changes in these factors do not produce corresponding change in the outcome. As long as the basic causal forces are operative, the modification of surface causes merely gives rise to new intervening mechanisms to maintain the same outcome. Thus even if social status inequities in psychosocial factors and medical care were eliminated, new factors probably would emerge to perpetuate inequality in health status as long as social stratification remained.

The pathogenic factors determining health status have not been static over the course of this century. The intervening mechanisms have changes but the SES gradient in health persists. Earlier explanations that focused on overcrowded housing, inadequate sanitation, poor hygiene, and malnutrition probably were correct at that time (cf. McKeown 1979). They are less important now because other features similarly linked to the structure of society have taken their place. Yet whatever the intermediary links are, higher-SES groups

are the first to know and are well endowed with resources to capitalize on new information. Position in the social hierarchy provides differential access to goods and resources that are linked to health status. It is in the very nature of social stratification that the more privileged groups will control a disproportionate level of desirable resources at the expense of the less privileged.

### *Asymmetrical Causation and Heredity*

A third reason why changing the risk factors or even equalizing SES is unlikely immediately to eradicate SES differences in health status is that the causal dynamics of the SES gradient in health appear to be asymmetrical. In an asymmetrical causal relationship, a change in the causal variable will not reverse the process or effect that was generated by that variable (Lieberson 1985, Chapter 4). That is, an SES gradient in health status, once established, creates conditions that will perpetuate themselves, even if the initial causes are removed. Observed morbidity and mortality differences are the result of complex processes; early environmental experiences and genetic and constitutional factors play an important role in determining adult health status. Thus, *current* psychosocial resources are not the only determinants of SES differentials in health.

A study in Norway examined the relationship between poverty during childhood and adult mortality (Forsdahl 1977). In Norway, despite the disappearance of county-level differences in the standard of living and in infant mortality, large SES differences remain for arteriosclerotic heart disease. This study found that for persons aged 40 to 69 in 1964 to 1967, the correlation between infant mortality rate (in the county of birth) and mortality from all causes was .93 for men and .75 for women. Forsdahl (1977, p. 95) concluded that "the more fit survive and carry with them a life-long vulnerability because of poor living conditions in early years." Analyses of ecological data from England and Wales report very similar findings (Barker and Osmond 1986).

The age pattern of SES differentials in the use of medical care is consistent with a crucial role for early environmental influences. We noted earlier that a positive relationship exists between income and the use of medical care through age 14. More-

over, SES differentials in the use of preventive services are most marked for children under age five (Richardson 1972). Thus adults may suffer because of the inadequate medical care experienced in the early years of life, when preventive care probably is most important. A deficit in preventive medical care in childhood may set in motion irreversible processes that will not disappear even if this initial cause subsequently is removed. Thus equalizing access to health care for adults who experienced inadequate care in childhood may not overcome the childhood deficits.

Other studies provide more direct evidence that health problems experienced during infancy and childhood have long-term consequences. We noted earlier that low birth weight is a major risk factor for infant mortality and that it is associated inversely with SES. Low-birth-weight babies who survive have higher risks for childhood morbidity. McCormick's (1985) review of this literature shows that compared to infants of normal weight, low-birth-weight infants have increased risk of neurodevelopmental handicaps, congenital abnormalities, respiratory diseases, and childhood illnesses in general. In a comprehensive 25-year follow-up study of more than 5,000 births that occurred during one week in 1946 in England, Wales, and Scotland, Wadsworth (1986) provides further evidence of the long-term effects of childhood illness. This study found that serious illness in childhood was associated positively with adult illness and with shortness of stature. Moreover, the SES differences in boys' health persisted through childhood and adolescence, and into adulthood.

Wadsworth's (1986) finding of the inverse association between childhood illness and adult height is intriguing. Childhood nutrition is a determinant of height (Rao and Singh 1970), and lower-SES men consistently have been found to be shorter than their higher-SES peers (DHSS 1980; Fehily, Phillips, and Yarnell 1984). Height also is linked inversely to mortality. Marmot, Shipley, and Rose (1984) found an inverse relationship between height and mortality even after controlling for age and occupational grade. The issue of social selection may not be trivial, however; height is associated positively with upward social mobility (Wadsworth 1986). One study in which the social selection issue was

addressed with regard to obesity reported that physically active bus conductors had smaller waist measurements than sedentary bus drivers *at the time they were hired*; this finding suggested that the drivers had brought obesity to the job (cited in Taylor 1967).

The interplay of social and biological factors can be complex. Cartwright (1980) reveals that some physiologic risk factors vary by social status. He states, for example, that uric acid levels are associated inversely with SES. Further, he reviews other studies which reveal that the ABO blood groups (which are associated with stomach cancer, duodenal ulceration, and arterial diseases) vary markedly by SES and geography. At any rate, Jacquard (1982) says that although genetic factors play a role, they do not account for much of the variation in adult mortality. He explains that

knowing the parents' ages at death decreases the variance of the son's age at death by  $(16/100)^2$ , or 2.6 percent. In other words, environmental factors are so important as regards duration of life that genetic factors seem insignificant in comparison (Jacquard 1982, p. 310).

