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PERCEIVED MOBILITY, STRESS-RELATED SYMPTOMS AND SOCIAL FACTORS IN HEALTH SERVICES UTILIZATION

by

Linda Jane Davis

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Public Health Administration)
in The University of Michigan
1974

Doctoral Committee:

Professor Charles M. Wylie, Chairman
Assistant Professor James O. Carpenter
Professor John P. Kirscht
Associate Professor Leon A. Pastalan
Doctor Ernest Harburg, Ph.D.

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CHAPTER I

BACKGROUND

The present study is a secondary analyses of available data. Its focus is twofold. First are selected predictors of Health Services Utilization (HSU). Several factors are well established in the literature and are retested herein. Second, a concept of social mobility is introduced and hypothesized to be associated with HSU. It is suggested that certain types of upwardly mobile persons will experience signs and symptoms of stress such as insomnia, indigestion, feelings of nervousness and high blood pressure. Having experienced such signs or symptoms, it is expected that these individuals will be high utilizers of health services.

The immediate objectives of the research are twofold: The strengthening of existing knowledge by retesting several social variables previously correlated with HSU; and the extension of knowledge by introduction of a stress variable which tests an association with HSU, independent of other correlates.

The ultimate objective of any such research lies in its usefulness to the planning and implementation of health services and policy. Continuing clarification of the predictors of utilization is essential information needed to identify segments of the population needing services not now received.

Predictors of Health Services Utilization

Hundreds of studies in HSU have been reported over the past twenty years. In reviewing the literature, it becomes evident that methodological problems have accompanied the growth of this knowledge. McKinlay (1972), Kasl and Cobb (1966), and others have outlined these problems in detail. Various unique combinations of populations observed, sampling procedures, methods of data collection and analysis have prevented replication of studies. Sources of data, retrospectiveness and multiple operational definitions of utilization have further confounded the problem. The study of HSU is inherently a field study. As such, it is extremely difficult to replicate study settings or eliminate the variety of extraneous factors encountered. This present study, as the others, has its own particular set of conditions, as will be pointed out in Chapter II on methodology.

The literature in HSU falls into three general approaches. The first approach is the descriptive study. The majority of utilization studies fall in whole or in part into this category. Common variables investigated are the socio-demographic characteristics of the consumer and organizational descriptions of provider systems. Findings answer the who, what, where and how questions, but not the why of utilization behavior. The second approach is the explanatory study. Social scientists have introduced such social-psychological concepts as health and illness behavior, perceived threat of illness and perceived benefit of treatment in an attempt to construct explanatory models of why people use or fail to use services, and the decision-making process involved (Suchman, 1965a; Suchman, 1965b; Mechanic, 1962; Kirscht &

Gochman, 1972; Stoekle, et al., 1963; Coe & Wessen, 1965; Kegeles, 1963; Suchman, 1966; Ludwig & Gibson, 1969; Savin, 1969; Borsky & Sagen, 1959). McKinlay points out that interrelationship among these social-psychological variables and utilization need a good deal of "unraveling" before the importance of beliefs, knowledge, attitudes and cues to action can be established. A third approach to the investigation of HSU is the summary and discussion of combined empirical findings. A number of these reviews exist and all discuss combinations of confirmed or suspected correlates as predictors of HSU (Fischer, 1971; McKinlay, 1972; Graham, 1957; Aday, 1972; Blackwell, 1963; Anderson & Andersen, 1972; Stoekle, et al., 1963). Some, such as Aday, present an inventory of findings (Figure 1); others analyze the advantages and limitations of various research approaches. McKinlay, an example of the latter, reviews HSU studies within the framework of six distinct research approaches: economic, socio-demographic, geographic, social-psychological, socio-cultural and organizational.

Of concern in the present study are descriptive variables which fall into McKinlay's socio-demographic and socio-cultural categories, and at various points into Aday's model (see Figure 1). These are age, sex, race, income, education, occupation, family size, social mobility as general stress, and perceived symptoms. Health Services Utilization is represented in the present study by three components: obtaining a regular checkup; having a regular physician or clinic; and frequency of physician or clinic out-patient visit. A review of the literature outlines specific findings for the above social variables as predictors of one or more of the three components of

Figure 1

An Inventory of Correlates of Health Service Utilization[a]

I. Predisposing Variables ⟶ II. Enabling Variables ⟶ III. Need Variables ⟶ USE

A. Socio-demographic

+ • Age
+ • Sex
• Marital status
+ • Family size
+ • Race
• Ethnicity
• Religion
+ • Education

B. Social-Psychological

• Health care attitudes
• Health knowledge
• Situation specific stress
+ • General stress
• Patient-physician interaction

C. Previous Health Behavior

A. Economic

+ • Occupation
+ • Income
• Price of services
• Methods of financing

B. Organizational

• Alternative systems
• Type of practice

C. Availability

• Region
• Residence
• Distance
• Supply of personnel and facilities
• Regular scource of care

A. Health and Physical Mobility Status

B. Perceived Symptoms

C. Physician Rated Urgency

D. Activity Limitation Status

E. Disability Days

F. Diagnosis

G. Surgery

---

[a]Taken from The Utilization of Health Services: Indices and Correlates, A Research Bibliography, 1972 by L. Aday, Department of Sociology, Purdue University, based on Ronald Andersen's Behavioral Model for Families Use of Health Services, 1968.

[+]Variables of concern in the present study.

HSU. For purposes of parsimony, certain completed surveys and supportive studies have been selected to illustrate relationships between each variables and HSU. Thus, the surveys of the National Center for Health Statistics, series 10, Andersen (1967) and Avnet (1967) are relied upon heavily to present these descriptive sociological predictor variables.

Of the variables under consideration, only age and sex offer an explicit explanation of why differences exist in HSU.

Age

The relationship between age and HSU is well documented (USDHEW, 1972; McKinlay, 1972; Andersen & Anderson, 1967; Avnet, 1967; USDHEW, 1962; Suchman, 1965; Fischer, 1971; McKinlay, 1972; Susser & Watson, 1962; Graham, 1957; Aday, 1972; Blackwell, 1963; USDHEW, 1964; Anderson and Andersen, 1972; Battistella, 1971; Kessel & Shepard, 1965; USDHEW, 1963; Stoekle, et al., 1963). The relationship between age and frequency of physician visit, for example, is best described by a U-shaped curve with children under six and older persons over 65 accounting for more visits than intermediate age groups. Among adults, frequency of visits for any purpose varies from approximately four visits per year for the ages of 18-34 to six visits per year at age 55 and over (USDHEW, 1972; McKinlay, 1972; Andersen & Anderson, 1967; Avnet, 1967; USDHEW, 1962; USDHEW, 1972). McKinlay suggests that this variation is explained by patterns of disease incidence by age. Young children have higher incidence of infectious illness and older persons greater occurence of chronic disease related problems.

Andersen and Anderson (1967) in three national surveys of HSU which extended over ten years, found that having a regular physician or clinic is reported by 88% of persons age 55 and over. The percentage decreases slightly to 86% ages 35-54, and 83% at the ages of 18-34.

Physician visits for preventive services, such as physical checkups, are found with the greatest frequency in age groups under 18 (Andersen & Anderson, 1967; Avnet, 1967; USDHEW, 1964; USDHEW, 1972). Andersen reports that among adults, 56% of persons 18-34 receive physical checkups, with 50% of those aged 25-64 reporting preventive services. Avnet, in surveying medical records of over 50,000 persons with pre-paid group health insurance, found that preventive services in adults is reported highest at ages 20-29 and decreases gradually with age increase. This is the only service category in which the oldest groups show the least usage. The National Health Survey for 1969 reported that approximately 10% of physician visits between ages 15-34 are for checkups as compared with 8% between ages 45-64. The difference is slight and could be attributable to sample error or to the increase of visit for signs and symptoms of illness with age. In that case, older persons are more likely to report a physician visit for diagnosis and treatment. Fewer reported checkups by older persons might be explained by several phenomena. First, it is possible that low income restrictions limit the older group in obtaining asymptomatic physical checkups. Second, there has been historically an increasing value placed on preventive care, thus suggesting that older cohort groups might not seek regular checkups. Third, it is possible that physician providers, may see less usefulness of a physical examination for older persons than for the younger population.

Sex

Sex is the variable which generates the most dramatic variation in volume of visit and preventive behavior (USDHEW, 1972; McKinlay, 1972; Andersen & Anderson, 1967; Avnet, 1967; USDHEW, 1962; Susser & Watson, 1962; Morris, 1967; Andersen, et al., 1970; Anderson & Andersen, 1972; Ross, 1962; USDHEW, 1965; USPHS, 1960; USPHS, 1951; Collver, et al., 1967; Kessel & Shepard, 1965; USDHEW, 1966; Rosenstock, 1966; Solon, 1966). According to the National Health Survey data, women use more preventive services than men at all ages 15-64 (USDHEW, 1962; USDHEW, 1965; USPHS, 1960; USDHEW, 1966; USDHEW, 1972). Some reports suggest that for child-bearing ages the difference between sexes is related to pre-natal, post-natal and family planning preventive services (USDHEW, 1965; USDHEW, 1966; USDHEW, 1972). Avnet found that women use more preventive services at all ages under 65 even when excluding obstetrical visits. In Andersen's survey, 50% of both sexes combined reported having a physical checkup within one year from the time of interview. Differences by sex at all ages are minor in Andersen's survey with women slightly more likely to have had a checkup. Larger differences between sexes are found in two age groups: group 18-34 with 60% of the women and 51% of the men reporting checkups; and over age 65 with 59% women compared to 49% of the men.

Variation between the sexes in voluntary preventive behavior is confounded by required physical examinations for work, school, military service, etc., for both men and women. Andersen examined sex differences by reason for physical checkup. He found that among men, 40% of the reported checkups were required by employment, school or military service as compared to 24% for women. The largest difference

again was found in age group 18-34 with 61% of checkups for men being required compared to 33% for women. This suggests that required examinations are a dominant factor in physician contact of young men. In the present study, there is no knowledge of whether or not physical checkups are required of respondents. The influence of this factor is therefore not possible to assess.

In Andersen's survey samples, 87% of the respondents indicated having a regular physician or clinic. Differences between sexes on this component were small, with 11% of the women reporting no regular physician or clinic as compared to 14% of the men.

Many investigators demonstrate that frequency of visits per year is greater for women than men (USDHEW, 1972; McKinlay, 1972; Avnet, 1967; USDHEW, 1962; Morris, 1967; USDHEW, 1965; USPHS, 1960; USPHS, 1959; Kessel & Shepard, 1965; USDHEW, 1966). At all adult ages, Avnet found a similar outcome in a pre-paid insurance group even when excluding obstetrical care. Annual frequency for all ages reported by Andersen in 1958 were 3.5 visits for men and 5.3 for women. In 1963, the frequencies changed to 4.1 for men and 5.0 for women (in Andersen's study and the National Health Survey). The National Health Survey in 1969 reported 3.7 visits for men and 4.7 for women. Generally, frequency of visits increase with age for both sexes. Aday, McKinlay, Morris and others suggest that visits to physicians or clinics follow incidence of illness patterns by age and sex in adults. Visits are likely therefore to increase gradually with age for men and present more of a bimodal relationship for women with peaks of frequency during the child-bearing years and again at older ages.

Race

Race is a variable which has consistently predicted frequency of visit to physician or clinic. National Health Statistics for 1957 through 1971 indicate that whites average more visits per person per year than non-whites regardless of age or sex (USDHEW, 1965; USPHS, 1959; USDHEW, 1969; USDHEW, 1969; Richardson, 1969; USDHEW, 1973; USDHEW, 1972). At all income levels whites have higher age-adjusted rates of physician visits than non-whites. White males and females frequency of visits increase with income. Among non-whites, highest frequencies of visits for males are found in the highest income group compared with highest frequency among females in the lowest income groups. Among all non-whites, the middle income group had the lowest frequency of physician or clinic visits (USDHEW, 1969).

Previous research reports only slight differences between whites and non-whites in having a regular source of care and in obtaining physical checkups. Andersen for example, found that 88% of the whites and 85% of the non-whites have a regular source of care. The main differences between races is the location of source of care. Most visitors to private physician offices are white. Most clinic visitors are non-white (USDHEW, 1972; Mckinlay, 1972; Andersen and Anderson, 1967). The present study does not differentiate between locations of visit. Andersen found in 1963 that 55% of the non-whites had a physical checkup within the past year, compared with 53% of the whites. The National Health Statistics of 1969 indicate that, among all persons receiving all types of services, 10.4% whites and 8.8% non-whites visited a physician for the purpose of obtaining a physical checkup; these figures exclude preventive visits for pre- and post-natal care.

Family Income

Family income, as an economic correlate of use of health services, has been described in studies as a major enabling factor influencing volume and type of service. Most pre-health insurance findings indicated that the higher the income, the more physician visits and physical checkups (USPHS, 1959; Bice, 1971; Muller, 1965; USDHEW, 1964; Rosenstock, 1966; White, 1968; Andersen & Benham, 1970). In addition, Koos (1954) and Andersen demonstrated that families with higher incomes were more likely to have a regular source of care (Andersen & Anderson, 1967).

In 1963, Andersen found that for all ages under 55, an increase in percentage of persons seeing a physician accompanied each rise in income. The National Health Statistics of 1963-64 similarly reported a steady increase in annual visits per person from 4.3 visits at income less than $3,000 to 5.8 visits with an income of $15,000 or over. In 1966-67, post Medicare-Medicaid, the figures increased for low income groups. In 1969, visits were most frequent for the highest and lowest income groups with 4.5 and 4.8 visits respectively. Two middle income groups between $5,000 and $10,000 per year reported the lowest frequency at 3.9 and 4.1 visits. When adjusting for age and sex, the same general trend remains only for ages 35-55. In men age 25-34, the frequency of visits decreases as family income increases, from 3.7 visits per year in the lowest income group to 2.5 in the over $15,000 group. In women of the same age, the relationship is exactly the opposite with frequency of visits increasing from 5.7 to 7.3 as income increases. For children under 15 and persons over 65, physician visits increase with income for both sexes.

There are indications that the introduction of third party financing for health services is influencing the traditional relationship between income and frequency of services. Several studies suggest that frequency of visits may be related more to increased health insruance coverage than to increased income. Gornick, et al., (1969), Bice and Eichhorn (1972), and Andersen and Benham (1970) have reported that, when financial assistance is provided, visits to physicians have increased among the poor even when controlling for sex and age. Rein (1969), in a study of the British experience with its National Health Service, found that the lowest income groups were making the greatest use of services. Avnet uses occupational groups as an indicator of income. Her data from the Group Health Insurance, Inc., reveals that blue-collar workers and their families visited physicians at exactly the rate of the professional-managerial income groups, with the clerical and sales income groups very close behind.

Previous research also indicates that preventive behavior, more than curative behavior, is associated with income (USDHEW, 1972; Mckinlay, 1972; Avnet, 1967; Aday, 1972; USPHS, 1960; USPHS, 1959; Donabedian & Rosenfeld, 1961; Freeman & Lambert, 1965; Koos, 1954; USDHEW, 1966; Nikias, 1968; Tyroler, et al., 1965; Andersen & Benham, 1970). National Health Survey data and researchers such as Bice, Muller (1965), White (1968), and Andersen (1970) have demonstrated a positive relationship between income and obtaining preventive medical services. Their findings are backed by Kegeles (1963), and Kriesberg and Treiman (1960) who studied preventive dental care. In a study on preventive pre- and post-natal care, Donabedian and Rosenfeld (1961) discovered that utilization increases with income. Freeman and

Lambert (1965) reported that a mother's preventive behavior for herself was positively related to income, but that the difference between income groups decreased markedly when the preventive services were for a child.

Several studies suggest that the relationship between income group and preventive health behavior remains the same even when third party payment is introduced (Avnet, 1967; USPHS, 1960; USPHS, 1959; Nikias, 1968; Tyroler, et al., 1965; Andersen & Benham, 1970). Research on prepaid dental programs point out that the prepayment does not change preventive behavior of different income groups (USPHS, 1959; Nikias, 1968). Similar differences have been reported between income groups in acceptance and participation in free polio vaccine programs (USPHS, 1960; Tyroler, et al., 1965). Avnet, in her comparison among occupational groups, found that the white-collar proportion of preventive service users was 35% higher than blue-collar, all members holding pre-paid insurance.

Education and Occupation

Education and occupation together with income are correlated indicators of socio-economic status and have been so used in most studies on HSU. Because of this, findings regarding the relationship between either of these variables and HSU are very similar to those for income. Education and occupation, however, possess certain qualitative substance which renders them less straight forward than income as predictors of utilization. Whereas income is considered an enabling factor, education and occupation, as a reference group, may be viewed as predisposing and enabling factors. A good deal of discussion exists in the literature regarding HSU and these two

variables, especially education. In addition to being an income predictor, occupation has been treated as a reference group with associated value system and life style. One assumes that membership in an occupational group may cause the individual HSU to resemble that of other members of that group. Occupational reference groups are often separated into white collar and blue collar. This classification appears less useful as income and education equalize between the "upper" blue collar and "lower" white collar categories. Nevertheless, occupation is retested in the present study on the basis that blue-collar/white-collar is still a reasonably viable separation of reference and prestige groups.

Coe and Wessen (1965), and Suchman (1966) summarize some pertinent findings regarding education and reference groups as part of the "social system" approach to explaining HSU. Suchman separates individuals into "parochials" or "cosmopolitans" depending upon their reactions to illness and to the medical care system. He suggests that parochials are more likely to be of lower socio-economic classes, which would indicate low level of education and blue collar occupational identity. Parochials are more likely than cosmopolitans to have a "popular" viewpoint regarding medical care, dependent somewhat on their degree of scientific knowledge of health matters. The individual who is ignorant and skeptical of the medical care system is likely to seek advice from friends and relatives rather than a professional source. Suchman has been supported by studies done by Koos (1954), Watts (1966), and the findings of Bloom (1963) and Friedson (1961), who labeled this method of obtaining services the "lay referral system."

Studies treating occupation as an independent predictor of HSU are few. Rosenblatt and Suchman discuss low utilization by blue

collar workers in the 1964 publication Blue Collar World edited by Shostak and Gomberg. They suggest that less education, unsatisfactory experiences with medical professionals and the impersonal medical system reduce utilization in Blue Collar groups. Avnet and Nikias (1968) both used occupation as predictors of medical and dental service utilization respectively. Nikias, in a study of the use of dental care in a prepayment plan, found that blue collarites displayed less preventive behavior than white collar workers. Very little difference was found between blue and white collar workers in volume of services among the employed in Avnet's survey of prepaid medical care. Blue collar workers and professional-executive workers received the same number of physician services, 6.7 per member per year. Clerical white collar workers were close behind with 6.5 services and the sales white collar category was highest at 8.8 services per user. The white collar average of 7.7 services is greater than blue collar. This perhaps points out the problems of lumping different reference groups into one category. Avnet did find a more clear-cut difference in preventive behavior. In measuring the proportion of the membership using preventive services, she found that blue collar members scored lowest with 124 users per 1,000 exposure years. Professional and executive members were 19% higher at 148 users. Clerical white collar workers were next with 170 users and sales workers again the greatest utilizers with 194 users. These limited findings with the income barrier removed by prepayment plan suggest that the "middle" occupational groups in the white collar category are responsible for the higher white collar scores in HSU.

Research regarding education and HSU is more voluminous and perhaps more definitive than that describing the relationship by occupation.

Education has been an important predictor of preventive behavior and of overall volume of physician services. National Health Statistics from 1957 to 1971 report more physician visits and physical checkups with higher levels of education (USDHEW, 1965; USDHEW, 1966; USDHEW, 1968; USDHEW, 1969; USDHEW, 1973; USDHEW, 1972). Ross (1962) analyzed the 1957-59 data and found a strong relationship between educational level and volume and type of service even when adjusting for age and sex. The differences between educational levels narrowed somewhat between 1963 and 1969. Perhaps this narrowing is indicative of improved health education in the lower grade levels. Watts (1966) has indicated that persons of high school level education or below with greater specific health knowledge have broader acceptance of the medical care system and are greater consumers of services. She found also that health knowledge was highly correlated with rising socio-economic status and the taking on of middle class values by a low income subculture. In 1969, the number of physician visits increased only slightly with educational level from 4.1 visits per year for high school graduates and below to 4.7 visits for 13 years of education or more (USDHEW, 1972).[1] Of persons who visited a physician in 1969, 11.8% of those with 13 or more years education did so to obtain a general checkup as compared with 9.5 % of those with 12 or less years.[2]

---

[1] 4.1 is the average of: 4.1, less than 5 years education; 4.0, 6-8 years; 4.2, 9-12 years.

[2] 9.5 is average of: 8.5%, less than 5 years education; 9.2, 5-8 years; 9.5, 9-11 years; 10.4, 12 years.

Andersen, and Donabedian and Rosenfeld (1961) have argued the case for the role of education in pre-natal care. Both studies revealed a positive relationship between education and volume of pre-natal visits. Fink, et al. (1968), in studying breast cancer screening programs, found that success in inducing preventive behavior was greatest among better educated women. Kegeles (1963) found education to be related also to seeking preventive dental services.

Family Size

Family size is another variable which is often cited as a predisposing predictor of HSU, particularly of volume of physician visits per family. The primary interest in the present study, however, is number of visits per adult individual.

Andersen (1968), in his study entitled A Behavioral Model of Families' Use of Health Services found family size to be the best single predisposing predictor of utilization per family. Based on data gathered in 1964, he found that large families with young children, and those headed by younger persons, were the highest utilizers of physician sources. Across family sizes, HSU increases with education and income of the head of household, and is higher for whites than for non-whites. Among the small family units (two persons) age had a marked effect. Aging family units with children out of the household were high utilizers. Young marrieds without children were low utilizers. Similar findings regarding total family volume of physician visits are reported by the National Health Survey in 1964 and Avnet in 1967.

Services per person by family size presents a different and somewhat unclear picture in the limited empirical evidence available. The National Health Survey Family Use of Health Services: United States, 1964, reports that physician visits per person decrease as family size increases, with the two person family having the highest number of individual visits. An apparent explanation of the phenomenon lies in the relationship between age and family cycle. Larger families have more children under 17 who are characteristically low utilizers. Conversely, two person families are composed mainly of older persons who are high utilizers. The survey also reports that for families of three or more members, individual physician visits increase with education and income. This is not true of two person families. One explanation is the high occurrence of and priority put on health needs by older persons of all income and educaton levels. Avnet in her study of Group Health Insurance, Inc. had similar findings, suggesting that the presence of low utilizing children in the large family tends to decrease the average use per person. In her findings, however, this age factor did not explain the exceptionally low use levels per adult in families of six or more members. Kessel and Shepard (1965) studied the characteristics of persons who seldom consult a physician in the British National Health Service. They found no difference in utilization by family size. Picken and Ireland (1969) studied family size and social class influence on HSU in Edinburgh, Scotland. They, too, found no difference in adult physician visits per family size. They did discover that small families of higher income with young children

consult a physician more often regarding their children than do parents of low income large families.

It appears from the literature that the effect of family size on HSU is strongly linked with other predictors, primarily age, income and education.

A brief summary is in order.[3] Age, sex, race, education, income, occupation and family size are listed in Figure 1 as predisposing or enabling factors related by previous research to Health Services Utilization. The preceding pages have been designed to acquaint the reader with the general descriptive relationships among these variables.

Women of all ages are higher utilizers than men even when excluding obstetrical care. Volume of visits increases gradually with age in men and presents a bimodal picture in women, with high frequency peaks during the childbearing and again during the older (55+) years. Visiting a physician for the purpose of obtaining a physical checkup is most common in young adults ages 18-34. There is some indication that this may be a function of required physical exams, especially for young men. Over 80% of all persons in one National Survey report having a regular source of care, the highest percentage being over age 55. Across all age groups, whites have a higher rate of physician visits than non-whites. Very little difference exists between races in obtaining physical checkups for adults or having a regular source of care.

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[3]The present study interprets the relationship of the above variables for 1,000 married subjects of both sexes who range in age from 25 to 65. For this reason, summary statements will be directed to this age span only.

Higher income is linked to more Physician Visits, regular check-ups and regular physician. Recent evidence indicates that third party payment programs may be equalizing income level differences in frequency of visits. Some findings suggest, however, that obtaining a physical checkup continues to vary with income level in spite of prepayment for services. Previous findings regarding education and occupation have been generally similar to findings for income with a few qualifications. Occupations may be divided into prestige reference groups labeled blue-collar/white-collar. The literature suggests that the middle prestige categories of white collar group have the highest volume of physician visits and physical checkups. Blue-collar employees on the other hand, are more likely to possess a popular viewpoint of medicine and pursue the lay referral system for obtaining health care advice. Higher level of education is an important predictor of higher utilization in visits, checkups and regular physician, particularly preventive behavior. Family size appears in the literature predicting both volume of services per family and per family member. Findings suggest less visits per member as family size increases. Except for large families of six or more persons, these findings appear to be the function of age, income and education as correlates of family size.

Stress, Symptoms and Social Mobility

Another predisposing variable to use of health services listed in Andersen's model is general stress. Like age, sex, race, education and family size, stress may also lead to a "need" variable, such as "perceived symptom," which will in time prompt utilization of health services (see Figure 1). The concept of perceived symptom assumes

that the individual is cognizant of a condition which he or she considers troublesome or abnormal enough to report during the interview. The three symptoms on which data are available in the present study are insomnia, indigestion, and nervousness. In addition to these respondent reported symptoms, the present study provides an opportunity for measuring and recording blood pressure at several intervals during the interview.[4]

It should be cautioned that the three symptoms may have multiple behavioral or physical causations, a few examples being overeating, hypergastric function, undereating, drug ingestion, hyperthyroidism, hypertensive vascular disease, peptic ulcer and diabetes (Merck Manual, 1972). It is also possible, however, that such symptoms arise as a reaction to stress, the prolonged condition caused by continuous conflict resolution.[5] The symptoms relate to the mechanisms by which the individual is coping adequately or inadequately with stress. Insomnia and nervousness, along with high blood pressure, are associated as stressors with hypertensive vascular disease and may be present for many years without treatment (Merck Manual, 1972). Insomnia, nervousness and chronic indigestion are also associated with the etiology of peptic ulcer. This is a serious stress-related illness which in theory could be prevented before a physical crisis, such as bleeding, brings the individual into the health care system.

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[4]Chapter II on Methodology describes the study parameters in detail.

[5]Discussions summarizing "stress theories" may be found in Shaw and Costanzo, Theories of Social Psychology, 1970, pp 117-133, "Field theory orientation" and pp. 171-221, "Cognitive orientation." And in Anxiety and Behavior, Spielberger (ed), "The study of psychological stress: A summary of theoretical formulations and experimental finding," by Lazarus and Opton, pp. 225-262.

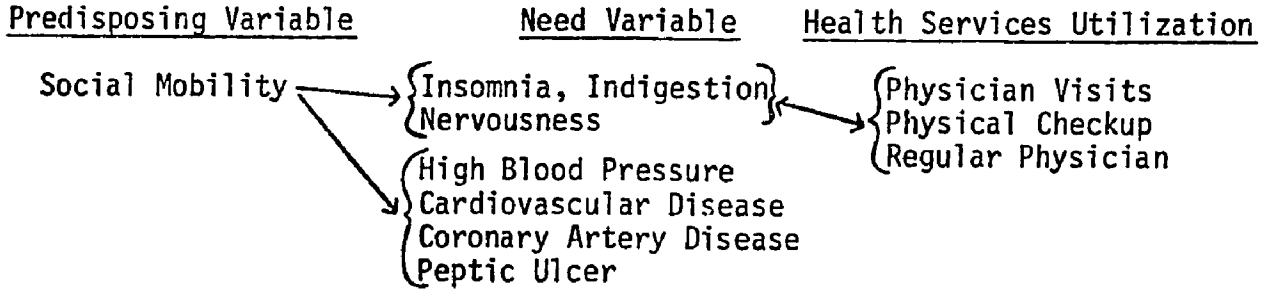
There is no way of knowing the right combination of psychological stress, specific disease, and/or situation specific behavior as the causal factor behind such symptoms as insomnia, indigestion and nervousness. There is in the present study, however, a way to measure the extent to which a certain stressor is associated with certain symptoms, signs and diseases; and, in turn, the extent to which the prevalence of symptoms is associated with use of health services.

General stressors are described by Aday as falling into two categories. First are "psychological" stressors such as upsetting events, crises, or chronic fear and anxiety. Second are "social structural" stressors such as social isolation, broken families, and other factors external to the individual. In the present study, general stressor is conceptualized by certain inconsistencies in social mobility.[6] Social mobility has stress elements which are both psychological and social structural.

The predicted relationships for this portion of the study are illustrated in Figure 2, within the framework of Andersen's model (outlined in Figure 1).

Figure 2

Predicted Relationships among General Stress, Symptoms and Signs, and Health Services Utilization



[6]The operational construction of social mobility may be found in Appendix B and will be discussed in Chapter II.

Social Mobility is conceptualized in the present study as a general stressor (see Figures 1 and 2). As detailed in Chapter II and in Appendix B, mobility is operationalized by an index. The first index component is individual orientation to achievement, consisting of perceived importance of mobility and perceived difficulty of upward mobility. The second component is mobility as perceived by the individual in occupation, financial status and residence. The social mobility index consists of eight "Mobility Types," which represent ordinal scale inconsistencies between upward mobility (reward) and achievement orientation (investment).

Stress is defined in the present study as a dynamic state of the organism which results from a demand for individual adaptation to inconsistencies perceived in the struggle for upward social mobility. As previously mentioned, the symptoms are operationalized in the present study by three conditions commonly associated with stress and stress related illness and on which data are available. These are insomnia, indigestion, nervousness, and chest pain. High blood pressure is also included as a sign of hypertension which may or may not be known to the respondent.

There are two notions underlying the predicted relationships illustrated in Figure 2. First, the greater the level of inconsistency between investment (achievement orientation) and reward (upward mobility), the greater the social stress (anger, guilt, fear, frustration, anxiety) within the individual. Second, social stress is a precursor of symptoms which are associated with certain illnesses. The next few pages review literature supporting these two notions.

Stress

The first consideration is the concept of social stress, and evidence supporting the suggestion that stress causes insomnia, indigestion, nervousness, high blood pressure and related illnesses.

In physics, when describing the mechanics of non-living systems, stress is defined as the molecular resistance in a body opposing the action of applied external force. Wolf and Goodell (1968) in their book, Stress and Disease, offer an analogous definition of stress in reference to living organisms--"Stress is a dynamic state within an organism in response to a demand for adaptation." Since life entails continuous adaptation to various noxious agents, one could say correctly that individuals are always under stress to one degree or another. Whether or not organisms adapt smoothly and remain free from symptomatic illness depends upon the relationships between the biological and psychological characteristics of the individual, social-situational support, and the nature of the noxious agent.[7]

Stress may be caused by physical forces in the environment, such as climate, geographical hardships, or micro-organisms, or from exposure to social changes which disrupt social structures, habits, roles, beliefs and expectations of the individual. It is the last type of social stress which is of concern in the present study. The interaction of high social stress and inadequate biological processes produces certain symptoms of illness. Maladaptive coping patterns are linked in the literature to both noninfectious chronic illness and host

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[7]A point worth mentioning is that stress is commonly thought of as destructive when in fact it may not be detrimental to the organism. Wolf suggests that the process of coping with a noxious agent may be good for, if not essential to, strengthening and growth.

vulnerability to infectious disease (Merck Manual, 1972; Raffle, 1959; Hetzel, 1960; Brady, 1964; Kasl & Cobb, 1964; Green, 1965; Rahe, et al., 1964; Antonovsky, 1967; Jacobs, et al., 1970; Howard & Holman, 1970; Perrera, et al., 1972; Theorell & Rahe, 1972; Smith, 1967; Syme, et al., 1965; Luce & Segal, 1969; Kales, 1969; Tyroler & Cassel, 1964; Rosenman, 1964; Henry & Cassel, 1969; Price, 1965; Dubos, 1969). A number of these studies demonstrate a relationship, not necessarily cause-and-effect, between stress and coronary heart disease, cerebrovascular disorder, essential hypertension, ulcers, and various mental disorders.

The literature on non-demographic sources of social stress which may lead to illness reveals several consistencies. Psychological or personality variables are mentioned frequently. Rosenman's research on "Type A" and "Type B" personalities and risk of coronary heart disease is one example (Rosenman, 1964). Another is Stamler's work on hypertension and psychological reaction to acculturation among black blue collar workers (Stamler, 1964). The second group of non-demographic variables often observed in the literature are those of social change. Social change can be divided into cultural change, in which society changes around the individual; or as situational change, a process discussed by Syme (1965) and Price (1965), which includes individual change in geographic location, goal orientation or life style. Henry and Cassel (1969) discuss cultural change in their review of the evidence regarding epidemiology of hypertension. They note that Hypertension mortality is positively related to the rate of modernization and growth in certain South American cities. In an already industrialized society, Tyroler and Cassel (1968) found that

mortality from coronary heart disease was greater in U.S. counties undergoing rapid urbanization. Both psychological and social change concepts will be discussed in the next section, in which the literature reviewed supports social mobility as a stressor.

Many signs and symptoms occur along the continuum from exposure to stress to the fulmination of these events into a chronic or acute diagnosed illness. Wolf and Goodell (1968) as well as Dubos (1969) in Man Adapting have outlined in detail many of the physiologic changes which occur in response to stress, and are manifest in signs or symptoms.

Symptoms and Signs Related to Stress

One symptom of physiologic reaction often related to stress and illness is gastric hyperfunction, which the average consumer describes as indigestion. Wolf and Goodell extensively review studies which have demonstrated that gastric hyperfunction can be evoked by social situations which produce brief or sustained anxiety. Continuation of such reactions is accompanied by increasing fragility of the gastric mucous membranes. Eventually even minor insults by physical or emotional agents may induce the erosion and bleeding of peptic ulcer.

The Merck Manual (1972) defines indigestion as a symptom complex which includes nausea, heartburn (pyrosis), upper abdominal pain, sensation of abdominal distention and flatulence. While it is true that these conditions can be caused by many irritants, social stress is commonly considered to have the causal role in the chronic gastric hyperacidity leading to gastric and duodenal ulcers.

Insomnia and nervousness are other symptoms commonly associated with stress and stress related illness (Merck Manual, 1972; Luce & Segal, 1969; Kales, 1969). Continued presence of either condition may be a warning signal or a causal factor in the development of hypertension, cardiovascular disease, peptic ulcer and mental disorders.

Insomnia is a common and usually, except in the elderly, a transitory condition. Luce and Segal in their book entitled Insomnia (1969) remark that... "there is only one way to escape insomnia...not to be born." For this reason defining "normal" and "pathological" insomnia is difficult. Luce and Segal suggest that sleeplessness becomes pathological when it represents a drastic prolonged change from ones usual sleep patterns. Further, scientists researching sleep patterns associated with certain stress related mental disorders are able to predict psycho-pathology. Deteriorating patterns of sleep assist in diagnosing mental illness, just as electrocardiograms help in the diagnosis of heart disease. These researchers have found that frequent insomnia often precedes mild to severe depression, acute anxiety states, and various forms of psychotic disorders. Insomnia has also been included as part of the clinical picture in certain physical illnesses. Kales and Tan (1969) review electrophysiological studies of persons already afflicted with a duodenal ulcer, coronary atherosclerosis or bronchial asthma. Insomnia and reduced sleep are linked to more specific primary symptoms of these illnesses: indigestion; chest pain; and breathlessness.

In addition to the exacerbation of physical and mental symptoms of illness, insomnia appears to impair daily life. Luce and Segal and Johnson (1969) suggest that prolonged insomnia will result in

signs of emotional instability and loss of efficiency while awake, including reduced ability to perform specific tasks. Constant lethargy and fatigue, reduced powers of concentration, faulty memory, poor coordination, irritability and lapses of attention are possible indicators of excessive lack of sleep. These accompaniments of insomnia suggest the difficulties in considering cause-and-effect relationships from stress to symptom or vice versa. In addition to the distressing manifestations, it is clearly possible that awareness of symptom (e.g., that one has insomnia, indigestion, high blood pressure, or a high degree of nervousness) is quite stress producing.

Nervousness, another widespread and vague symptom, is defined by the Merck Manual as a "state of restlessness, mental or bodily or both." In common use, nervousness is often used to describe feelings which are unpleasant, frightening, anxious and apprehensive. These feelings manifest themselves into worry, bewilderment, difficulty in making decisions, irritability, mannerisms (such as nail-biting, tics, etc.) difficulty in concentrating, insomnia, and often fatigue. Further, all major psychotic disorders may begin with vague symptoms of nervousness. Many disorders of biochemical origin can produce nervousness. Among these are drug reactions and the metabolic disturbances that arise in diabetes mellitus, anemia, thyroid malfunction and others. The Merck Manual suggests, however, that nervousness in the vast majority of individuals is due to social stress.

A final stress-related sign for consideration in the present study is high blood pressure, the primary sign of hypertensive vascular disease. High blood pressure has long been linked to social stress as well as to diet, exercise, smoking, heredity and biochemical

predictors (Merck Manual, 1972; Raffle, 1959; Kasl & Cobb, 1964; Green, 1965; Harburg, et al., 1971; Howard & Holman, 1970; Perrera, et al., 1972; Scotch & Geiger, 1963; Beck & Cassel, 1972; Hinkle & Wolff, 1958; Graham & Stevenson, 1963; King, 1972; Henry & Cassel, 1969). The causal relationships among these predictors are only partly known. The question also remains as to whether situational transitory elevated blood pressure will always lead to permanent hypertension. Scotch and Geiger (1963) review a number of early and recent studies which show clearly that a variety of social-psychological determinants are involved in hypertensive vascular disease. The determinants include sociocultural differences, personality differences and varying patterns, all in response to stress. While many investigations focus on demographic and psychological characteristics of hypertensives, some, including laboratory experiments, attempt to demonstrate a process of causation from environmental stress, via physiological mechanism, to temporarily elevated blood pressure, to permanent hypertension. These types of studies assume a symbiotic relationship between individual and environment. When disorders in the relationship occurs, symptoms of illness may result. Wolf and Goodell (1968), Glock and Lennard (1957, and Reiser and Bakst (1959) suggest a basic sequence of social-psychological events leading to hypertension. Particular environmental factors are prerequisite to the experience of a psychological reaction (stress). The psychological reaction is followed by a physiological response, resulting immediately in elevated blood pressure and culminating eventually in the development of hypertension. The physiological response is the primary cause of high blood pressure regardless of the stimulus inducing the response. The stimulus in the present study happens to be social stress.

Hinkle and Wolff (1961) support this basic sequence in their extensive longitudinal studies of stress and psychosomatic illness. They compared several groups (which were homogeneous in sex, race, occupation, education, income and geographic location) on life events, psychological characteristics and incidence of illness. They conclude that social experience and psychological reactions are crucial determinants in all types of illness, including hypertension. They suggest that hypertensive persons, as well as persons who are frequently ill, have a proclivity for perceiving their life situations in a stressful manner, thus perpetuating an adverse pattern of adaptation to stress. This includes high blood pressure. Harris, et al. (1953) and others have pursued similar studies on psychosomatic illness in an attempt to identify a "hypertensive personality." Generally, these studies reveal that hypertensives and "prehypertensives" are non-reactive...mobilized for combat...tense, wary, suspicious... preoccupied with conforming, saving-face, and appearing easy-going...and filled with restrained aggression and hostility. The prehypertensives studied by Harris were less able than "normals" to deal with frustrating social situations, thus rendering the situations high in social stress. Because these individuals become emotionally upset under social stress they are likely to experience the autonomic physiological accompaniment of emotion, including elevated blood pressure. Harris contends that constant repetition of this essentially emergency pattern of response becomes a way of life and an important, though not a necessary or sufficient factor in the network of events leading to hypertension.

The past few pages have offered support from the literature that social stress does have an etiological role in illness, specifically

by association with certain symptoms. In the present study, specific attention is given to insomnia, indigestion, nervousness and high blood pressure. The next consideration is inconsistency in social mobility as a potential source of social stress.

Social Mobility as Stress

Inconsistency in social mobility is measured by an index of achievement orientation (personal investment) in upward mobility and perceived upward mobility (reward). The basic underlying notion is that the greater the discrepancy between investment and reward, the greater the social stress.

Theoretical support for this notion may be found in a number of sociological concepts and psychological variables which attempt to explain the dynamics of stress and behavior. Names of some social concepts are: status inconsistency; exchange theory of investment and reward; alienation; anomie; and physical, cultural and social mobility. These concepts are based on the notion that behavior is only fully explained when placed in the context of social environment. Thus, mobility and status inconsistency refer to unstable conditions in the individual's social environment. Alienation and anomie are stress-related isolation responses to individual perception of success in controlling access to and achieving prescribed goals. Intervening or mediating psychological variables are personality characteristics,

attitudes, past behavior and individual interpretation of stressful situations.[8]

Pertinent to the present study are the sociological concepts of investment/ reward, and social mobility. Among the psychological variables, only one can be measured. That is individual perception of inconsistency in upward mobility, which is conceptually tantamount to the perception of social stress.