Although genetic and early environmental factors play some role in determining health status, the social structure and personality perspective contends that substantial inequality is introduced by social structures experienced by individuals in adulthood. At the same time, the presence of these factors has at least two implications for research. First, the sociological assessment of health status differences should include controls for biomedical factors, thus accounting explicitly for at least some of the effects of heredity and early environment. Second, because these factors cannot be measured perfectly, genetics and early environment always will remain a residual explanation.

#### A RESEARCH AGENDA

A central concern of this paper has been to outline the utility of the social structure and personality perspective for studying the persisting association between SES and health status. House (1981) states that understanding the relationships between macro social structures (social stratification) and individual personality and behavior (health outcomes) requires the analysis of three key principles: the components principle, the proximity

principle, and the psychological principle. The discussion of needed research is built around these principles.

### *The Components Principle*

This principle calls for a clear understanding of the nature of social structure, especially in terms of its multiple dimensions and components. Research is needed urgently on the conceptualization and measurement of SES in order to identify the conditions under which particular indicators are most appropriate. Most prior research has assessed social structure as education, income, occupation, or some combination thereof. Each measure has its own strengths and weaknesses. (For an excellent review of various SES measures see Liberatos Link, and Kelsey 1988.) For example, SES differentials based on current income and occupation are likely to be exaggerated by a reverse causal path in which serious illness and the approach of death force employees to work at jobs below the level of their normal occupations and/or cause a decrease in their income.

Some studies have discovered that the association between SES and health outcomes becomes more robust when education is used as the SES indicator (Kitagawa and Hauser 1973; Lebowitz 1977; Liberatos et al. 1988). This finding has led some researchers to conclude that education is the most stable measure of SES and the best SES predictor of health status (Fuchs 1979; Kitagawa and Hauser 1973). Nonetheless, other evidence suggests that other SES indicators, especially income, may be important. Differences in education have a large effect on women's mortality, but income differences are stronger determinants for men (Kitagawa and Hauser 1973; Mechanic 1978). A similar pattern of relationships has been reported for SES differences in psychological distress (Kessler 1979). This pattern of results, however, has not been replicated consistently (Williams 1986), and some recent studies still find income to be the strongest predictor of health status (e.g., Satariano 1986).

At this time we need more careful theoretical work that seeks to identify the conditions and environments in which different components of SES are more or less consequential in predicting health outcomes. Another promising area for future research is the identification and empirical verification of

other components of social structure that affect health status. Morgenstern (1985) recently highlighted an important but neglected area of study. Noting that few studies of health status use theoretically based measures of social class, he evaluated the class typologies of Wright and Perrone (1977) and Robinson and Kelley (1979), and calls for their inclusion in studies of health outcomes.

### *The Proximity Principle*

According to this principle, social structures exert their effects through factors that bear directly on the individual. That is, macro social structures affect the individual through smaller intermediate structures. This review, for example, focuses on stress, health behaviors, social ties, and attitudinal orientations as the potential links between social stratification and health outcomes. This list is not exhaustive, however; research is needed to identify other pathways by which social structures can affect health status. Probably a broader range of health behaviors is related to health status than those noted in the studies reviewed here (cf. Berkman and Breslow 1983). Other relevant health practices include nutritional behavior, seat belt use, breast self-examination, and drug use. In addition, it would be useful to specify further the health-enhancing aspects of some of the risk factors considered here. With regard to social relationships, for example, additional research is needed to identify which aspects of social ties are most consequential for health and to isolate the conditions under which different aspects of relationships can be expected to have particular effects (cf. House et al. 1988). Further, recent reports (e.g., Rook 1984) showing that social interaction can and does have harmful effects on health highlight the need for a comprehensive conceptualization of social relationships that would include both the positive and the negative aspects of relationships and would propose adequate strategies to assess them.

Most of the health-enhancing factors identified here have been studied in relative isolation. We do not know which factors are most important, how they are related, and how they combine to affect health status. Sterling (1978), for example, in a provocative paper titled "Does Smoking Kill Workers or Working Kill Smokers?" argues that smoking has been used to divert attention away from

the effects of occupation and of environmental exposure. He holds that diseases associated with smoking may be caused by occupational influences. Although Sterling may have overstated the case (cf. Fox and Adelstein 1978), he highlights the critical need to assess the relative effects of smoking and occupational conditions. More generally, systematic research on the relative contribution of the classes of risk factors reviewed here would provide a more complete picture of the determinants of health status. It is also likely that different factors or combinations thereof may furnish more relevant explanations at different stages of the life course (DHSS 1980, Chapter 6). For example, medical care and maternal nutritional behavior may be important in considering pregnancy outcomes, but alcohol and its associated links to suicides, homicides, and accidents may be the critical factor in early adulthood.