The concept of investment/reward is found in the writing of George Homans, specifically in his theory of social-reinforcement exchange (Shaw & Costanzo, 1970). Homans speaks of the "rule of distributive justice" in which he suggests that individuals in exchange relationships will expect their rewards to be proportional to their costs or investments--the greater the investment, the greater the reward. When the rule of distributive justice is violated, Homans (1961) explains the consequences as follows: "The more to a man's disadvantage the rule of distributive justice fails of realization, the more likely he is to display the emotional behavior we call anger." A corollary to this is that if the failure of distributive justice is to the individual's advantage, he will experience guilt at a level proportionate to the extent of his "underserved" advantage. Distributive justice then is conceptualized as a situation in which "fair" exchange of investment and reward exists, and no stressful reaction to injustice results. The existence of a disproportionate or unjust

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[8]For further elaboration of sociological perspectives on stress and disease, see: Graham and Reeder, "Social Factors in Chronic Disease," in Freeman's Handbook of Medical Sociology (1972), pp. 89-92. Major points from the works of Durkheim, Merton, Thomas, Cooley and Mead are concisely summarized and discussed. Homan's "Exchange Theory" is developed at some length in Shaw and Costanzo, Theories of Social Psychology (1970) pp. 69-81.

situation may be either perceived by the individual concerned or may be inferred by some outsider who is interpreting the circumstances from afar (such as a researcher or government official). Hinkle and Wolff (1958), and Beck and Cassel (1972) argue that in order for stress (and eventually symptoms of illness) to occur, the individual must perceive an injustice and must become psychologically "dissonant" as a result of his perception. This suggests that perceived inconsistencies between investment and reward are better predictors of stress-related illnesses than inferred inconsistencies.

Theoretical background supporting the necessity of perceiving an injustice comes from Festinger's theory of cognitive dissonance (Festinger, 1957). Cognitive dissonance is explained by Beck and Cassel (1972) as a state of psychological tension growing out of the individual's recognition of a discrepancy, or dissonance, among two or more cognitions. Dissonance then can be applied to cognitions regarding the social expectations of the individual, as in the failure of distributive justice. For example, if the individual perceives that his rewards are not proportional to his investment than a discrepancy exists between two cognitions (expectation and perceived reality) and his social expectations are not satisfied. The experience of perceived injustice is now reduced to experiencing cognitive dissonance and thereby becomes socially induced stress. Festinger explains that the empirical consequences of cognitive dissonance are behavioral attempts to reduce dissonance and stress. In the case of too little reward for too much investment, Homans would suggest that the stress is experienced as anger followed by a biological and behavioral reaction to that anger.

In order for the theoretical material of Homans and Festinger to be extrapolated to the present study, it is necessary to make two assumptions:

1. Every individual includes in his cognitive set beliefs regarding social hierarchies and his own social status.
2. Every individual's beliefs define upward mobility in social status as a reward, and define achievement orientation as an investment.

In further elaboration of the second assumption, achievement orientation is defined in the present study by the importance and difficulty of mobility as perceived by the individual. It is considered an "attitudinal" or "value" investment which is likely to have behavioral components (e.g., longer working hours). The reward, upward social mobility, is measured by changes in occupation, income, and residence.

The theoretical relationship between investment and reward using the parameters of the present study are presented in Table 1 to illustrate levels of dissonances and predicted consequences.

Table 1

Theoretical Relationship of Achievement Orientation and Reward

		Upward Mobility (Reward)	
		Low	High
Achievement Orientation (Investment)	Low	Low Dissonance No Reaction	High Dissonance Guilt
	High	High Dissonance Anger	Low Dissonance No Reaction

Theoretically, the consequences of distributive injustice are psychological attempts to reduce dissonance. There are three pertinent solutions.

The first solution is to give up beliefs suggested in assumption 2, that upward mobility is desirable. An attempt to reduce dissonance in this manner is unlikely. The value of upward mobility is continuously ingrained in American society from childhood, through education, mass media, primary and secondary social groups. Giving up such an inescapable value would only serve to create new stresses emanating from being "out of line" with society. A second solution is to increase the investment and reduce guilt by perceiving greater difficulty and importance in attaining higher status. Increasing one's achievement orientation in this manner is tantamount to assuming middle and upper class achievement values after achieving status in one of those classes. The third solution is to increase the reward so that it becomes proportionate to the investment, by perceiving increased upward mobility and thereby reducing anger. Kelley, Merton, Biddle and others involved in the study of reference groups in social psychology suggest that persons tend to assume the values of the reference group to which they aspire (Shaw & Costanzo, 1970). The desired group is used as a reference point to derive new standards and values, and by which to evaluate ones performance on obtaining and maintaining membership in that group.

All solutions create situations which require learning new goals, socialization to new norms and the process of coping with new stimuli. The same requirements are inherent in all types of social mobility.

Graham and Reeder (1972) categorize social mobility as "cultural change" and "situational mobility." Cultural change refers to massive social strucutre or economic change, such as the modernization of "underdeveloped" countries or the rapid growth of urban centers. Henry and Cassel (1969) suggest that such occurrences produce competitive, unfavorable and disordered situations which continuously bombard inhabitants with strong threatening stimuli. Situational mobility refers to individual change as distinct from cultural or societal change. Price (1965) outlines situational mobility as having one or more of the following components: a change in physical space (voluntary or involuntary); a change in social space; a change in life style; goal orientation change; and accompanying status inconsistency. All components of situational mobility have been related to stress and stress-related illness. Smith (1967), Syme, et al. (1965), and Tyroler and Cassel (1964), have demonstrated stress reactions and cardiovascular disease among intercultural and intracultural migrants; particularly those who do not assume the life style and boals of the group they "join." Rahe and his associates at the Navy Neuropsychiatric Research Center in San Diego and others have done extensive research on social mobility, social readjustment and reporting of illness (Rahe, et al., 1972; Harmon, et al., 1972; Rubin, 1969; Rahe, et al., 1964; Rahe & Ransom, 1968; Theorell & Rahe, 1972; Rahe, et al., 1970; Gunderson, et al., 1970; Rahe, et al., 1970a; Rahe, et al., 197b; Rahe, 1969; Marks, 1967; Caffrey, 1967). They have incorporated into a "Social Readjustment Rating Scale" such indicators of situational mobility as: change in financial state; change in work responsibilities; change in living conditions, and

outstanding personal achievement. All are related to perception of stress and the reporting of stress-related illness.

Mechanic (1968) states that "coping...refers to the instrumental behavior and problem solving capacities of persons in meeting life demands and goals. It involves the application of skills, techniques, and knowledge that person has acquired."

The foregoing review of the literature on stress and stress-related illness suggests that coping and resulting adaptation can have one of two outcomes. First, adaptation to stress can strengthen the organism for future performance in coping with stress. Second, inadequate coping responses can lead to maladaptive behavior, such as physical or emotional pathology. It is the latter which serves as the underpinning of two hypotheses in the present study. Social mobility is introduced as the stressor which requires adaptation of the organism. The choice of social mobility is based on the notion that mobility precedes changes in goals, life-style, and location which inherently produces discrepancies between norms and goals, thus generating continuous social stress.

In summary, the present study has two objectives, the first is an overview of several social variables which have been associated with utilization of health services in past research. Sex, age, race, occupation, education, income, and family size are all linked to utilization. The data provide opportunity for testing these associations again in this unique setting.

The second study objective consists of two hypotheses which describe the expected relationships among social mobility, stress-related symptoms and illnesses, and Health Services Utilization.

Available in the data are measures of social mobility, insomnia, indigestion, nervousness, blood pressure, cerebrovascular and coronary disease, peptic ulcer, physician visits, physical checkups, and having a regular physician. Generally, it is expected that social mobility as a stressor will be associated with the above stress-related symptoms and illnesses. Second, it is expected that, among certain mobility types, those who experience the symptoms of stress will seek treatment and thus be the highest utilizers of health services. If these individuals are not utilizing services more, the situation has implications for the health care system for treatment which would assist the individual in resolving the stress and/or eliminating the symptom or sign. In addition, these symptoms and signs are often precursors to more serious chronic illnesses. In that sense, those who need preventive care may not be receiving it.

CHAPTER II

METHODOLOGY

The present study is a secondary analysis of data collected by the Program for Urban Health Research (PUHR), Department of Psychology, at The University of Michigan. The main objective of the Program for Urban Health Research is the investigation of differential hypertension levels, as related to genetic and social factors in black and white urban populations.

The PUHR data were obtained by interview during 1968-69. These available data were examined as to their utility in studying relationships among sociodemographic, stress and HSU variables. The result is a study design which is entirely pre-experimental and exploratory in nature. Comparisons are made between what Campbell and Stanley (1963) would label "static groups." The term describes groups which are comparable on several variables, but differ on the independent variable. Static groups in the present study come from the same population. The population provides a unique setting for studying stress-related variables in that it is comprised of the two extremes for both blacks and whites in socioeconomic status in a large urban area.

A number of comparisons are made, with hypotheses separated into two components: (1) Descriptive: social variables and Health Services Utilization; and (2) Analytic: relationships among social mobility, stress-related signs and symptoms and HSU. Appropriate demographic

variables and three measures of utilization were readily available for the descriptive objective of the study. For the analytic objective, the data contained a number of items, from which could be culled perceptions of investments and rewards in social mobility, and presence of signs and symptoms of stress-related illness.

Chapter II describes the study population, data collection, variables, the hypotheses, and finally, data management and analysis.

Description of the Study Population

Using 1965 Transportation and Land Use Study (TALUS) data, PUHR systematically ranked the black and the white Detroit census tracts on two factors: socioeconomic status (SES), (education, income, unemployment, home ownership) and instability (residential and marital stability; juvenile and adult crime.) These two factors combine to define the "Ecological Stress Index" [9] (Erfurt, Harburg and Rice, 1970).

Using the Ecological Stress Index, four census areas were identified for use in the study: one black and one white tract possessing the extreme score for low SES with high instability; and two tracts, black and white, which possess the extreme scores for high SES and low instability. These areas were consequently labeled: black high stress (1); black low stress (2); white high stress (3); and white low stress (4). The location of each tract in the City of Detroit is illustrated in Figure 3. Figures 4 - 7 are photographs of the four areas.

Within each stress are, a door-to-door census was taken by interviewers in order to select a pool of persons verified to be

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[9] Black census areas are defined as those with 50% or more black residents.

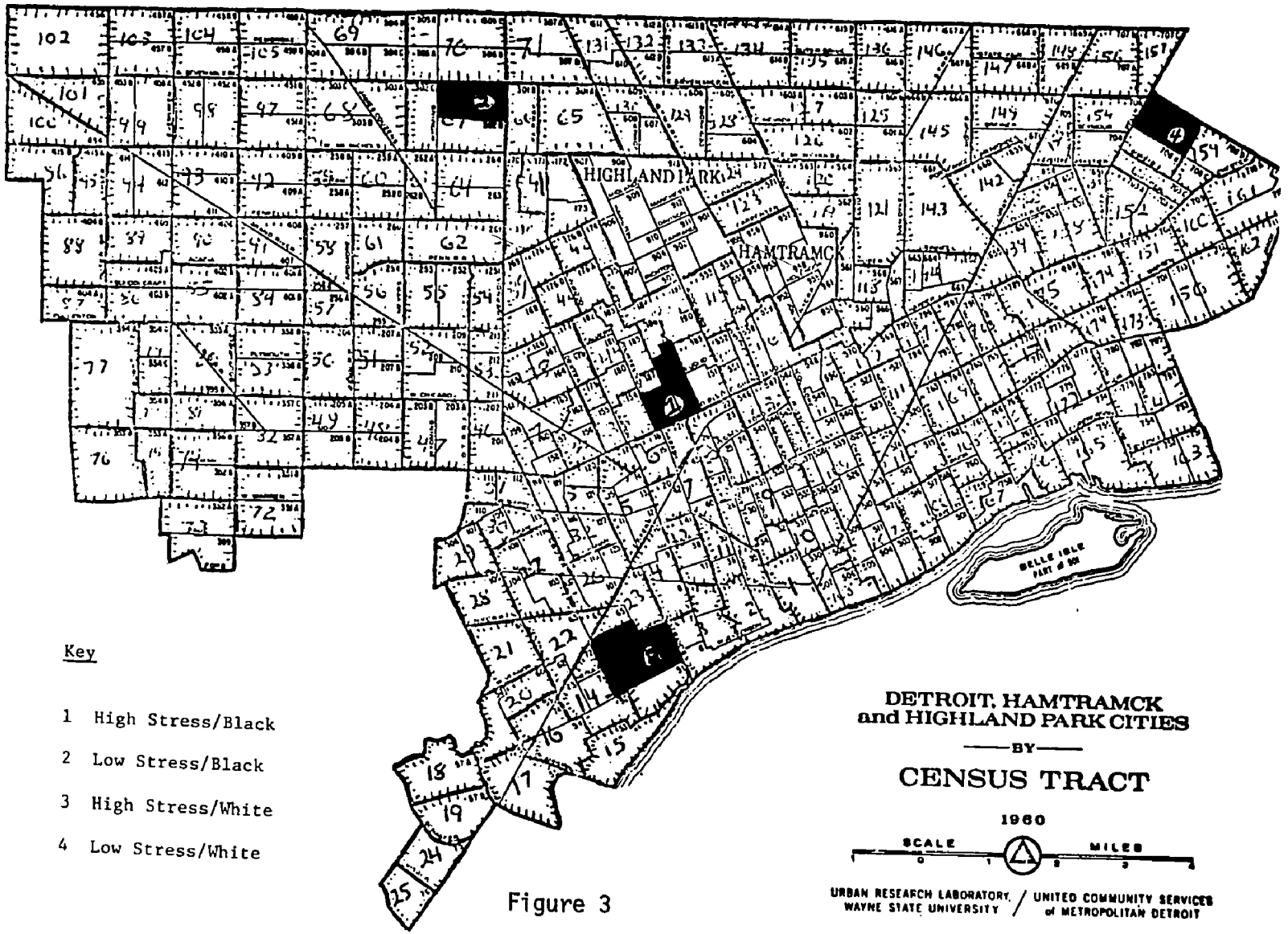

HIGHLAND PARK
HAMTRAMCK
BELLE ISLE
Key
1 High Stress/Black
2 Low Stress/Black
3 High Stress/White
4 Low Stress/White
DETROIT, HAMTRAMCK and HIGHLAND PARK CITIES
BY
CENSUS TRACT
1960
SCALE
MILES
URBAN RESEARCH LABORATORY, WAYNE STATE UNIVERSITY / UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

Figure 3



Figure 4. Negro High Stress Area (#1)



Figure 5. Negro Low Stress Area (#2)



Figure 6. White High Stress Area (#3)



Figure 7. White Low Stress Area (#4)

within the ages of 25-60, married living with spouse, and who had both a sibling and first cousin within five years of their age living in the Detroit Metropolitan area. These respondents were further divided into two groups, "index cases" and "unrelated persons," the latter comprising a control group matched to the index cases by sex, age, race, stress area, marital status and availability of sibling and first cousin. Through this technique a "family set" was formulated for interviewing. The present study is concerned with a subset population of 1,000 respondents, comprising all index cases and matched unrelated persons (Table 2). Tables 3 and 4 present selected characteristics of the study population.

Presenting an overall picture of the average respondent would be erroneous as such an individual would represent an arithmetic mean or median located midway on what is really a bimodal distribution for nearly all socioeconomic variables. The two modes represent scores for the high stress and low stress areas. There is a typical respondent in each of these groups. The high stress area individual (black and white, male or female) is approximately 40 years old; is a high school graduate; is married living with spouse; is renting a home; has two or more children; lives in a medium or high density environment; spent his early childhood in the Southern U.S. (especially if black); has a family income of approximately $9,000; has one car; and head of household is an operative or laborer employed by motor vehicle or metal manufacturing industries. The low stress area counterpart is buying a home; has two children or less; lives in a low or medium density environment; spent his childhood in Detroit (especially if white);

Table 2

Number of Family Sets by Stress Area and Sex (Used for Interviewing in PUHR October 1968 - June 1969)

	Black				White				
	High Stress		Low Stress		High Stress		Low Stress		
Family Set Members	Male	Female	Male	Female	Male	Female	Male	Female	Total Persons
Index person*	57	55	61	56	55	62	58	57	(461)
Spouse of Index	57	55	61	56	55	62	58	57	(461)
Sibling of Index	57	55	61	56	55	62	58	57	(461)
First Cousin of Index	57	55	61	56	55	62	58	57	(461)
Unrelated Person*	57	55	61	56	55	62	58	57	(461)
Total Persons	(285)	(275)	(305)	(280)	(275)	(310)	(290)	(285)	(2305)
Number of Family Sets	57	55	61	56	55	62	58	57	461

*Index and Unrelated, N = 1000, the subset population for the present study are matched by sex, age, race, marital status, census area, and possession of a family set.

Table 3

Selected Characteristics of the Study Population

Characteristics	Percentage (N=1000)
1. Sex	
Male	49
Female	51
2. Race	
Black	51
White	49
3. Marital Status	
Married, Living with Spouse	100
4. Age[a]	
25 - 29	7
30 - 34	18
35 - 39	20
40 - 44	19
45 - 49	18
50 - 55	14
55+	4
5. Occupational Industry (Head of Household)	
a. Manufacturing	
Motor Vehicles and Equipment	33
Non-durable goods (including food products)	4
Metals	4
Machinery	2
b. Construction	7
c. Public Administration	
Local Administration	4
Postal Service	3
d. Education Services	3
e. Other	40

(continued on next page)

Table 3 (cont)

Selected Characterisitcs of the Study Population

Characteristics	Percentage (N=1000)
6. Occupation[b]	
a. Operatives[c]	31
b. Foremen/Craftsmen	23
c. Clerical/Sales	11
d. Laborers	8
e. Professional/Technical	8
f. Service Workers (including Police and Firemen	8
g. Managers/Officials, Proprietors	5
h. Missing Data	6

[a]Mean age = 41.2 years.

[b]Occupation categories are from Duncan's SES occupational codes (Duncan, 1961).

[c]33% of all operatives are employed in the motor vehicles manufacturing industry.

Table 4

Selected Characteristics of the Study Population by Stress Area and Race

Characteristics	Black		White	
	High Stress (N=246)	Low Stress (N=262)	High Stress (N=250)	Low Stress (N=242)
	%	%	%	%
1. Education				
8th Grade or Less	15	6	29	6
Some High School	41	16	32	26
High School Graduate	35	40	32	50
Some College	6	23	7	12
College Graduate	3	13	0	6
2. Family Income				
<$7,000	19	3	12	8
7,000 - 8,999	25	8	16	9
9,000 - 10,999	13	14	24	26
11,000 - 12,999	12	11	15	13
13,000 - 14,999	13	17	9	15
15,000 - 16,999	8	18	10	10
>$17,000	10	29	14	20
3. Childhood Residence				
Detroit	37	48	48	84
Southern U.S.	57	44	32	2
Other	6	8	20	14
4. Religion				
Catholic	4	9	49	73
Protestant	96	91	51	27
5. Work Status, by Sex				
Male:				
Working	97	98	98	99
Unemployed/Laid off	3	2	2	1
Female:				
Working	53	66	31	27
Unemployed/Laid off	8	7	3	2
Housewife	39	27	66	71

(continued on next page)

Table 4 (cont.)

Selected Characteristics of the Study Population by Stress Area and Race

Characteristics	Black		White	
	High Stress (N=246)	Low Stress (N=262)	High Stress (N=250)	Low Stress (N=242)
	%	%	%	%
6. Home Ownership				
Rent Home (Apt or House)	66	1	46	2
Buying Home	34	99	54	98
7. Number of Autos per Family				
0	24	3	10	1
1	48	36	56	44
2+	23	60	28	46
Missing data	5	1	6	9
8. Children Living at Home				
None	29	19	15	19
1 - 2	35	46	33	42
3	15	19	18	20
4+	20	16	34	19
9. House Density[a]				
Low	22	65	27	15
Medium	37	27	37	50
High	41	8	36	35

[a]Construction of the density index is found in Appendix B.

has a family income of approximately $13,000; has two or more cars; head of household is an operative or foreman/craftsman employed by a manufacturing industry.

Data Collection

The data were collected over nine months from October 1968 to June 1969. Nurses of the same race as the respondent were randomly assigned to interview index and unrelated cases. High stress area and low stress area were alternated each week for each nurse. All nurse interviewers had a minimum of 20 hours training in survey technique and measurement of blood pressure. Nurses who could not properly mark and edit pretest interviews or who had fears of high stress areas were screened out. The interviewers went to the home of each family set member to obtain five blood pressure readings and a 1-1/2 hour interview. The refusal rate averaged 4% and was similar in all stress areas. Using a base of assigned respondents minus assigned respondents who had moved from the tract or separated from spouse, the nurses completed approximately 95% of the assigned interviews (Harburg, et al, 1973).