The evidence linking psychosocial factors to SES was reviewed earlier, but we need research that would go beyond merely demonstrating associations with social status. We need to identify and delineate the mechanisms and processes that link SES to the distribution of psychosocial resources. We do not know, for example, why supportive social relationships are associated positively with SES, although the literature provides some interesting suggestions. Bishop's (1977) review of the evidence linking economic changes to marital status shows that unemployment, declines in income, and high job turnover are all associated with increased rates of marital dissolution. In addition, the number of female-headed households declines when males' earnings rise and rises when male unemployment increases. Similarly, unemployment is associated with declines in levels of social interaction not only with co-workers but also with friends, relatives, and community organizations (House, Williams, and Kessler 1986). A review of the literature on social support and occupational stress provides further evidence of the structural determinants of social support (Williams and House 1985). Structural features of the work environment (e.g., machine-bound jobs, high noise levels) can inhibit communication among co-workers. Research that seeks to identify how psychosocial factors are embedded in social structures and processes can enhance our understanding of the social production of illness.

### *The Psychological Principle*

This principle calls for the identification of the psychological process through which individuals respond to social structure. Sociological explanations frequently make assumptions, implicitly or explicitly, about individual psychology (House 1981) but seldom refer to social psychological theories.

The behavior of significant others in one's immediate environment can play a crucial role in the development and maintenance of behavior. These individuals can serve a "relay function" by channeling informational influences from social institutions such as the mass media (Katz and Lazarsfeld 1955). In addition, the behavior of these significant others may define the norms of behavior. Finally, significant others may function as modeling agents. The imitation of models ranging from parents, peers, and siblings to teachers and the mass media has been shown to play a role in the onset of adolescent behavior (Evans and Raines 1982).

Even so, as Evans and Raines (1982) note in their review of research on adolescent smoking, we do not understand the underlying process. For example, there is a strong association between adolescent smoking and parental smoking, but do the causal dynamics reflect identification and modeling or merely the availability of cigarettes? Our understanding of peer influences is equally unclear. Is the critical influence the behavior of a best friend, of several close friends, or of a large number of friends, or is it the strength of identification with the prevailing peer model? Moreover, when we consider that individuals usually are exposed to conflicting socialization influences (Turner 1988), what leads particular individuals to select one form of influence over another? Turner says that answers to these questions can be obtained in research that focuses on specific situational contexts. He explains that the individual's environment is an intervening variable between the larger social structure and the individual's behavior. Thus the nature of the social influence will be affected both by the particular context in which behavior unfolds and by the meanings that the individual attributes to the situation.

### CONCLUSIONS

We have clear, abundant evidence for a

strong causal relationship between socioeconomic position and health status. Progress has been made in identifying risk factors for the major causes of morbidity and mortality; the available data suggest that these risk factors also depend on the social, economic, and political arrangements and structures of society. Few attempts have been made, however, to explore systematically and empirically the links between psychosocial factors and SES, and to study the extent to which differential exposure and/or differential response to psychosocial deficits can explain SES differences in health status.

Research of this kind can advance the theoretical understanding of the relationship between social stratification and health status, and can enlighten us regarding the causes and consequences of the persisting SES differentials in health. They also can provide illustrations of how broader structural conditions impinge on lower-SES groups and shape their life experiences. Equally important, such information can have immense practical significance because it can inform policy initiatives to achieve greater equality in society, both in health and more generally.

The research reviewed here suggests strongly that the current preoccupation with issues of equal access to medical care is not the most fruitful approach to correcting problems of SES differentials in health outcomes. Although equality of access is a legitimate and desirable goal, it is likely to play only a limited role in eliminating inequality in health status. Equalization of preventive care is likely to be the most cost-effective medical approach. The available evidence suggests though that equality in the health care delivery system (or in any single system in society) will not eliminate inequality in health status (or in any single area of evaluation) if inequalities remain in the fundamental reward structures of society. The point here is neither that changes in health care delivery will make no difference nor that the determinants of inequality are static. What is implied is that inequality will persist in a variety of societal indicators as long as the basic reward structures remain unequal.

The policy debate over how to reduce inequalities in health status was heightened recently by the publication of a comprehensive report on the health status of minority groups (DHHS 1985). This report not only

describes the nature and extent of the disparities in health but also outlines strategies for dealing with them. The recommendations of this report focus on health education and health promotion strategies, on the delivery and coordination of health services, and on the development of health professionals. None of these recommendations, however, address directly the structural elements of inequality in society. This report on minority health is typical of a growing tendency among some health authorities to use the evidence linking psychosocial factors with health in order to "blame the victims" for their failure to follow healthier lifestyles. Accordingly, calls are made to launch national educational campaigns that would persuade the poor to give up their high-risk lifestyles.

On the other hand, if psychosocial resources derive from social status, the elimination of unhealthy lifestyles will be contingent on efforts to alter the socioeconomic conditions of the disadvantaged in America. Because health status affects the individual's ability to use the available opportunities in society, further attempts to identify and modify factors that affect health are indispensable to the achievement of equality (cf. Elder and Acheson 1970).

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