The interview was designed to obtain information on the respondent's medical history, economic status, ecological setting, early childhood, marriage, leisure time and race relations. After the interviews were processed through the PUHR Detroit Field Office (staffed by a Field Director, a Field Supervisor, and Nurse-Supervisor and three assistants), they were delivered to a team of seven coders and a Coding Supervisor who prepared the questionnaires for computer processing. The questionnaires were designed to be optically scanned through a machine system developed by the National Computer Systems in Minneapolis, with provisions for high accuracy and automatic programming onto IBM tapes (Harburg, et al., 1969).

Selected questions used in the present study are outlined in their original numerical order in Appendix A.

Original data management, cleaning and index construction was accomplished by PUHR staff in 1970. For the present study, data were transferred from IBM tapes to disk storage for further index construction and analysis. All data processing was accomplished through standard programs available in MIDAS, OSIRIS and MTS located at The University of Michigan Computing Center. A copy of the Coding Manual for the present study may be found in Appendix C.

Description of the Variables

The Dependent Variable

The dependent variable, Health Services Utilization, was first measured by an index constructed from three component variables: (1) frequency of visits; (2) physical checkup; and (3) regular physician or clinic. The index was tested by the Kuder-Richardson formula for Internal-Consistency (Guilford, 1973). The reliability Coefficient (K_{tt}) is a measure of the extent to which test items (in this case component variables) are measuring the same trait. Since the reliability Coefficient for the HSU Index was .49 it was judged that the results would be more meaningful if frequency of physician visits, physical checkups, and regular physician were analyzed separately as describing three separate but related behaviors (Table 5).

The Independent Variables

The independent variables fall into two categories. First are the social variables which have been related to HSU in past research.

Table 5

Correlation Matrix and Reliability of the Health Services Utilization Index

Item	a	b	c
a. Frequency of Visits to Physician or Clinic			
b. Physical Checkup	.29		
c. Regular Physician or Clinic	.25	.21	

$$r_{tt} = \left(\frac{n}{n-1}\right)\left(\frac{0^2 - \Sigma pq}{0_t^2}\right) = .49$$

(Kuder-Richardson formula for estimating reliability)
Where n = number of items in the index.
p = proportion responding positively
q = 1 - p

Second are social mobility types hypothesized to be related to HSU, and stress-related symptoms and illnesses (the intervening variables).

1. Demographic and Socioeconomic Variables. Seven variables are hypothesized to be related to HSU in the present study. These are: age, sex, race, education, head of household occupation, family income, and family size. Components of the family income variable are detailed in Appendix B, item 6.

2. Social Mobility. The major hypotheses of the present research deal with predicting association among social mobility, symptoms and HSU. Social mobility is commonly defined as a perceived or measured change in socioeconomic status over a certain span of time (often comparisons are made between inter- and intragenerational mobility).

Changes in income, occupation, educational level, residence and class value systems are common measures (Lenski, 1966; Lipset and Bendix, 1959). Rarely does a status transit occur simultaneously in all these indices of mobility. A phenomenon known as "status discrepancy" results. The measure of social mobility is then refined by observing individual position on a profile of several status predictors (Lenski, 1954, 1956; Homans 1953; Jackson, 1962). Further confounding the measurement of social mobility are extraneous variables such as: achievement orientation of the indivudual; the cultural setting; and the rapidity of mobility (Hawkes, 1972; Blau and Duncan, 1967).

In this study, social mobility types are defined in terms of the following: (A) the perceived and/or measured change in individual financial status, occupational status, and residential status, and (B) the achievement orientation of the individual. Social mobility in socioeconomic status can be either perceived (e.g., how well have you done in getting ahead?) or perceived and described in concrete terms (e.g., how many times have you been promoted in five years?). Both concepts are used in the present study for comparative purposes. Social mobility is coded as either "upward" or "same or downward." The measures are operationalized briefly below. The detailed listing of component variables may be found in Item 8, Appendix B.

A. Social Mobility in Socioeconomic Status

(1) Occupational Status

(a) Times promoted during past five years

(b) Intergenerational mobility, head of household (blue collar/white collar)

(c) "How well have you done in advancing on the job?"

(2) Financial Status

(a) "How well have you done in earning more money?"

(3) Residential Status

(a) Change in ownership of residence (rental vs buying)

B. Achievement Orientation

Achievement Orientation is based on the perceived importance of upward social mobility and perceived difficulty in attaining upward social mobility. The two concepts are combined as illustrated in Table 6, and in Table 2, Appendix B.

Table 6

Achievement Orientation

		Perceived Importance of Upward Social Mobility	
		Important	Not Important
Perceived Difficulty in Attaining Higher Status	Difficult	A	C
	Not Difficult	B	D

The Achievement Orientation types created in Table 6 and combined with perceived or measured social mobility, resulting in eight Mobility Types. Each Mobility Type constitutes one ordinal value of the independent variable ranging from 1 to 8, as illustrated in Table 7. Mobility types 1 and 2 represent zero inconsistency among components and are assumed to be "low stress." Mobility types 3 - 6 represent one inconsistency each. Types 7 and 8 have two inconsistencies each and are assumed to be high stress conditions.

Table 7

Mobility Types

	A	B	C	D
Non-Mobile or Downward	Type 8*** Important Difficult Non-Mobile	Type 3** Important Not difficult Non-Mobile	Type 5** Not important Difficult Non-Mobile	Type 1* Not important Not difficult Non-Mobile
Upwardly Mobile	Type 6** Important Difficult Upwardly Mobile	Type 2* Important Not difficult Upwardly Mobile	Type 7*** Not important Difficult Upwardly Mobile	Type 4** Not important Not difficult Upwardly Mobile

* = zero discrepancy (Low Stress)
** = one discrepancy
*** = two discrepancies (High Stress)

Item 8, Appendix B, outlines in detail questionnaire items which, when combined, constitute thirteen possible measures of mobility type. It was discovered through correlational analysis that most measures are related to each other. Since use of all measures would be both impractical and repetitious, a choice was made on the basis of: (1) strongest associations with the dependent and intervening variables; (2) face validity - what appeared to be the most straightforward measure of three separate mobilities, occupational, financial, and residential. The selection produced five measures of mobility types, outlined below and denoted by asterisks in Appendix B.

C. Mobility Types [Combinations of A (Social Mobility) and B (Achievement Orientation)]

(1) Occupational

(a) How important is it to get ahead in the world/
How difficult is it to advance on the job/
Intergenerational mobility (blue collar-white collar)

(b) How important is it to advance/How difficult is it to advance/How well have you done in getting ahead.

(c) How important is it to advance/How difficult is it to advance/How many times have you been promoted in five years.

(2) Financial

(a) Importance of higher pay/Difficulty of earning more/How well have you done in having enough money.

(3) Residential

(a) Importance of moving to different neighborhood/ Chance to move/Change in ownership.

The Intervening Variables

The intervening variables are four symptoms, one sign, and two stress related illnesses. It is generally hypothesized that persons of certain Mobility Types will report more stress symptoms and illnesses. Those reporting more symptoms are predicted to be the highest utilizers of health services.

Symptoms are conceptually defined as conditions which are perceived by the respondent. Reporting of symptoms does not assume that the respondent is a utilizer of health services. Three symptoms used in the present study are insomnia, indigestion and nervousness. Corresponding questionnaire items may be found in Appendix A, Form 1, Items 67, 70, and 71. Coding and recoding of these variables is in Appendix C, Variables 55-57, and 80-82. A fourth symptom is chest pain, measured in the present study by a Myocardial Infarct Index, which is outlined in Appendix B, Item 4.

Signs of stress related illness and the illnesses are defined as conditions reported by the respondent and/or confirmed by clinical test

or medical diagnosis. Reporting of illness assumes that the respondent is already a health service utilizer. Peptic ulcer is measured by an Ulcer Index which is a combination of two variables; physician diagnosis; and clinical confirmation (Appendix B, Item 3). The Cardiovascular Index is a summation of four variables: diabetes, kidney trouble, stroke, and heart trouble (Appendix B, Item 5). The one sign, Blood Pressure Category, was measured by sphygomomanometer and recorded by the interviewer three times during the interview. The measurement thereby remains independent of either respondent perception or HSU for a confirmed diagnosis. Blood Pressure Category was constructed from the means of the three systolic and the three diastolic measurements. Detailed measures and index construction are outlined in Appendix B, Item 2.

Hypotheses

The hypotheses are divided into two sections. The first series represent the social factor--Health Services Utilization component of the study. It is generally predicted that findings in the present study will be consistent with major findings in previous research on utilization of health services with age, sex, race, education, occupation, family income and family size.

The second group of hypotheses represent the social mobility/stress related illness/higher utilization component. Though the null hypothesis is statistically tested in each case, the hypotheses are written in an alternative style which reflects either previous findings, or analytic expectations.

Social Factors

H1a: Females are higher utilizers when compared to males on all three components of Health Services Utilization.

H1b: Frequency of physician visits and reporting a regular physician increase with age.

H1c: Reporting of a regular checkup decreases with age.

H1d: Whites report significantly higher frequency of visits when compared with blacks.

H1e: No significant difference exists between whites and blacks when compared on regular checkups and regular physician.

H1f: No significant difference exists between income groups in Health Services Utilization even when controlling for age and sex.

H1g: White collar groups of both sexes will be significantly higher utilizers of Health Services.

H1h: Persons of both sexes with higher education will be significantly higher utilizers of health services.

H1i: No difference exists between family size groups on Health Services Utilization.

H1j: No difference exists between house density groups on health services utilization.

Social Mobility

Two hypotheses predict the relationships among social mobility, symptoms and signs of stress related illness, and health service utilization. Generally, it is predicted that respondents who report the greatest inconsistencies among importance and difficulty of upward social mobility and perceived mobility, will also report more stress related illnesses and have higher blood pressure; these predictions will be tested using two hypotheses:

H2: High stress Mobility Types will report more chest pain, insomnia, indigestion and nervousness, and will have higher blood pressure, when compared to low stress Mobility Types.

H3: Symptomatic groups within the high mobility discrepancy category will utilize health services significantly more than non-symptomatic groups.

Data Management and Analysis

Following transfer of selected PUHR data to disk storage, a series of steps was undertaken for data management and analysis. First, the reliability and validity of the variables was assessed. Nunnally (1967), Selltiz, et al. (1967), Guilford and Fruchter (1973) and Kerlinger (1964) are among the authors who discuss the importance of, and techniques for, establishing reliability and validity. The extent to which measurement error can be assessed is the extent to which the data yield can be considered dependable. It follows that the dependability of the measurements foretells the degree of confidence in the findings and conclusions.

An appraisal of the variables in the present study reveals a variety of levels of reliability and validity.

Independent Variables

For all the social independent variables the strongest case for validity is what Selltiz describes as "construct" validity. The method depends upon measurement items yielding results which are consistent with theoretical support and empirical evidence from similar studies. Hypothesis H1a through H1i predicting relationships between sociodemographic variables and HSU actually provide the test of construct validity. In addition, the reliability of the "occupation" variable was tested by independent coding. Two sets of coders agreed on categories 100% when independently coding the question, "what is the main occupation you work at?" and "what type of work do you do?" (or spouse if the

respondent is female) into the Duncan occupational categories. The questions pertaining to social mobility types, "How difficult...; how important it is...; how well are you doing in getting ahead?," have face validity. The "true" value of these measures is irrelevant in the present study. It is the perception of importance, difficulty and upward mobility that is important for measurement here.

Intervening Variables

Among the intervening variables, a check on reliability and validity is available for nervousness, blood pressure category, Myocardial Infarct Index and Ulcer Index.

Blood pressure is a major dependent variable in PUHR. Reliability of the measurement was assessed prior to actual field work (Harburg, 1973). First, test-retest reliability was established by a Latin-Square design applied to measurement comparisons among 15 nurses, 15 subjects and 15 new mercury sphygomomanometers. Second, validity was provided by periodic concurrent blood pressure readings on subjects in the field by nurse supervisors.

A variation of a "parallel forms" reliability test is applied to the nervousness variable (Guilford, 1972). Another question asking about nervousness is used for comparison: "Have you ever felt as though you would have a nervous breakdown?" (Appendix A, Form 1, Question 73). One would expect a high correlation between the two items, with all of the persons expecting a nervous breakdown also reporting feelings of nervousness. The results are illustrated in Table 8.

The Ulcer Index is taken from an index used by Dunn and Cobb (1962) and validated by Epstein (1969). The Myocardial Infarct Index is taken from an index validated by Rose (1968).

Table 8

Frequency of Nervousness and Expected Nervous Breakdown

Frequency of Nervousness	Expected Nervous Breakdown No (N=897)	Yes (N=103)
	%	%
Never, rarely	34	7
Occasionally	43	32
Often	23	61
gamma = .66	p < .001	

Dependent Variable

All three measures of HSU have been used extensively in previous research (Aday, 1972). In addition, the variable "regular physician" was validated in the present study by checking with clinics and physicians reported by respondents. A random sample of 231 respondents was selected. Clinical records concurred with respondent reporting in 213 (92%) of the cases.

After assessment of reliability and validity, several statistical procedures were undertaken for preliminary management and analysis. Using MIDAS TWOWAY and MCORREL computer programs, cross-tabulations and correlations were obtained for independent/intervening, independent/dependent, and intervening/dependent sets of variables. Relationships between variables and distributions were observed. The output was further utilized for collapsing variable categories and recognition of items for introduction as control variables into predicted

relationships. In addition, a cluster analysis was performed on the correlations among independent variable components in order to select four appropriate units to represent mobility in occupational status and financial status.

Finally, statistical analysis focused on testing the hypotheses.

Choice of Statistical Tests

Parametric tests assume that the observations are drawn from normally distributed populations with equal variances (Siegel, 1956). Most multivariate analysis techniques follow the parametric statistical model with additional assumptions of interval measurement and independence among "predictor" variables. These criteria are not met by data concerning many variables in the present study. For this reason, Chi-Square was selected as the non-parametric statistic of choice for measures of significance in testing independence. It was decided that additional information indicating strength of association would be useful. One non-parametric correlational technique is Kendall's "tau" coefficient.[10]

Kendall's tau assumes bivariate comparisons with ordinal measurement so that every respondent can be assigned a rank on both variables. Tau gives a measure of the degree of association between the two sets of ranks (Siegel, 1956). Hays presents the following equation:

$$\text{Tau} = \frac{\text{(Number of times rankings agree about a pair)} - \text{(Number of times rankings disagree)}}{\text{Total Number of Pairs}}$$

[10] An extensive discussion of Kendall's tau and Goodman-Kruskal's gamma may be found in Hays, Statistics for the Social Sciences, 1973, pp. 792-801.

The determination of the exact distribution of tau also assumes that no ties exist in rankings. When ties are present, the computation of tau becomes extremely complex. The solution suggested by Hays is the "gamma" coefficient, developed by L.A. Goodman and W.H. Kruskal in 1954 specifically for use with data arranged into ordered ordinal classes. The numerator in the gamma equation is identical to that for the tau coefficient. The denominator, however, now becomes the total number of Untied pairs. Thus, tied ranks are simply removed from the analysis. For calculation of gamma, it is important to reduce the number of ties. Since fewer ties occur when cases are distributed evenly among the marginals of the two distributions, categories in the present study were constructed to maximize equal marginals.

The gamma coefficient is appropriate for use with ordinal classifications which may be of unequal sizes (e.g., eight categories for variable X, and four categories for variable Y). Where interpretation of tau is primarily stated in mathematical notation, gamma may be interpreted directly as a probability. The gamma coefficient is the proportion of excessive concordant over discordant pairs of ranked observations (Somers, 1962). As an example, if the gamma coefficient for variable X and Y is equal to .45, one could say that: if a pair of respondents is drawn at random from all the untied rankings, the probability that these two respondents show the same order in both rankings is .45 more than the probability that they would show different order.

Hays points out that tau (and gamma) can range in value from -1 (perfect negative association) to 1 (perfect positive association).

Small values of gamma indicate either that the two variables are not associated strongly, or that the association in non-monotonic.[11] Gamma, therefore, is an indicator of a tendency toward monotonicity as well as direction of the relationship.

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[11] For a clear discussion of the concept of monotonicity, see Hays section on "Rank-order Correlation Methods," pp. 786-788.

CHAPTER III

FINDINGS

Social Factor Hypotheses

As outlined in previous Chapters, several social factors have been associated in prior research with Health Services Utilization. The data in the present study provide the opportunity for further validation of these associations. In addition to these factors, (age, sex, race, education, occupation, income and family size) work status and household density are included as refinements on the sex and family size variables respectively. In Table 9, the gamma correlation coefficient presents an overall picture of the associations.

Sex and Age

H1a: Females are higher utilizers than males on all three components of Health Services Utilization.

Previous research suggests that sex is the variable most strongly related to all components of HSU. Some authors contend that this relationship may be spurious due to the associations between sex and (1) obstetrical-gynological care; (2) work status, and (3) age-related morbidity patterns.

In the present study, sex had a stronger association with HSU than any other social variable (Tables 9, 10). H1a is supported even with pregnancy and work status held constant (Tables 11, 12). It is

Table 9

Goodman-Kruskal gamma Coefficients among Health Services Utilization Variables and Social Variables*

	a	b	c	d	e	f	g	h	i	j	k
a. Regular Physician											
b. Regular Checkup	.59										
c. Frequency of Visits	.54	.42									
d. Age	.20	.03	.05								
e. Sex†	.50	.48	.35	.01							
f. Race†	.31	-.45	.02	.20	.02						
g. Education	.02	.25	-.01	-.29	.03	-.21					
h. Work Status †	-.46	-.18	-.19	-.02	-.55**	-.54	.11				
i. Occupation†	.01	.05	-.03	-.11	-.11	.03	.61	.08			
j. Income	.05	.05	-.03	.00	-.17	-.06	.30	.43	.31		
k. Family Size	.02	-.25	-.04	-.26	.03	.20	.04	-.23	.00	.05	
l. Household Density	.02	-.26	.00	-.19	-.10	.35	-.25	-.19	-.24	-.20	.62

†Higher numerical values coded for: (e.) females; (f.) white; (h.) employed; (i.) "blue collar" occupation.

*N = 1000

**Gamma cannot be computed due to zero cell frequency. Kendall's tau-B is substituted and is a more conservative coefficient than gamma.

not supported for certain age groups however (Table 12). Since HSU so closely relates to sex, all other social factor hypotheses are tested separately for males and females.

The only available method of introducing obstetrical care into the comparison of sexes and all components of HSU was to remove all pregnant women from the analysis. When this was done, the original relationship remained unchanged. A comparison of single men and women was not possible since all respondents had to be married in order to enter the study population.

Table 10

Health Services Utilization, By Sex

Health Services Utilization	Male (N=442)	Female (N=508)
	%	%
Frequency of Visits**		
Visits per Year: 0	33	15
1	22	21
2 - 3	21	21
4+	24	43
gamma = .35		
Regular Checkup**		
No	56	31
Yes	44	69
gamma = .50		
Regular Physician or Clinic**		
No	17	7
Yes	83	93
gamma = .48		

**X^2 significant at $p < .01$

Work status was introduced to examine whether the difference between sexes is due to the probability that housewives have more unstructured time available. The first comparison was made between full time employees (Table 11). A second comparison was made between employed women and housewives with the expectation that housewives would be higher utilizers (Table 12). Table 11 reveals that women continue to

Table 11

Full Time Employed Persons and Health Services Utilization, by Sex

Health Services Utilization	Male (N=492)	Female (N=272)
	%	%
Frequency of Visits**		
Visits per Year: 0	33	12
1	22	20
2 - 3	21	25
4+	24	43
Regular Checkup**		
No	56	26
Yes	44	74
Regular Physician or Clinic**		
No	17	7
Yes	83	93

**X^2 significant at $p < .01$

have the higher Health Services Utilization even with housewives removed.

Table 12 reveals that housewives and women employed full time are similar in reporting a regular physician and in frequency of physician visits. Contrary to expectations, however, employed women actually report a significantly greater frequency of physical checkups. This is possibly a function of an employment requirement for a physical exam.

Table 12

Female Health Services Utilization, by Work Status

Health Services Utilization		Housewives (N=236)	Females Employed Full Time (N=272)
		%	%
Frequency of Visits			
Visits per Year:	0	18	12
	1	22	20
	2 - 3	17	25
	4+	43	43
Regular Checkup**			
	No	37	26
	Yes	63	74
Regular Physician or Clinic			
	No	6	7
	Yes	94	93

**X^2 significant at $p < .01$

In the next step of the analysis, age is introduced to assess its influence on the relationship between sex and HSU, as well as to test the following hypotheses:

H1b: Frequency of physician visits and reporting a regular physician increases with age.

H1c: Reporting of a regular checkup decreases with age.

Table 13 is a comparison between the sexes at each age group. The data suggest that age does have an influence on the relationship between sex and HSU, as reviewed in the paragraph following Table 13.

The sex difference in all three components of HSU becomes statistically non-significant at ages 25 - 29 and ages 50+. Women report the greatest frequency of visits at ages 25 - 34 and ages 45 - 54.

Table 13

Sex and Health Services Utilization, by Age

Health Services Utilization	25-29		30-34		35-39		40-44		45-49		50-54		55+	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Frequency of Visits														
Visits per Year: 0	42	13	36	11	30	18	37	18	31	12	22	13	41	25
1	21	23	23	22	24	23	17	23	23	16	29	21	5	17
2 - 3	17	24	23	24	25	17	18	17	19	25	20	22	27	25
4+	20	40	18	43	21	42	28	42	27	47	29	44	27	33
			*		*		*		*					
Regular Checkup														
No	53	43	58	29	60	27	54	32	60	30	46	32	60	42
Yes	47	57	42	71	40	73	46	68	40	70	54	68	40	58
			*		*		*		*					
Regular Physician or Clinic														
No	25	17	23	4	15	8	22	7	14	4	9	4	9	12
Yes	75	83	77	96	85	92	78	93	86	96	91	96	91	88
			*		*		*		*					
(N)	(36)	(30)	(93)	(85)	(102)	(100)	(96)	(94)	(84)	(91)	(59)	(82)	(22)	(26)

*X^2 significant at $p < .05$

An increase in regular checkup and regular physician occurs for women ages 30-34 as compared with ages 25-29. These findings support the expected trend of higher utilization for women being related to child-bearing. Men, as expected, show an increase with age in frequency of visit and regular physician. Compared with men, at all ages, women report more visits, regular checkups, and a regular physician. The greatest differences between the sexes appears at ages 30-34, when men report the least and women the greatest frequency of visits and regular physician; and at ages 30-39 with regular checkups. Where Table 13 compares the sexes within each age group, Table 14 compares age groups within each sex. This latter comparison reveals non-significant but generally supporting findings up to age 55 for the hypothesis that frequency of physician visits and reporting a regular physician increases with age. Number of persons reporting no visits increase at age 55+ for both men and women. The hypothesis predicting that checkups decrease with age is not supported by the data, with the exception of decreasing checkups in females at age 55+.

Race

Race is a variable which has consistently predicted greater frequency of visits for whites, even when controlling for sex and income. Little difference has been demonstrated in reporting a regular source of care. Findings on physical checkups have been inconsistent with some studies indicating slightly more frequency in blacks, and some reporting more checkups for whites. These previous findings suggest the following hypotheses;

Table 14

Age and Health Services Utilization, by Sex

	Males							Females						
Age:	25-29	30-34	35-39	40-44	45-49	50-54	55+	25-29	30-34	35-39	40-44	45-49	50-54	55+
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Frequency of Visits														
Visits per Year: 0	42	36	29	37	31	22	41	13	11	18	18	12	13	25
1	22	24	25	17	23	29	5	23	22	23	23	16	21	17
2 - 3	17	22	25	19	19	20	27	23	24	17	17	25	22	25
4+	19	18	21	27	27	29	27	40	43	42	42	47	44	33
	gamma = .09							gamma = .01						
Regular Checkup														
No	53	58	60	54	60	46	60	43	29	27	32	30	32	42
Yes	47	42	40	46	40	54	40	57	71	73	68	70	68	58
	gamma = .04							gamma = -.007						
Regular Physician or Clinic														
No	25	23	15	22	14	9	9	17	4	8	7	4	4	13
Yes	75	77	85	73	86	91	91	83	96	92	93	96	96	87
	gamma = -.19							gamma = .11						
(N)	(36)	(93)	(102)	(96)	(84)	(59)	(22)	(30)	(85)	(100)	(94)	(91)	(82)	(26)

X^2 not significant unless indicated by *

H1d: Whites report significantly higher frequency of visits when compared with blacks.

H1e: No significant difference exists between whites and blacks when compared on regular checkups and regular physician.

Table 15 illustrates the relationships between races and HSU, controlling for sex.

The data do not support the hypothesis stating that whites report significantly higher frequency of visits than blacks. The races are similar in visiting physicians for both sexes. The hypothesis suggesting that no significant difference exists between blacks and whites in regular checkup and regular physician is also not supported. A difference between races does exist for males and females in both physical checkups and regular physician. Whites demonstrate a significantly greater reporting of a regular physician, though percentage difference is small. In reporting a regular checkup, however, blacks of both sexes show a significantly higher frequency when compared to whites.

Previous research has suggested that races vary in utilization of services by family income. Expectations from these past studies are that both black and white male visits and white female visits increase with income. In contrast, black female visits should be most frequent in the lowest income group. Visits are expected to be least frequent for black males and females in income group $9-11,000.

In this study, however, white male and female visits and black male visits do not increase appreciably with income. White males show an increase in regular physician with income, while black males show a decrease with income over $9,000. Black females in both the lowest and highest income groups report 10 - 13% more annual visits of 4+ when compared to the middle income groups. On the other hand,

Table 15

Race and Health Services Utilization, by Sex

	Males		Females	
Race:	Black	White	Black	White
	%	%	%	%
Frequency of Visits				
Visits per Year: 0	31	35	14	16
1	21	23	20	22
2 - 3	24	18	25	17
4+	24	25	41	45
	gamma = -.04		gamma = .003	
Regular Checkup				
No	42	71	21	41
Yes	58	29	79	59
	gamma = -.53 **		gamma = -.43 **	
Regular Physician or Clinic				
No	21	13	9	4
Yes	79	87	91	96
	gamma = .30 *		gamma = .35 *	
(N)	(252)	(240)	(256)	(252)

*X^2 significant at $p < .05$

**X^2 significatn at $p < .001$

black females in the lowest income group report significantly less regular physician or clinic than white women of comparable family income. Black males have the lowest overall visits reported at $9-11,000, as expected. The relationship between race and physical checkup has not changed by introducing income, with blacks still reporting significantly more checkups at all levels (Table 16).

There are two factors which may help explain the consistent significant higher reporting of checkups by blacks in this Detroit population. First, as suggested previously, employment requirements for physical exams may be important, especially for women. A look into the occupational structure of the study population reveals that among females, 54% blacks are employed full time, as compared with 23% whites. Of the employed black females, 80% report employment in civil service, health services, or food handling establishments. It is likely that all three affiliations require some form of regular physical exam. Only 39% of the employed white females report similar occupations, thus suggesting that employment requirements may explain higher reporting of checkups among black females. Among males, 31% black and 21% white are employed in civil service or health services. Employment may account for some of the increased reporting of checkups by black males. Another explanation of more checkups in blacks is the correlation between race and education in this population, which indicates that blacks have significantly higher levels of education. In turn, education is significantly correlated with reporting checkups in the present study, and thus could explain more checkups reported by blacks of both sexes.

Table 16

Health Services Utilization, by Sex, Family Income and Race[a]

Health Services Utilization		Males								Females							
		$9,000		$9-11,000		$11-15,000		$15,000+		$9,000		$9-11,000		$11-15,000		$15,000+	
		B	W	B	W	B	W	B	W	B	W	B	W	B	W	B	W
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Frequency of Visits																	
Visits per Year:	0	34	32	29	39	32	31	30	33	17	20	11	18	16	10	10	18
	1	17	16	32	22	13	19	28	28	15	21	22	18	19	30	25	17
	2 - 3	22	27	23	17	25	21	23	19	24	20	32	10	31	18	18	21
	4+	27	25	16	22	30	29	19	20	44	39	35	54	34	43	47	44
												*					
Regular Checkup																	
	No	48	71	32	72	50	75	36	67	27	47	19	44	19	34	22	37
	Yes	52	29	68	28	50	25	64	33	76	53	81	56	81	66	78	63
			*		*		*		*	*		*		*		*	
Regular Physician or Clinic																	
	No	25	18	15	20	18	12	22	11	14	4	5	3	10	3	4	7
	Yes	75	82	85	80	82	88	78	89	86	96	95	97	90	97	96	93
									*	*							
	(N)	(56)	(44)	(31)	(54)	(76)	(67)	(89)	(75)	(78)	(66)	(37)	(68)	(62)	(61)	(79)	(57)

[a]B = Black
W = White

*X^2 significant at $p < .05$

Income

Many pre-1966 studies indicated that persons with higher incomes were more likely than low income groups to have a regular source of care, regular checkups and more physician visits when compared to low income groups. More recent studies suggest that introduction of third party payment program may be narrowing the income group gap in HSU. At ages 35 - 55 one might expect high HSU at the lowest and highest income levels. At age 25 - 34, visits tend to decrease with rising income for males, and increase for females.

H1f: No significant difference exists between income groups in HSU, even when controlling for age and sex.

Table 16 suggests that little difference exists between income groups in HSU, when controlling for race and sex. Table 17 further confirms this finding and with certain exceptions generally supports H1f.

One exception is that visits decrease significantly with income in males, 25 - 34, though not in female income groups of the same age. Another execption is that reporting a regular checkup increases significantly with income in females, ages 25 - 34. No other statistically significant differences occur between income groups. With the exception of males 25 - 34, the data usually indicate that the number of persons reporting no visit, no checkup, no regular physician falls as income increases. No group, with the exception of males, age 25 - 34, meets the 1969 National Health Statistic average of visits per year. One would expect averages ranging from 3.9 annual visits for low income males, 35 years and over to 7.3 annual visits for high income females age 25 - 34. The only group reporting the expected average of slightly more than four annual visits is females over 35 with a family income

Table 17

Family Income and Health Services Utilization, by Age and Sex

Health Services Utilization	Males								Females							
	Age: 25-34				Age: 35+				Age: 25-34				Age: 35+			
	$9000	9-11	11-15	15+	$9000	9-11	11-15	15+	$9000	9-11	11-15	15+	$9000	9-11	11-15	15+
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Frequency of Visits																
Visits per Year: 0	25	42	42	39	38	33	28	29	10	19	8	7	20	14	14	15
1	18	25	8	39	17	26	19	24	20	25	21	24	18	16	25	22
2 - 3	32	21	17	17	18	18	25	22	27	15	29	24	21	19	23	18
4+	25	12	33	5 **	27	23	28	25	43	41	42	45	41	51	38	45
Regular Checkup																
No	46	63	58	59	63	56	63	47	43	47	25	14	33	30	27	32
Yes	54	37	42	41	37	44	37	53	57	53	75	86 *	67	70	73	68
Regular Physician or Clinic																
No	21	21	25	24	22	13	12	15	17	6	4	0	8	3	7	7
Yes	79	79	75	76	78	87	88	85	83	94	96	100	92	97	93	93
(N)	(28)	(24)	(36)	(41)	(72)	(61)	(107)	(123)	(30)	(32)	(24)	(29)	(114)	(73)	(99)	(107)

*X^2 significant at $p < .05$

**X^2 Significant at $p < .01$

of $9-11,000. One can only speculate as to the reasons underlying the low utilization rates in Detroit. Perhaps the population is healthier, or sees little value in frequent physician visits. Under-reporting due to inaccurate recollection or insufficient questioning may also explain the phenomenon.

Education and Occupation

These two variables are correlated with each other and with income as indicators of a socioeconomic status profile and have been used as such in past studies of Health Services Utilization. However, occupation is used in the present study as a reference or prestige group.

It is predicted that:

H1g: White collar groups of both sexes will have significantly higher rates of Health Services Utilization.

Table 18 demonstrates no significant difference exists between blue and white collar groups in any of the three components of HSU. Females in the white collar group have slightly more checkups and regular physician when compared to their blue collar counterparts.

Since education is correlated with occupation at gamma = .61 (Table 9), one would expect similar findings for both variables, thus the following hypothesis:

H1h: Persons of both sexes with higher education will be significantly higher utilizers of health services.

As expected, there is a significant difference between female education groups in reporting regular checkups, with the better educated (12 years or more) demonstrating more preventive behavior (Table 19). Males also show a trend of more checkups with more education. Similar to the findings with income group at ages 25 - 34, males have a decreasing

Table 18

Occupation, Head of Household, and Health Services Utilization, by Sex

Occupation:	Males		Females	
	Blue Collar	White Collar	Blue Collar	White Collar
	%	%	%	%
Frequency of Visits				
Visits per Year: 0	32	34	15	14
1	21	24	21	20
2 - 3	22	20	21	20
4+	25	22	43	46
	gamma = -.06		gamma = .05	
Regular Checkup				
No	56	56	33	25
Yes	44	44	66	75
	gamma = .00		gamma = .19	
Regular Physician or Clinic				
No	17	18	7	4
Yes	83	82	93	96
	gamma = -.05		gamma = .30	
(N)	(350)	(142)	(384)	(124)

X^2 not significant unless specified

Table 19

Level of Education and Health Services Utilization, by Sex

Level of Education:	Males			Females		
	<12 yrs.	12 yrs.	>12 yrs.	<12 yrs.	12 yrs.	>12 yrs.
	%	%	%	%	%	%
Frequency of Visits						
Visits per Year: 0	26	36	42	20	11	13
1	21	22	23	17	25	21
2 - 3	24	19	19	23	19	20
4+	29	23	16	40	45	46
	gamma = -.19			gamma = .09		
Regular Checkup						
No	60	56	49	40	25	24
Yes	44	44	51	60	75	76
	gamma = .14			gamma = .27		**
Regular Physician or Clinic						
No	15	19	20	7	5	7
Yes	85	81	80	93	95	93
	gamma = -.13			gamma = .05		
(N)	(225)	(165)	(102)	(202)	(228)	(78)

**χ^2 significant at $p < .001$

trend in visits and regular physician with increase in education. Females show a slight increase in visits with education.

The data generally support a narrowing in the gap in Health Services Utilization between low and high education and occupation groups. It appears that preventive behavior is an exception, however, and still varied significantly with education and income, especially in females.

Family Size and Household Density

Previous findings have been inconsistent regarding family size and HSU. Some researchers have found no difference in HSU by family size. Others suggest that the relationship is a function of age and family cycle, with families of two older persons exhibiting more HSU than younger families with children at home, especially those of six or more members. In the present study, it is predicted that:

H1i: No difference exists between family size groups on HSU.

Table 20 supports H1i with the following exception. A significantly greater frequency of males and females in smaller families report checkups. Table 21 further elaborates the basic relationship between physical checkup and family size, with age being held constant. Age does not appreciably influence the original relationship. Larger families at both age levels report significantly less checkups. Smaller families report about the same percentage of checkups at both age levels.

Density is a more interesting and meaningful variable than family size. While strongly related to family size (gamma = .62) it also indicates crowded or non-crowded conditions within the home. In addition, household density is associated with income, education,

Table 20

Family Size and Health Services Utilization, by Sex

Family Size:	Males 2 Persons	Males 3 - 5 Persons	Males 6+ Persons	Females 2 Persons	Females 3 - 5 Persons	Females 6+ Persons
	%	%	%	%	%	%
Frequency of Visits						
Visits per Year: 0	33	33	33	13	13	19
1	20	22	23	18	23	19
2 - 3	22	22	19	16	24	18
4+	24	23	26	55	40	43
	gamma = .00			gamma = -.09		
Regular Checkup						
No	40	56	68	21	31	38
Yes	60	44	32	79	69	62
	gamma = -.31		**	gamma = -.23		*
Regular Physician or Clinic						
No	19	18	15	5	6	8
Yes	81	82	85	95	94	92
	gamma = .08			gamma = -.13		
(N)	(89)	(279)	(124)	(83)	(296)	(129)

*X^2 significant at $p < .05$

**X^2 significant at $p < .001$

Table 21

Family Size and Health Services Utilization, by Sex and Age

Age:	Males				Females			
	25-44		45+		25-44		45+	
Family Size:	2 - 4	5+	2 - 4	5+	2 - 4	5+	2 - 4	5+
Regular Checkup	%	%	%	%	%	%	%	%
No	50	65	49	67	23	37	27	43
Yes	50	35	51	33	77	63	73	57
	gamma = .30 **		gamma = -.36 *		gamma = -.32 **		gamma = -.33 *	
(N)	(165)	(162)	(113)	(52)	(128)	(181)	(143)	(56)

*X^2 significant at $p < .05$

**X^2 significant at $p < .01$

occupation, and race. White, blue collar, low income, low education levels have the highest density in this study. The relationships between race, income, occupation and education have previously been discussed. Based on these findings and the association between household density and these variables, one would predict that:

H1j: High density groups will exhibit significantly less HSU, when compared with low density groups, especially in regular checkups.

Table 22 reveals that there is very little difference among density groups in frequency of visits. For males, the high density groups report more regular physicians than the low density group. For females, the trend is reversed. Neither finding is significant. As predicted, however, regular checkups are reported significantly more for both sexes in the low density group.

Since race, education and income are associated with reporting a regular checkup, they were introduced into the comparison between density and regular checkup (Table 23 - 25).

There is a significant difference between blacks and whites of both sexes at each density level in reporting checkups. If density was responsible for most of the variation in checkups, one would expect little difference between races of the same density. This is not the case, suggesting that race accounts for much of the variation in both density and reporting regular checkups. Density, however, does have an influence when observing some race-sex groups. It is noted that black males vary little across density levels. Whites of both sexes show a decrease in checkups with increased density. Black females report fewer checkups in the high density group as compared to the low-medium group.

Table 22

Density of Household and Health Services Utilization, by Sex

Density:	Males Low	Males Medium	Males High	Females Low	Females Medium	Females High
	%	%	%	%	%	%
Frequency of Visits						
Visits per Year: 0	37	30	33	14	16	15
1	23	19	24	22	17	24
2 - 3	21	22	21	23	20	19
4+	19	29	22	41	47	41
		gamma = .04			gamma = -.01	
Regular Checkup						
No	47	57	64	23	30	43
Yes	53	43	36	77	70	57
		gamma = -.22	**		gamma = -.30	**
Regular Physician or Clinic						
No	23	15	14	4	7	10
Yes	77	85	86	96	93	90
		gamma = .21			gamma = -.31	
(N)	(145)	(196)	(151)	(185)	(178)	(145)

**X^2 significant at $p < .01$

Table 23

Household Density and Regular Checkup, by Sex and Race

	Males						Females					
Density:	Low		Medium		High		Low		Medium		High	
Race:	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White
Regular Checkup	%	%	%	%	%	%	%	%	%	%	%	%
No	41	63	44	67	43	79	17	33	12	42	41	45
Yes	59 *	37	56 **	33	57 **	21	83 **	67	88 **	58	59	55
(N)	(105)	(40)	(86)	(110)	(61)	(90)	(121)	(64)	(74)	(104)	(61)	(84)
gamma	-.41		-.44		-.67		-.40		-.69		-.09	

*x^2 significant at $p < .05$

**x^2 significant at $p < .01$

Table 24

Household Density and Regular Checkup, by Sex and Education

	Males									Females								
Density:	Low			Medium			High			Low			Medium			High		
Education in Years:	<12	12	>12	<12	12	>12	<12	12	>12	<12	12	>12	<12	12	>12	<12	12	>12
Regular Checkup	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
No	48	49	43	59	59	47	69	58	64	35	16	22	33	26	30	53	37	22
Yes	52	51	57	41	41	53	31	42	36	65	84 *	78	67	74	70	47	63	78
(N)	(52)	(49)	(44)	(96)	(64)	(36)	(77)	(52)	(22)	(52)	(87)	(46)	(82)	(73)	(23)	(68)	(68)	(9)
gamma	.06			.12			.15			.23			.10			.35		

*x^2 significant at $p < .05$

Table 25

Density and Regular Checkup, by Sex and Income

Density:	Males												Females											
	Low				Medium				High				Low				Medium				High			
Family Income Per Year:	$9,000	$9-10,999	$11-14,999	$15,000+	$9,000	$9-10,999	$11-14,999	$15,000+	$9,000	$9-10,999	$11-14,999	$15,000+	$9,000	$9-10,999	$11-14,999	$15,000+	$9,000	$9-10,999	$11-14,999	$15,000+	$9,000	$9-10,999	$11-14,999	$15,000+
Regular Checkup	%				%				%				%				%				%			
No	47	25	58	45	50	61	68	50	73	68	56	60	24	26	21	22	28	36	31	26	52	46	31	42
Yes	53	75	42	55	50	39	32	50	27	32	44	40	76	74	79	78	72	64	69	74	48	54	69	58
(N)	(19)	(16)	(43)	(67)	(44)	(31)	(59)	(62)	(37)	(38)	(41)	(35)	(38)	(35)	(48)	(64)	(58)	(42)	(39)	(39)	(48)	(28)	(36)	(33)
gamma	-.01				.02				.19				.05				.02				.17			

X^2 non-significant unless specified.

The original relationships between density and regular checkup change little when comparing men of different educational levels within each density group; thus indicating that education does not explain the significant association between density and checkups. For women, education has an influence, particularly evident in the low and high density groups (Table 24).

Income is introduced in Table 25, which indicates no significant difference in reporting checkups among income groups at any density level. For high density males and females, checkups are usually reported more frequently at the higher income levels.

The preceding report of findings concludes the first component of the present study. The objective is to describe the relationships between demographic variables and utilization of health services in terms of findings from previous studies. a second objective inherent in the analyses is the identification of control variables appropriate for use in the second study component.

The second objective of the present study is to establish a continuum of Mobility Type (based on number of discrepancies perceived in upward mobilty) to stress-related signs (high blood pressure) or symptoms (indigestion, insomnia, nervousness, chest pain) to utilization of health services. This component of the study is organized into two hypotheses. The findings are presented in the following pages.

Social Mobility Hypotheses

Two hypotheses in the present study deal with the associations among (a) mobility types, (b) presence of signs and symptoms of stress-related illness, and (c) health services utilizaton. The first step

is to identify the symptoms which are associated with discrepancies in social mobility. After identifying the symptoms, the next step is to identify "risk groups" by sex and race. The risk groups are composed of those respondents in the high discrepancy category who report the symptoms. The third step, then, is to investigate whether or not the risk groups are utilizing health services more than their non-symptomatic counterparts. In Table 26, the gamma correlations coefficients present an overall picture of the associations.

As outlined in Chapter II, five out of thirteen potential mobility measures were selected, based on strength of association with intervening and dependent variables, and on face validity.[12] Items d - h in Table 26 represent the selection. One among the three occupational mobility measures was chosen using the same rationale. The results are three measures of mobility as follows:

1. Occupational Mobility--Importance of advancement/Difficulty of advancement/Promoted in five years.
2. Financial Mobility--Importance of more income/Chance to earn more/Done with having more income.
3. Residential Mobility--Importance of moving to better neighborhood/Chance to move/Change in property ownership (rent to buy).

The three components of each mobility measure are permutated in all possible combinations to form eight mobilty types. The eight types represent an ordinal scale based on three levels of status discrepancy. Types 1 and 2 have zero discrepancy between components, types 3 - 6 have one, and types 7 and 8 each have two discrepancies.

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[12]A detailed list of component variables may be found in Appendix B.

Table 26

Goodman-Kruskal Gamma Coefficients among Social Mobility Variables, Signs and Symptoms and Health Services Utilization Variables*

		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s
a.	Sex†																			
b.	Race†	.02																		
c.	Stress Area†	-.04	-.08																	
d.	Occupational Mobility 1	-.10	-.09	-.07																
e.	Occupational Mobility 2	.03	.10	-.03	.59															
f.	Occupational Mobility 3	.03	.00	-.06	.67	.58														
g.	Financial Mobility	.09	.17	-.06	.30	.37	.30													
h.	Residential Mobility	.17	.11	-.22	.08	.12	.08	.13												
i.	Insomnia	.26	.24	.04	.02	.06	.06	.11	.04											
j.	Indigestion	-.02	.10	.01	.07	.02	.06	.09	.01	.21										
k.	Nervousness	.41	.25	-.04	.07	.06	.10	.10	.06	.44	.28									
l.	MI Index	.18	-.15	-.17	-.07	.05	.03	-.05	.08	.26	.24	.51								
m.	Blood Pressure Level	-.18	-.26	-.20	.05	.06	.00	.06	.00	.05	.03	-.05	.03							
n.	Ulcer Index	-.21	.16	-.04	-.10	-.06	.03	.00	-.10	.15	.28	.12	.42	.17						
o.	CV Incex	.39	-.03	-.07	.05	.04	.06	.13	.08	.23	.14	.35	.57	.11	.08					
p.	Frequency of Visits	.35	.02	-.06	.00	.02	.06	.00	.00	.11	.06	.22	.25	.09	.12	.38				
q.	Regular Checkup	.48	-.45	.22	-.07	-.05	.00	-.09	-.05	-.01	.02	.04	.08	.06	-.04	.13	.42			
r.	Regular Physician	.50	.31	.19	-.15	-.07	-.09	-.15	-.01	.02	.04	.14	.37	-.17	.18	.27	.54	.59		
s.	Seen Doctor for Nerves	.49	.33	-.19	.15	.12	.10	.15	.18	.39	.23	.66	.43	-.10	.18	.47	.28	.23	.41	

†Higher numerical values coded for: (a.) females; (b.) whites; (c.) low stress area.

*N = 1000

The Mobility Types are as follows:

Zero discrepancy
Type 1 - Not important, not difficult, not mobile
Type 2 - Important, not difficult, mobile

One discrepancy
Type 3 - Important, not difficult, not mobile
Type 4 - Not important, not difficult, not mobile
Type 5 - Not important, difficult, not mobile
Type 6 - Important, difficult, mobile

Two discrepancies
Type 7 - Not important, difficult, mobile
Type 8 - Important, difficult, not mobile

The reader is reminded that the "discrepancies" are a result of combining achievement orientation with perceived mobility. A "discrepancy" is considered a stressor in accordance with Chapter I's theoretical discussion of cognitive dissonance and/or distributive justice. Thus, perceived difficulty in upward mobility constitutes one discrepancy or stressor. The other discrepancy is produced by disagreement between perceived importance of mobility and perceived mobility. For example, non-mobile respondents who place importance on mobility are considered to have one discrepancy. If the respondent also reports perceived difficulty in upward mobility, then he has two discrepancies. In contrast, non-mobile respondents who do not place importance on mobility, and who do not perceive upward mobility as difficult, are considered to have zero discrepancy. Going back to Table 1 on page 31, Types 7 and 8 represent the "high dissonance" categories. Type 7 with low investment (not important) and high reward (mobile) theoretically experience dissonance because of guilt; Type 8 with high investment and low reward because of anger. Types 1 and 2 with low dissonance are predicted to have no reaction. Since dissonance, anger and guilt have been linked with stress-related illness, Types 7 and 8 are

expected to report more symptoms and have higher blood pressure than Types 1 and 2. Types 3 - 6 with one discrepancy each are expected to fall statistically between low and high discrepancy types in percentage reporting symptoms.

The first social mobility hypothesis deals with the question, "Are mobility discrepancies associated with stress-related signs and symptoms?." Expectations are expressed in the following hypothesis:

> H2: High stress Mobility Types 7 - 8 will report more chest pain, insomnia, indigestion, and nervousness; and will have higher blood pressure than other Mobility Types.

Initial distributions suggested that three of the signs or symptoms be dropped from further analyses. The Ulcer and Myocardial Infarct Indexes were dropped on the basis of their small frequencies. A third, the Cardiovascular Index, was dropped for the same reason as well as because of its weak associations with Mobilty Type (see Table 26).[13]

The overview of Mobility Types and the remaining three symptoms (insomnia, indigestion, nervousness) and one sign (blood pressure) of stress-related illness is presented in Table 27.

Table 27 reveals several pertinent findings. First, neither indigestion nor high blood pressure relate systematically to Mobility Types. Second H2 is supported by the relationships between both insomnia and nervousness, and occupational and financial Mobility Types,

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[13] Frequencies of variables are as follows:
Ulcer Index: 898 = no symptoms; 83 = confirmed diagnosis; 18 = missing data
Myocardial Infarct Index: 948 = no chest pain; 52 = some chest pain
Cardiovascular Index: 734 - no symptoms; 226 - one CV trait (diabetes, kidney, stroke or heart trouble); 40 = more than one trait

Table 27

Mobility Types and Percent Reporting Frequent Indigestion, Insomnia, Nervousness or High Blood Pressure

	Mobility Types 1	2	3	4	5	6	7	8	gamma
	%	%	%	%	%	%	%	%	
Symptoms or Signs									
				Occupational					
Indigestion	33	36	41	37	39	44	37	44	.06
Insomnia*	28	34	34	47	37	31	43	42	.07
Nervousness**	77	58	63	74	71	62	77	75	.12
High Blood Pressure	18	12	14	14	10	10	5	16	.00
(N)	(39)	(139)	(141)	(204)	(51)	(117)	(74)	(235)	
				Financial					
Indigestion	46	38	38	28	38	43	40	46	.06
Insomnia**	42	27	28	52	32	41	50	41	.15
Nervousness**	62	62	64	76	66	67	79	71	.14
High Blood Pressure	8	12	16	9	13	14	14	13	.06
(N)	(26)	(191)	(64)	(67)	(137)	(183)	(194)	(138)	
				Residential					
Indigestion	39	67	41	39	38	55	39	40	.00
Insomnia	37	33	37	38	44	36	48	42	.06
Nervousness	65	67	67	74	60	91	74	74	.11
High Blood Pressure	12	11	17	13	14	18	11	11	.00
(N)	(318)	(9)	(160)	(300)	(63)	(11)	(46)	(93)	

*Significant at $p < .05$

**Significant at $p < .01$

with Types 7 - 8 reporting significantly more symptoms. The relationships are somewhat systematic as indicated by weak but positive gamma coefficients.

A third cluster of findings is that: (a) Types 7 and 8 are significantly higher in percentage reporting insomnia and nervousness than Types 1 and 2; (b) few persons fall into the Type 1 category, except in residential mobility; (c) the greatest differences exist between Types 2 and 7; (d) Type 1 represents a "symptom reporting peak" in two instances (occupational mobility/nervousness and financial mobility/insomnia), and (e) symptom reporting peaks are evident in Types 4 and 5.

In the interest of explaining these findings as well as other observations of the symptom distributions along Mobility Types, it was decided to investigate the sex, race, stress area (SRS) composition of each Mobility Type. Table 28 illustrates the SRS compositions.

Table 28 shows a strong relationship between SRS and Mobility Types. One example of Mobility Type membership based on sex and race is Types 7 and 8 in financial mobility. White females, low stress area black females, and low stress area white males make up 75% of Type 7 (more income is not important, it is difficult to acquire, and the respondents are already earning enough to have what is wanted in life). Type 8, in contrast, is 66% comprised of black males, white high stress area males and high stress area black females. These respondents perceive that earning a higher income is important, difficult, and they do not have the income to have what they want. Table 28 is replete with such examples supporting the clear and interesting influence of SRS on Mobility Type. The qualitative SRS distributions

Table 28

Percentages of Sex-Race-Stress Area Groups*

within Each Mobility Type

	Occupational Mobility Types							
	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %
BMH	8	17	13	5	4	16	4	17
BML	7	23	12	6	10	33	8	9
WMH	26	9	10	13	6	9	11	15
WML	8	10	16	15	15	7	19	9
BFH	7	11	22	9	6	15	1	16
BFL	13	19	7	8	16	12	19	14
WFH	21	4	12	20	20	5	20	12
WFL	10	7	8	24	24	3	18	8
(N)	(30)	(139)	(141)	(204)	(51)	(117)	(74)	(235)

*BMH = Black Male High Stress Area
BML = Black Male Low Stress Area
WMH = White Male High Stress Area
WML = White Male Low Stress Area
BFH = Black Female High Stress Area
BFL = Black Female Low Stress Area
WFH = White Female High Stress Area
WFL = White Female Low Stress Area

(continued on next page)

Table 28 (cont)

Percentages of Sex-Race-Stress Area Groups

within Each Mobility Type

	Financial Mobility Types							
	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %
BMH	20	14	30	10	2	14	3	20
BML	11	21	14	5	10	15	9	14
WMH	4	13	17	6	10	17	9	12
WML	15	10	6	12	18	9	18	5
BFH	15	16	18	14	4	18	4	20
BFL	27	18	11	3	16	12	11	9
WFH	8	6	2	19	16	7	24	15
WFL	0	2	2	31	24	8	22	5
(N)	(26)	(191)	(64)	(67)	(137)	(183)	(194)	(138)

	Residential Mobility Types							
	1 %	2 %	3 %	4 %	5 %	6 %	7 %	8 %
BMH	7	11	33	7	10	9	0	18
BML	20	0	4	19	3	0	0	4
WMH	12	34	13	9	16	9	17	13
WML	17	0	3	12	19	9	20	3
BFH	6	22	28	6	4	27	9	36
BFL	18	0	3	21	8	0	0	6
WFH	8	22	13	12	19	36	28	17
WFL	12	11	3	14	29	9	26	3
(N)	(318)	(9)	(160)	(300)	(63)	(11)	(46)	(93)

of Mobility Types is a finding worthy of further investigation as a separate study.

In the present study, however, it is noted in Table 26 that sex, race and stress area also relate to symptoms and signs of stress-related illness and to utilization of health services. It is possible therefore that associations between Mobility Type and symptoms or Health Services Utilization is spurious because of the SRS composition of the Mobility Type. For example, Types 4 and 5 report peaks of nervousness in occupational, financial and residential mobility measures. Table 28 reveals that Types 4 and 5 are approximately 67% female, and 40 - 50% white female, which could explain the increase in reporting of this stress-related symptom. Another example is Type 7, comprised largely of white females, which would be expected to, and does, report more symptoms. In contrast, Type 2, 70% black in both occupational and financial mobility measures would be expected to, and does, report less symptoms.

Another pertinent factor illustrated in Table 28 is the qualitative discrepancy (vs number of discrepancies) differences between Mobility Types. For example, occupational Mobility Type 1 (getting ahead on the job is not important, not difficult, and respondents are non-mobile), with only 39 persons, is comprised mainly of high stress area whites, the majority of whom report nervousness. One might speculate that the nervousness causes apathy about occupational advancement and living in the high stress area.

Another consideration which comes to mind when observing Table 28 is the causal direction of the whole sex-race-symptom utilization association. Sex, for instance, has been significantly associated with

symptoms and utilization in many studies. The literature offers few social explanations for the relationship. It is possible that, rather than sex composition of Mobility Type explaining symptoms, Mobility Type explains why women report more symptoms. In order to investigate whether or not Mobility Type explains the difference between the sexes in the present study an analysis would have to be made comparing males with females by race within each Mobility Type. If the significant differences between males and females were reduced, one might conclude that Mobility Type is a viable explanation of the differences between the sexes in reporting certain symptoms, or in utilization of health services. Again, this is a matter for further investigation beyond the scope of the present study.

Thus far in the analysis two basic findings have emerged. First, H2 is supported insofar as Mobility Type is positively related to insomnia and nervousness. Second, the importance of the qualitative and SRS composition of Mobility Types had been established. For the present study, the next step is to continue the analysis in terms of number of discrepancies in mobility and reporting of insomnia and nervousness. Table 29 contains the same statistical information as Table 27. Mobility Types are now collapsed into zero, one or two mobility discrepancies for a slightly different perspective of the relationships.

Since sex, race and stress area have been linked with Mobility Types, it is necessary to introduce variables into further analysis of symptoms and number of mobility discrepancies. This step in the analyses will identify the sex-race "risk groups" who are in the high discrepancy category and who report insomnia or nervousness.

Table 29

Number of Mobility Discrepancies and Percent Reporting Indigestion, Insomnia, Nervousness or High Blood Pressure

	Number of Discrepancies		
	0	1	2
	%	%	%
Symptom or Sign			
	Occupational Mobility		
Indigestion	34	40	40
Insomnia*	31	37	43
Nervousness**	67	67	76
High Blood Pressure	15	12	10
(N)	(178)	(513)	(309)
	Financial Mobility		
Indigestion	42	37	43
Insomnia**	34	38	46
Nervousness**	62	68	75
High Blood Pressure	10	26	14
(N)	(217)	(451)	(332)
	Residential Mobility		
Indigestion	54	43	40
Insomnia	35	39	45
Nervousness	66	73	74
High Blood Pressure	11	16	11
(N)	(327)	(534)	(139)

*Significant at $p < .05$

**Signiticant at $p < .01$

Before finding risk groups, it is important to deal with one more issue in the stressor/stress-related symptom section of the predicted continuum, namely predicted high blood pressure. Blood pressure is the only measured sign of stress-related illness and it appears to be not systematically related to number of mobility discrepancies. It is possible that physician treatment may hide a real relationship between blood pressure and mobility. One method of testing that possibility is to compare all persons who report zero physician visits in the past year (therefore are not being medically treated for high blood pressure) across Mobility Types on high blood pressure. Table 30 shows the results.

Table 30

Percent with High Blood Pressure by Number of Mobility Discrepancies: Persons who Have Not Visited a Physician or Clinic in the Past Year

	Number of Mobility Discrepancies								
	Occupational			Financial			Residential		
	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%
People with High Blood Pressure	10	9	13	7	11	11	9	11	9
(N)	(40)	(127)	(70)	(54)	(101)	(82)	(70)	(132)	(35)

There is still little difference across mobility discrepancies in high blood pressure, even when controlling for the possibility of respondents being under medication. Insomnia, nervousness and indigestion are not tested while controlling for physician treatment for two reasons. First, many

over-the-counter drugs are available for treatment of these symptoms. Second, it is possible that respondents under physician treatment for one or all of the symptoms will still report a high frequency of symptom incidence.

The next step in the analysis is to identify the sex-race risk groups who report more insomnia or nervousness with higher Mobility Type discrepancies. Identification by sex and race is not only useful descriptively, but also controls for these variables, thus allowing an association of stressor and reporting symptoms which is independent of sex and race. The first comparisons are made in Table 31 among sex-race discrepancy groups.

Of the twenty four comparisons among discrepancy groups in Table 31, fifteen show an increase in symptom reporting of at least 5% with mobility discrepancy. Six show little difference, and three a decrease in symptom reporting with higher discrepancy. In five out of six comparisons, white males report more symptoms with higher discrepancy. Black females are next reporting in increase in four out of six. Black males and white females follow with three each. A reverse trend appears for black females reporting less insomnia with higher mobility discrepancy; and black males slightly less nervousness with more discrepancies in residential mobility.

Most of the percentages of respondents reporting symptoms in the one discrepancy middle category tend to cluster with either the highest or lowest category. One exception is the black female group who report frequent insomnia. They present a modified U-shaped curve across discrepancy groups in financial mobility. Only one of the findings in Table 31 is statistically significant; and that is white

Table 31

Percent Reporting Insomnia or Nervousness in Zero, One and Two Discrepancy Groups, by Sex and Race

	Male						Female					
	Black			White			Black			White		
Number of Discrepancies:	0	1	2	0	1	2	0	1	2	0	1	2
	%	%	%	%	%	%	%	%	%	%	%	%
Occupational Mobility:												
Insomnia	20	28	30	32	33	42	42	40	35	44	52	61
gamma =		.16			.15			-.09			.18	
Nervousness	54	53	54	65	63	70	62	69	78	77	84	96
gamma =		.00			.09			.23			.51**	
(N)	(61)	(122)	(69)	(40)	(122)	(78)	(50)	(120)	(86)	(27)	(149)	(76)
Financial Mobility:												
Insomnia	20	29	29	22	39	39	38	28	54	47	54	55
gamma =		.15			.18			.19			.05	
Nervousness	48	51	62	65	67	65	68	67	79	88	84	89
gamma =		.18			.01			.15			.18	
(N)	(75)	(108)	(69)	(49)	(114)	(77)	(76)	(110)	(70)	(17)	(119)	(116)
Residential Mobility:												
Insomnia	29	25	29	32	35	50	39	39	33	53	54	57
gamma =		.00			.18			-.04			.04	
Nervousness	52	55	43	59	67	87	69	71	74	84	89	84
gamma =		-.02			.26			.05			.04	
(N)	(86)	(145)	(21)	(95)	(113)	(32)	(78)	(136)	(42)	(68)	(140)	(44)

**X^2 significant at $p < .01$

females reporting nervousness with high discrepancy in occupational mobility.

As the next step, it was decided to eliminate the middle (one discrepancy) category from the analysis in order to observe whether the contrast of extremes would strengthen the relationships suggested in Table 31. Table 32 presents the results of comparisons between lowest and highest discrepancy types.

Table 32 reveals higher gamma coefficients for the relationships first demonstrated in Table 31, with four chi squares gaining statistical significance. White males are reporting significantly more insomnia with (1) occupational, and (2) financial mobility discrepancy; and (3) significantly more nervousness with residential discrepancy.[13] Black females are reporting (1) significantly higher nervousness with

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[13]As mentioned in Chapter II, one of the side purposes of the present study is to observe the difference between mobility measures which are "objective" versus "perceived." The opportunity arose at this point for comparison between the "objective" occupational mobility (importance of advancement/difficulty of advancement/promoted) and the "perceived" occupational mobility (importance of advancement/difficulty advancing/how well have done at getting ahead). Using "perceived" occupational mobility, the percentage of high discrepancy females of both races reporting nervousness is now similar to Types 1 - 2. For males, on the other hand, high discrepancy whites in "perceived" mobility now report a significant 17% more insomnia low discrepancy types. High discrepancy black males report 6% more nervousness, though not significant. This comparison suggests that females are more concerned about actual promotion as an indicator of upward mobility, in contrast, males who may place more importance on their "feeling" of accomplishment. Since males vary more in reporting symptoms within "perceived" occupational mobility, this measure will be used for them in all future comparisons. The "objective" occupational mobility measure will continue in use for females only.

Table 32

Percent Reporting Insomnia or Nervousness in Lowest and Highest Discrepancy Groups, by Sex and Race

	Male				Female			
	Black		White		Black		White	
Number of Discrepancies:	0	2	0	2	0	2	0	2
	%	%	%	%	%	%	%	%
Occupational Mobility:								
Insomnia	20	30	32	44	42	35	44	61
gamma =	.29		.21		-.15		.31	
Nervousness	54	54	65	70	62	78	77	96
gamma =	.00		.12		.36*		.75**	
(N)	(61)	((69)	(40)	(78)	(50)	(86)	(27)	(76)
Financial Mobility:								
Insomnia	20	29	22	39	38	54	47	55
gamma =	.24		.38*		.32*		.16	
Nervousness	48	62	65	65	68	79	88	89
gamma =	.28		.00		.26		.07	
(N)	(75)	(69)	(49)	(77)	(76)	(70)	(17)	(116)
Residential Mobility:								
Insomnia	29	29	32	50	39	33	53	57
gamma =	.00		.37		-.11		.07	
Nervousness	52	43	59	87	69	74	84	84
gamma =	-.19		.50*		.11		.00	
(N)	(86)	(21)	(95)	(32)	(78)	(42)	(68)	(44)

*χ^2 significant at $p < .05$

**χ^2 significant at $p < .01$

occupational discrepancy and (2) insomnia with financial disrepancy. Black females also report more nervousness with high discrepancy in all three measures of mobility. The correlations in Table 26 suggest that white females would be expected to report more nervousness. On the other hand, among all the signs and symptoms, nervousness is more highly correlated with chest pain (gamma = .51). Chest pain (MI Index) is the only symptom associated positively with being black and female. If chest pain had been pursued in the analysis, it is possible that it would have been reported significantly more by higher discrepant black females, especially those living in the high stress area. White females continue to report (1) significantly more nervousness with occupational mobility discrepancy. Black males show some increase in symptoms, particularly with financial mobility discrepancy, but the relationships fail to reach statistical significance.

Thus far, the search for risk groups based on mobility discrepancies has narrowed down to three groups of white males, two groups of black females and one group of white females. Since the risk groups have been identified, the final step is to investigate whether or not the risk groups are utilizing health services more than their non-symptomatic counterparts. That question is expressed in the following hypothesis:

> H3: Symptomatic groups within the high mobility discrepancy category will utilize health services significantly more than non-symptomatic groups.

Testing H3 necessitates some attrition of data since the analysis has narrowed down to comparisons on utilization within each of the sex risk groups. Comparisons are made between symptomatic and non-symptomatic members of high discrepancy categories on two measures of health services utilization. First, frequency of visits is used as

an indicator of volume of utilization. Second, a qualitative measure is added: "Have you ever seen a Doctor for problems of nervousness?" It is judged that the use of both variables is not only interesting but necessary. Frequency of visits cannot provide the why needed for elaboration on the question of whether or not the respondent is visiting the physician for problems associated with nervousness or insomnia. The word "ever" in the question presents a problem in evaluating visits for nervousness over the past year. Unfortunately, there is no more valid measurement available in the data.

Tables 33, 34 and 35 present the findings for the white male, black female and white female risk groups respectively. If the symptomatic members of the high risk groups report more utilization of health services, then there is at least a chance that they are receiving treatment for these stress-related symptoms. The respondents who do not report more utilization would be targets for mental health programs.

Symptomatic white males visit the physician more often and report visiting for nervousness systematically more than non-symptomatic counterparts. The findings are not statistically significant, however, except for white males in the residential mobility discrepancy group. Those reporting nervousness also report seeing a Doctor for nerves significantly more than non-symptomatics. It would be interesting to break this finding down further by stress area and Mobility Type (7 or 8) to assess some qualitative explanations. It was not done because of the small N=32 involved. An average of 48% of the symptomatic white males report a high frequency of visits, while only 35% report seeing a Doctor for nervous problems. When comparing by stress area, 12% more of the high stress than low stress white males report seeing a Doctor

Table 33

Reported Symptoms and Health Services Utilization in White Male High Mobility Discrepancy Types

Mobility Type:	Occupational Mobility		Financial Mobility		Residential Mobility	
Symptom:	Insomnia		Insomnia		Nervousness	
Frequency:	Rarely	Often	Rarely	Often	Rarely	Often
	%	%	%	%	%	%
Health Services Utilization:						
Frequency of Physician Visit						
0-1	70	51	60	53	56	50
2+	30	49	40	47	44	50
	gamma = .39		gamma = .13		gamma = .12	
Seen Doctor for Nerves						
No	84	71	83	67	94	56
Yes	16	29	17	33	6	44
	gamma = .36		gamma = .42		gamma = .84**	
(N)	(44)	(35)	(47)	(30)	(16)	(16)

**X^2 significant at $p < .01$

for nerves, though the difference is not statistically significant. Of course, it is possible that the symptoms are being treated through the lay-referral system and with over-the-counter drugs. The low percentages of physician treatment, however, suggests that mobility discrepant white males, particularly from the low stress area, could be a target group for mental health programs which would provide for the monitoring and treatment of these early symptoms of stress-related illness.

The second set of sex-race risk groups are the black females in occupational and financial mobility. Table 34 presents the findings. Black females with frequent nervousness report significantly more physician visits than non-symptomatic counterparts. Only 33%, however, report seeing a physician for nervous problems, a percentage similar to the black females who report "rarely or never" nervous. A similar comparison is evident for black females in the highly discrepant financial Mobility Types with insomnia and Health Services Utilization. These findings suggest several things. First, black females may define "nervous problem" as something aside from nervousness or insomnia, thus not reporting seeking treatment for nerves. Second, black females may be getting physician treatment for stress-related symptoms in connection with some other condition. There are no means in the data to adequately assess that possibility. Third, psychiatric care may not be accessible to black females.

The black female groups were further investigated for differences by stress area in the findings outlined in Table 34. It was found that high discrepancy symptomatic black females did not differ significantly

Table 34

Reported Symptoms and Health Services Utilization in Black Female High Mobility Discrepancy Types

Mobility Type:	Occupational Mobility		Financial Mobility	
Symptom:	Nervousness		Insomnia	
Frequency:	Rarely	Often	Rarely	Often
	%	%	%	%
Health Services Utilization:				
Frequency of Physician Visit				
0-1	34	15	34	26
2+	66	85	66	74
	gamma = .48*		gamma = .19	
Seen Doctor for Nerves				
No	66	67	65	65
Yes	34	33	35	35
	gamma = .01		gamma = .00	
(N)	(53)	(33)	(32)	(38)

*X^2 significant at $p < .05$

in seeing a Doctor for nervous problems between high and low stress areas.[14]

It is felt that the high mobility discrepancy black females can be considered a target group for mental health programs which stress the importance of medical attention for nervousness or insomnia and which would provide some guidance in procuring treatment.

A final consideration is the white females risk group illustrated in Table 35.

In contrast to black females, highly discrepant white females who report nervousness report only slightly more physician visits than non-symptomatic counterparts; and report significantly more seeing a Doctor for nervous problems. The findings reveal that 62% of the symptomatic white females have seen a Doctor for nerves. When 112 symptomatic white females were contrasted by stress area, it was discovered that 64% of the high stress area respondents reported seeing a Doctor for nerves, compared with 51% for the low stress area residents. These percentages suggest that psychiatric care may be more available to white females than to black females; and that the majority of white females with nervousness are seeking treatment for some nervous condition, significantly more than their non-symptomatic counterparts.

In summary, white males, black females, and white females all reported some significant presence of insomnia or nervousness with discrepancies in social mobility, thus becoming identified as "risk

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[14]It is interesting to note that in the same comparison, symptomatic high stress area black males reported significantly more seeing a Doctor for nerves (gamma = .70) than low stress area symptomatic black males.

Table 35

Reported Nervousness and Health Services Utilization in White Female High Discrepancy Occupational Mobility Types

		Nervousness: Rarely	Nervousness: Often
		%	%
Health Services Utilization:			
Frequency of Physician Visits			
	0 - 1	41	35
	2+	59	65
		gamma = .12	
Seen Doctor for Nerves			
	No	74	38
	Yes	26	62
		gamma = .65**	
	(N)	(39)	(37)

**X^2 significant at $p < .01$

groups." When utilization of health services for nervous problems was investigated for these risk groups, it was discovered that, except for white females, generally small percentages of symptomatic respondents report seeing a Doctor for nerves. This case is particularly evident for black females. Several difficulties arise from the data which make it difficult to conclude whether or not symptomatic respondents are receiving some form of treatment for frequent nervousness or insomnia. It is generally felt, however, that the low percentages of symptomatic black females and low stress area white males who have sought professional help for nervous problems indicate these respondents as the prime target groups in the study population for mental health programs.

CHAPTER IV

SUMMARY AND DISCUSSION

The present study has been, from the onset, an expedition into a large scale gathering of available survey data.

First, the data were examined and found usable in relating several measures of health services utilization to certain social factors; the latter had already correlated with HSU many times over in previous research.

Second, the literature was searched for concepts which offered concrete indicators of socio-psychological stress. Simultaneously, the data were explored for items used in the questionnaire which could be logically constructed into such indicators. The results were (1) a synthesis of concepts (cognitive dissonance, distributive justice and status discrepancy) from which evolved the notion that perception of social mobility is a socio-psychological stressor; and (2) a concept of social mobility constructed from achievement orientation and perceived mobility.

The literature abounds with evidence suggesting that psychic input produces physiological output which can improve or harm the organism. One possible negative effect is chronic illness. It follows that persons experiencing excessive amounts of a psychic stressor may also have stress-related signs and symptoms. If so, those persons can be considered at risk of progressing into a more advanced stage

of illness. Because of this, it is intuitively desirable for these individuals to be receiving treatment to control their condition, thus preventing progressive illness and ultimate disability. This continuum of stress - symptom - treatment was explored in the study population.

The purpose of this Chapter is to summarize and discuss the results of this expedition. Empirical outcomes, problems in methodology and interpretation and directions for further investigation are all matters of consideration in concluding the present study.

Social Factors

A series of hypotheses predict associations between (a) age, sex, race, occupation, education, income, work status, family size, density and (b) three measures of health services utilization (frequency of physician visit, regular checkup, and regular physician). This study produced a number of exceptions and modifications, different from the expected findings.

As expected, women of all ages are higher utilizers than men, with significant differences in this study occurring only between ages 30 - 50. Controlling for work status revealed that women employed full time are still significantly higher utilizers than their male counterparts. An unexpected result was that employed women report significantly more checkups than housewives. This is not so surprising if one assumes that employers require employment examinations, but other factors may also have partly caused the difference. In testing the influence of sex on utilization, it was impossible to adequately assess the part played by obstetrical and gynecological care. Peaks

of HSU for women at ages 30 - 34 and 45 - 54 suggest that treatment related to childbearing or menopause contributes to at least part of the difference between the sexes at those ages.

Differences in HSU between age groups within the same sex, produced non-significant findings. General trends support the expected increase in visits with age, up to age 55 and over. On the other hand, the expected decrease in checkups with age is not supported, except for age 55 and over. The decrease in visits and checkups at age 55+ suggests that something happens in this particular population at that age which is associated with HSU. Since the majority of respondents are employed in manufacturing industries, it is possible that retirement occurs at age 55. An alternative (but somewhat unlikely) speculation is that only the healthiest individuals live to age 55, thus eliminating those who account for increased care at older ages. Another explanation is the cohort influence. It is possible that persons age 55 - 60, born just prior to World War I, are in an age cohort which places low value on frequent physician care and regular physical checkups.

The expectancies in the exploration of associations between race and HSU were that whites would report more visits, and report no differences in checkups and having a regular physician. Contrary to expectations, there is no significant difference in this study between races in physician visits, with the one exception of white females reporting more visits than blacks in the $9,000 to $11,000 income bracket. Another unexpected outcome is that blacks of both sexes at all income levels report significantly more checkups when compared to white counterparts.

The largest difference occurs between low income females. The vast majority of white males and just under half of the white females report no checkup. Some of the explanation may lie in the fact that blacks in the population of this study are better educated than whites. Another explanation is the availability of prenatal clinics to inner city low income blacks. This must remain speculative as the questionnaire did not ask about such clinics or their availability. As expected, there is no difference between races on having a regular physician, with two exceptions. The first is the high income males in which significantly more whites report a regular physician. The data concerning high income blacks reveals that the majority (82%) have recently (average 2.8 years) moved to low stress areas. It is conceivable that these men have simply not established physician contact in a new area, nor desire to travel back to former inner city sources of care. The second exception is low income black females reporting significantly less regular physician or clinic, which again might be explained by their use of various clinics.

When correlated with education, income and occupation, utilization of health service was similar with three exceptions. First, as expected, education is significantly associated with checkups. This proved to be the case for females only, however, with frequent checkups reported for for the middle educated (12 years) or above. The second and third significant differences involve visits and checkups in certain income groups. Visits decrease as income increases for males age 25 - 34. The difference is due to the unusually high frequency of visits of low income males. This tends to support an explanation that

low income males may be less healthy. As expected from previous research, checkups increase significantly with income in females age 25 - 34.

Among social factors, sex and race produced the majority of significant variations in HSU. The small differences in utilization between age, education, occupation and income groups support the suggestion by some authors that third party payment is narrowing the gap in care which has traditionally separated socioeconomic groups. In the present study, the questionnaire did not ask about health insurance. Therefore, one may only speculate that since most respondents are employed by government and industry, some third party payment system is likely to be operating.

Finally, family size and density were explored in some detail. Previous findings have been inconsistent and suggest that any relationship between family and HSU is due to age and family cycle. Visits and regular physician were not significantly related to family size. Checkups were related, however, with more checkups reported by small families at all ages. Density was introduced as a definitive elaboration of family size. The outcomes were similar to those of family size. Further comparisons controlling for race, education and income indicated that the relationship between density and checkups is a function of the association between race and preventive care, with blacks reporting both lower density and more checkups.

Social Mobility

Two social mobility hypotheses were designed to test the deduced continuum of stressor--stress symptom--health services utilization. It was expected that, concurrent with testing the hypotheses, risk groups

would be identified who, (a) are in a stressful life situation; (b) report more stress-related symptoms and (c) report less health services for these problems.

The findings which emerged from testing the hypotheses are summarized as follows:

1. Sex, race and stress area account for most of the differences between mobility types in reporting stress-related symptoms.

2. Insomnia or nervousness are independently related to mobility type within certain sex-race groups:

   a. White males in occupational, financial and residential mobility,

   b. Black females in occupational and financial mobility,

   c. White females in occupational mobility.

3. Among high mobility discrepancy males, with one exception, there is no significant difference between symptomatic and non-symptomatic respondents in HSU. The trend, however, consistently suggests that males reporting frequent insomnia report more physician visits and having seen a doctor for nervous problems than do non-symptomatic counterparts.

4. High discrepancy black females of both stress areas report significantly more visits with frequent nervousness, but do not report seeing a doctor for nervous problems.

5. High discrepancy, white females of both stress areas with "frequent" nervousness, report significantly more seeing a doctor for nerves; but little increase in visits over "rarely to occasionally" nervous counterparts.

The first empirical question was whether or not persons within highly discrepant mobility types would report more, the same, or less stress-related symptoms than members of low discrepant groups.

Initial analyses revealed that high blood pressure and frequent indigestion was not related in any systematic manner to mobility type. Insomnia and nervousness were the only symptoms which varied significantly across occupational and financial types. Examination of

the mobility Types 1 through 8 indicated that mobility type composition is closely related to sex, race and stress area, which in turn, are closely related to both symptom reporting and HSU.

Further comparisons were made between the highest (Type 7 - 8) and lowest (Type 1 - 2) mobility discrepancy groups, holding sex and race constant. The outcomes supported the suspicion that, with few exceptions, sex and race explained the difference among high and low stress types in reporting frequent insomnia and nervousness. The several exceptions suggest that stress, as measured by number of discrepancies in social mobility, is associated independently with the stress-related symptoms of nervousness and insomnia. The questions now are, what are those certain exceptions, how can the findings be interpreted, and can plausible conclusions be reached?

Both black and white high mobility discrepancy females report significantly more nervousness when measuring thr discrepancies in occupational mobility than low discrepancy counterparts. Two alternative interpretations are: Nervous women perceive occupational mobility as a difficult struggle, whether successful or not, and would therefore fall into the high discrepancy categories; or, the struggle for occupational mobility, important or not, causes women to experience frequent nervousness. Another plausible explanation is that the association between stressor and symptom is spurious because of another variable, such as age or income.

High discrepancy white males report significantly more insomnia when measured on "perceived" occupational mobility, rather than mobility measured by promotion, as were the females. The difference between sexes here suggests that promotion is a more sensitive indicator of

mobility to females, while feeling of accomplishment is more sensitive in males. One wonders if jobless housewives account for such a difference, or working women whose jobs offer little in the way of perceptions of "getting ahead." This question might be worthy of further investigation.

Also reporting significantly more frequent insomnia are high discrepancy black women and white men when compared with their low discrepancy counterparts in perception of financial mobility. Again, one could speculate regarding the causal direction or spuriousness of the relationships. Does freqeuncy of insomnia result in increased perceptions of mobility discrepancies, or vice versa?

Another finding is that high discrepancy white males report more nervousness with residential mobility when compared to low discrepancy white males. The nature of the residential mobility measure makes this finding very difficult to interpret. The step of acquiring property is noted, but not <u>when</u> it was acquired, nor if the respondent moved from what he considered a "less desirable" neighborhood. One possible interpretation is that Type 7 white males who are buying a home find it unnecessarily difficult (stressful), and therefore experience frequent nervousness. Most Type 8 white males are in the high stress area. Frequent nervousness reported by them can be interpreted as resulting from a frustrated desire to move to a better neighborhood. On the ohter hand, they may belong to Type 8 because they are frequently nervous, which interferes with their opportunities for residential mobility.

Another association emerging from these outcomes is that "perceived" mobility is consistent with insomnia, while "ascribed" mobility (both occupational and also residential in white males) is associated

with reporting more nervousness. Insomnia, assuming it is pathological, is a more concrete symptom than is the vague symptom of nervousness, although both still involve subjective judgments. Outcomes in the present study suggest that the perception of discrepancy is associated with actually staying awake, rather than with a nervous feeling. This is supported by the Beck and Cassel (1972) notion that perceived dissonance is a more viable measure of stress than discrepancy measures ascribed by researchers (such as promotion and home rental vs. ownership).

Another observation is that the women concerned with occupational mobility report significantly more nervousness, whereas insomnia is reported more by women concerned with having enough money to live as they would like. This suggests that financial stress, as a pragmatic problem, is associated with the incidence of loss of sleep. Stress over money problems could conceivably be exacerbated by day-to-day concrete issues, e.g., enough food, clothes, new car, etc. Stress over occupational promotions or advancement on the job, as a long-term constant concern, seems to be more logically associated with general nervousness. A curious finding is that while both black and white high discrepancy females report more nervousness over occupational mobility, only black females report insomnia associated with financial mobility. One difference between black and white women in this population which may serve to highlight that finding is that 54% (60% low stress and 48% high stress) black women work full time as compared with 23% (17% low stress and 27% high stress) of the white women. Perhaps the higher percentages of married women working indicates a greater basic concern

of black women for supplementing the family income. This could account for a more stressful response to discrepancies in financial mobility. Such speculation points out the need for further investigation into differences between employed women and housewives in stress responses, controlling for such variables as race, family income and education.

The last link in the stressor-stress symptom-HSU continuum is the empirical question of whether or not the high discrepancy "risk groups" visit a physician more frequently and/or seek care for nervous problems when compared to their non-symptomatic counterparts.

The overall trend suggests that high discrepancy symptomatic respondents visit physicians more often and have at some time sought care for nervous problems. There is one significant exception, and that is black females from both low and high stress areas, who like their low discrepancy counterparts, report a low percentage seeking care for nervous problems.

For males of both races, comparisons between symptomatic and non-symptomatic high discrepancy in HSU are statistically insignificant. Percentages suggest greater utilization with frequent insomnia. One cannot draw a convincing conclusion as to whether or not black or white males receive physician treatment for insomnia. The relationships may be entirely due to chance. In addition, even if men who are troubled by loss of sleep see a physician more often, there is no evidence that insomnia is reported to the physician, or considered by the physician to be pathological, or treated by the physician.

There is a significant difference in utilization patterns between high discrepancy black and white females, irregardless of stress area.

Symptomatic white women, expecially those reporting nervousness, report visiting the physician less often than black women, but do report seeking treatment for nervous problems. This suggests that there is a difference by race in either, (1) definition of nervous problem, (2) perception of need for treatment of insomnia or nervousness, and/or (3) availability of psychiatric care. Further data are needed to support a choice between alternatives. In addition, black females may indeed be receiving treatment from a physician for nervousness and/or insomnia in connection with some other condition.

In summary, the findings for the social mobility hypotheses are straightforward enough to suggest that discrepancies in social mobility are related to certain symptoms in certain sex-race groups; and that symptomatic respondents visit physicians more often; and, with the possible exception of black females, have at some time seen a doctor for nervous problems. Without further investigation, these outcomes cannot be interpreted in such a way as to be conclusive or to achieve the study goal, which was to identify untreated stress symptom risk groups by high stress mobility type. There is enough evidence to suggest that white males and black females may be appropriate target groups for mental health programs which stress the importance of treating nervousness and insomnia as precursors of more serious stress-related illnesses. The findings also produced enough evidence to suggest further investigation into social mobility as a symptom producing stressor. Suggestions for further investigation are presented after a discussion of the methodological and interpretive problems which hindered the construction of concrete conclusions.

Methodological and Interpretive Problems

Accompanying all research, and perhaps especially in secondary analysis studies, are conditions which detract from the reliability of the findings and the quality of conclusions. Though Chapter II presents many points regarding the adequacy of the data, some methodological problems existed which could not be controlled in this study.

In the first place, PUHR data on symptoms and Health Services Utilization is retrospective; even at the time of first collection. In studies on health and illness, over or under reporting of symptoms and utilization is a well known problem (Rosenstock, 1961; Fink, 1969; Kirscht, 1971). A second problem is the limited choice of information available to test the hypotheses. In secondary analysis, this situation is usually referred to as "living with the data." For instance, since not asked in the original questionnaire, there was no way to assess (1) reason for a visit to physician, e.g., for self or child; (2) general respondent health, e.g., absence of infectious diseases; (3) recency of a visit for a nervous problem; (4) how often recent promotion occurred, and (5) whether or not respondent had moved within the neighborhood or from a better/worse neighborhood.

Another common problem is variation in respondent interpretation of symptoms (Tyroler, 1969; Zola, 1966). "Trouble Sleeping" and "Problems with Nervousness" no doubt produce a wide variety of subjective judgments in making responses. In defense, one can say that it is unimportant how severity of symptom is interpreted; what matters is the perception of a problem. Still, a more exact interpretation of frequency of insomnia or nervousness, e.g., every day, once a week, would have been useful to this study as an ordinal measure of severity.

Another difficulty is that possible spurious associations may neutralize the relationships that truly occur between mobility type, symptoms and HSU. Within the data, for example, no control was available for respondent health insurance (particularly of interest would be insurance covering housewives), quality of care, and availability of physician services in the four stress areas. A separate sub-study was conducted in an attempt to establish information on availability of care.[15] It was concluded that availablility and accessibility of physicians and clinics in each stress area is impossible to measure adequately from published materials without further information. Another variable which is suspect as influencing the relationship between mobility type and symptom is age. Though age and insomnia are not significantly correlated in the present study, it may be that high discrepancy types are older, and low discrepancy types are younger, thus explaining reporting of insomnia, considered more "normal" for older persons.

A methodological problem, which became apparent in the interpretation of findings, was the construction of Mobility Typology and the combining of Types 1 - 2 and 7 - 8. It could have been simpler and

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[15]The sub-study consisted of two parts. First, 1970 Census data was used to obtain the number of health workers within a one and one-half mile radius from the center of each stress area. Second, 746 reported physician addresses were pinpointed on a map of Detroit and coded by stress area patient. The purpose was to assess travelling patterns to "available" physicians. Private physicians offices are most heavily located in Northwest and Northeast Detroit, locations of the black and white low stress areas. Hospitals and clinics abound in the black high stress area, with few hospitals or physicians in the white high stress area. Travel patterns indicate that black low stress residents travel an average of 18 1/2 miles to visit inner city physicians despite the "availability" of physicians in Northwest Detroit. Black and white high stress and white low stress travel an average of 9 1/2 miles to various locations.

more useful to operationalize the "stressor" by one component of the index, such as perceived difficulty. Combining the two highest and the two lowest in mobility discrepancy types became interpretative chaos. Type 1 and Type 7 differ qualitatively, (though not statistically on symptoms or HSU) from Types 2 and 8 respectively. Comparisons could have been made, say between Types 2 and 7, based on their qualitative content (e.g., differing on achievement orientation) and/or on the fact that they generated the most variance in reporting of symptoms. Number of discrepancies was not an easily interpretable measure, although helpful in forming an ordinal scale.

Finally, another "living with the data" phenomenon was the population, which represents extremes in the socioeconomic variables associated with reporting of stress-related symptoms and HSU. The two extremes may statistically offset each other so as to create a "normal" population in terms of means. Still, generalization of the results must be confined to groups of the same composition, e.g., black, married, female, between 30 - 55, living with spouse, in a high stress neighborhood in a large city.

A second consideration is the problem of interpretation. As stated above, the methodology of social mobility index construction left little scope in interpreting the findings. Importance, mobility difficulty, achievement orientations are qualitatively different concepts, while together they represent only a number of mixed discrepancies.

An additional problem in interpretation relates to the respondent and physician beliefs regarding illness and illness behavior. The original questionnaire provides only one thing that the respondent can report--his symptoms. As suggested by Kirscht (1971), information

is useful if accompanied by other data which facilitate program planning and evaluation. These data are: respondent knowledge and beliefs regarding his symptoms; his health practices; his lay referral system and his views about physician services. This information was not requested in the original questionnaire. Also missing are physician attitudes regarding the seriousness of symptoms such as insomnia and nervousness. It is therefore impossible to interpret motivation for seeking care, physician response if symptoms are reported, and socially accepted methods of treatment, e.g., drug store remedies versus physician care. As an example, the annual physician visits of approximately two is low when compared to the National Health Survey average for the general population of over four. Does this contrast mean that the study population is healthier, has less availability of services, uses lay referral systems more, or what?

A final but critical problem in interpretation deals with causality. For example, it is just as plausible to predict that persons troubled by insomnia and nervousness find difficult the struggle for mobility as it is to say that finding mobility difficult causes nervousness and insomnia. On the basis of other empirical findings and existing theory, one might favor the latter explanation. Nevertheless, data are missing which would reveal a time sequence of events, thus helping to establish causal direction.

Suggestions for Further Research

Two areas should be discussed for further research. One is elaborations on or additions to findings as they stand in the present

study. The other is an alternative approach to research on the etiology of stress-related symptoms.

Several findings suggest areas for further investigation. First, the Mobility Types revealed a composition heavily influenced by sex, race and community stress area. Of descriptive interest would be further elaboration on the composition of mobility types, using such variables as age, income, occupation, density and indebtedness.

The findings suggested some basic difference between black and white females in pursuing care for nervous problems. A second investigation would be that of acquiring more information regarding the differences between these and other "at risk" groups with nervousness and insomnia. For instance, mobility types could be compared with each other individually, rather than in combination, or by achievement-orientation, or on just "difficulty" or "importance." Other stress variables are needed, such as anger, guilt, and marital discord, to complete the etiological picture of nervousness/insomnia/nervous breakdown. To complete the continuum of whether or not treatment is received by "risk groups," detailed information is needed on perception of severity of symptoms, frequency, recency and purpose of physician visit, and lay referral systems.

A third investigation which might be useful is the comparison of "at risk" symptomatic groups of all Mobility Types with each other on an adequate measure of Health Services Utilization. If one controlled for sex and race, this comparison would indicate whether or not differences in utilization are based on Mobility Type membership, rather than sex or race, thus suggesting that certain Mobility Types should be target groups for health care programs.

The findings indicated that social mobility is associated with stress-related symptoms in certain sex-race groups. Because of this, a fourth suggestion for further investigation is the use of status discrepancy, based on social mobility, as a predictor of stress symptoms. Status discrepancy could be measured by a status profile index which would include achievement orientation plus additional information such as, employment status, education, income, intergenerational mobility, recent promotions, occupation and race. The status profile would be hypothesized to predict symptoms. If status discrepant "risk groups" were identified, they could be observed on more appropriate and adequate measures of Health Services Utilization in order to identify target populations for mental health programs.

A basic issue in this study as in any research is the relationship of the theoretical background to the empirical outcome, always expressed in the hypotheses. The process of multifaceted psychic stimuli culminating in physiological response is not clearly understood. The long-run task is to construct the relationships step-by-step, over time. In the meantime, one makes assumptions, draws heavily on deductions, predicts, and has expectations that certain outcomes will emerge. Westie (1957) has suggested that in cases where precise theory is lacking, as it is in understanding the etiology of stress-related illness, it is useful to construct alternative sets of expectancies. The idea is to let the data lead to a decision between alternatives based on repetition of results.

Alternative expectancies in the present study may be listed as follows:

Expectation 1: Persons in Mobility Type 8 report more stress-related symptoms than any other Mobility Type. The interpretations are: (1) Type 8 persons have more psychic stress than all other types; (2) Psychic stress leads to stress-related symptoms; (3) Persons who aspire to upward mobility will report more symptoms because the group to which they aspire reports more symptoms; and/or (4) They may report more stress-related symptoms because health care providers have drawn their attention to them.

Expectation 2: Persons in Mobility Type 8 report fewer symptoms than any other Mobility Type. The interpretations are: (1) Type 8 persons are too busy to be concerned with symptoms; (2) Type 8 persons would not want to report anything which might be detrimental to upward mobility; (3) Conflicts involved in being a Type 8 serve a constructive role in preparing the organism for continuous stress. He therefore solved the conflict and doesn't experience stress-related symptoms; and/or (4) Type 8 persons receive so much effective health care that their symptoms disappear.

Similar sets of expectancies and interpretations could be formulated for the link from symptoms to HSU.

Such a list of contrasting deductions, supporting two alternative relationships, would be the strategy of choice by this author if similar future exploratory expeditions are to be designed, or if the present study was redesigned. If alternative sets of expectancies and their respective interpretations are outlined from the onset of design, it would facilitate appropriate choice of variables for observation, comparison and control in guiding the analysis toward one expectancy or its antithesis.

APPENDIX A

QUESTIONNAIRE

Questions Used in the Present Study

Questions are outlined below using the same form and item number of the original complete questionnaire. The items have been edited eliminating interviewer cues and numerical coding blanks which are irrelevant to the present study.

FORM 1

Respondent (R) identification

Sex

Race

Stress area

4. Now, I want to ask some questions about your health and habits. First, please tell me the date you were born, your birth date?

BIRTHDATE

Jan.	Feb.	Mar.	Apr.	May	June
___	___	___	___	___	___
Jly.	**Aug.**	**Sep.**	**Oct.**	**Nov.**	**Dec.**
___	___	___	___	___	___

31. What (is/was) your father's nationality, that is, his national background?

38. What (is/was) your mother's nationality, that is, her national background?

42. Next, some questions about your own health. Do you have a regular doctor or one you will try to see first if you get sick?

____Yes, Doctor

____Yes, Clinic

____ None

43. How many times did you go to a doctor or clinic during the last 12 months?

____Have not gone at all

____Once

____2 or 3 times

____4 or more times

44. Do you generally go to a doctor or clinic for physical checkups?

____Yes ____No

45. Have you ever been troubled by being overweight?

____Yes ____No

53. Are you pregnant now?

____Yes

____DK

____No

60. (ASK EVERYONE) Now please tell me if you ever, at any time in your life, had high blood pressure?

____Yes ____No

67. How often are you bothered by acid indigestion or sour stomach?

____2 or 3 times a week

____Once a week

____Once or twice a month

____A few times a year

____Never

68. Has a doctor ever told you that you had a duodenal or stomach ulcer?

____Yes ____No

69. Was this ulcer proven by either an x-ray or by an operation? (IF YES): Which one?

____No ____Yes, Operation

____Yes, X-Ray ____Yes, Both

70. Next, about how often do you have any trouble in getting to sleep or staying asleep? Would you say...

____Very often
____Fairly often
____Occasionally
____Rarely
____Never

71. How often are you bothered by feeling nervous or tense? Would you say...

____Very often
____Fairly often
____Occasionally
____Rarely
____Never

73. Have your ever in your life felt that you were going to have a nervous breakdown?

____Yes ____No

74. When--in what year--was the last time that happened?

Last two digits of year _____

76. Have you ever gone to a doctor, psychiatrist, clinic, or any other person or place for problems of nervousness or tension?

____Yes ____No

77. Next, about your chest area; have you ever had any pain or discomfort in your chest?

____Yes ____No

86. How many of these attacks (chest pain) have you had in the last year?

No. of Attacks _____

89. Was the place you were raised in...

____A farm area or village (less than 2500)
____A small town (2500--30,000)
____Around a city
____Or in a city

90. What year did you come to live in Detroit?

Last two digits of year _____

98. What kind of work did your (father) do most of the time when you were growing up?

99. What kind of business or industry was that in?

100. Did he work for someone else or for himself?

106. What was the last grade in school you completed?

Last Grade in School	Last Year of College
____6th or less	____One year
____7th	____Two years
____8th	____Three years
____9th	____College degree
____10th	____Graduate work
____11th	____Master's degree
____High School diploma	____Ph.D. or M.D. degree

113. (Nurse: Mark one)

If R is White:	If R is Negro:
____Fair (White)	____Very light
____Somewhat fair	____Somewhat light (tan)
____Somewhat dark	____Somewhat dark (brown)
____Dark	____Very dark (brown or black)

FORM 2M

1. Now I'd like to ask about the work you usually do these days. First, do you have a job and work for pay, are you looking for work, or what?

____R is working now (Skip to Q. 3)
____R is unemployed or laid-off, but usually works
____R is disabled and does not work for pay
____R is retired
____R is a housewife
____R is on welfare

3. What is the main occupation you (are/were) working at? What type of work (do/did) you do?

4. What kind of business or industry (is/was) that in?

5. (Ask if not answered) (Do/Did) you work for someone else or for yourself?

7. How many hours a week do you usually work on this job?

Hours per week _____

9. How many different companies or places have you worked at in the last five years?

Number _____

12. In the past five years how many times have you been promoted?

____Never	____Twice
____Once	____Three times
	____Four or more times

14. Right now if you had your way about it, how much would you want to find another job? Would you say...

____Very much	____Not too much
____Fairly much	____Not at all

15. At your age and with your training and skills, how hard or easy would it be for you to find another job? Would it be...

____Very hard	____Somewhat easy
____Somewhat hard	____Very easy

20. (Hand R Card C) People differ about what they think is important in a job. If you were looking for another job, how important would the following things to be to you personally?

	Not at all	Some-what	Fairly	Very	Extreme-ly
20a. ...to earn a higher wage or salary?	___	___	___	___	___
20f. ...to have a chance for getting ahead at work--that is, being promoted to a higher level?	___	___	___	___	___

21. (Hand R Card D) Now I'd like you to think about your (present/last) job and the place at which you (are now/were) working. Please read this card and tell me how much chance you actually (have/had) to do the following things on your (present/last) job?

How much actual chance (does/did) your job give you...

	Not good at all	Somewhat good	Fairly good	Quite good	Very good
21a. ...to earn a higher wage or salary?	___	___	___	___	___

21. (cont.)	Not good at all	Somewhat good	Fairly good	Quite good	Very good
21f. ...to get ahead at work--that is, to be promoted to a higher level?	___	___	___	___	___

36. (Hand R Card C) Women differ about what they think is important in their lives. For the next few questions, please look at this card and tell me just how important these things might be to you personally. How important is it to you...

	Not at all	Somewhat	Fairly	Very	Extremely
36a. ...to have a better family income?	___	___	___	___	___
36f. ...to have your husband get ahead in his work--that is, be promoted to a higher level job or move to a better job?	___	___	___	___	___

37. (Hand R Card D) Now I'd like you to think about the actual chances that your present life allows you to have. How much actual chance is there...

	Not good at all	Somewhat good	Fairly good	Quite good	Very good
37a. ...to have a better family income?	___	___	___	___	___
37f. ...to have your husband get ahead in his work--that is, be promoted to a higher level job or move to a better job?	___	___	___	___	___

39. (Hand R Card C) People have different feelings about whether some things in life are important to them. For the next few questions, please look at this card and tell me just how important these things might be to you personally.

	Not at all	Somewhat	Fairly	Very	Extremely
39h. ...to get ahead in life and move up in the world?	___	___	___	___	___
39i. ...to have enough money so that you and your family can live as you would like to?	___	___	___	___	___

46. (Spouse) What is the main occupation (he/she) (is/was) working at? What type of work (does/did) (he/she) do?

47. What kind of business or industry (is/was) that in?

48. (Ask if not answered) (Does/Did) (he/she) work for someone else or for (himself/herself)?

50. (Housewives) How many hours a week does he usually work on his job?

Hours per week _____

52. (for Spouse) How many different companies or places has (he/she) worked at in the last five years?

Number _____

55. (for Spouse) In the past five years how many times has (he/she) been promoted?

___Never ___Three times
___Once ___Four or more times
___Twice

92. How many of your children are now living at home with you?

___All of them

None	1	2	3	4	5	6	7	8	9+
___	___	___	___	___	___	___	___	___	___

FORM 3

1. (for Males) (Hand R Card G) All of us at times try to look at our life and judge how we're doing. I'd like to ask you some questions about how you yourself feel you have handled certain things in the last few years.

(In the last few years) how well have you...	Not done well at all	Not done too well	Done somewhat well	Done fairly well	Done very well	Done extremely well
1L. ...done at getting ahead in life and moving up on the world.	___	___	___	___	___	___
1m. ...done at having enough money so you and your family can live as you would like to?	___	___	___	___	___	___

If R is a Housewife:

1n. ...done at getting ahead in life and moving up in the world?	___	___	___	___	___	___
1o. ...done at having enough money so you and your family can live as you would like to?	___	___	___	___	___	___

4. Now we'd like to talk a little bit about the place you live in. First, how long have you lived here, at this address?

Years _____

Months ___1-4 ___5-8 ___9-11

5. (If less than five Years) How many times have you moved in the last five years?

___Once ___Twice ___Three times ___Four times ___Five or more

6. Was the last place you lived in before moving here a...

___Rented apartment or flat
___A rented house
___A house you had a mortgage on
___Or a house you owned outright

7. How many persons live here in this (house/apartment)--including yourself and everyone (not visitors who will leave)?

No. of Persons ____

8. How many rooms are there in this (house/apartment), not counting the bathroom(s)?

No. of rooms ____

14. Right now, if you had your way about it, how much would you want to move to a different neighborhood? Would you say...

___Very much
___Fairly much
___Not too much
___Or not at all

15. How hard or difficult would it be for you to actually move to a different neighborhood, say in the next year or two? Would it be...

___Very hard
___Somewhat hard
___Not too hard
___Not hard at all

16. If you wanted to move to a neighborhood you like, how much actual chance would there be for you to move there in the next year or two? Would you say...

___A very good chance
___Fairly good chance
___Somewhat good
___Not too good
___Or no chance at all

83. (If R is working now) Next, how much are you now earning on your occupation or job, before taxes?

84. (If R is married and R's Spouse is working now) How much is your (husband/wife) now earning on (his/her) occupation or job, before taxes?

85. (Ask everyone) Does anyone else in your family who lives here with you have a job and is working now?

____Yes ____No

86. For each of these persons who is now working, please tell me how much each one is now earning on his or her job, before taxes?

87. (Ask everyone) Do you, or anyone else in your family who lives here, have any other sources of income? Say from rent or dividends. or from welfare, social security, unemployment, or disability payments?

____Yes ____No

88. Please tell me, for each person, how much income he or she gets from this source?

89a. Cars in Family:

____No car in family
____One car in family
____Two or more cars

89d. House payments or rent:

____R is renting an apartment or flat
____R is renting a house
____R is buying a house
____R owns house (makes no payments)

APPENDIX B

INDEX CONSTRUCTION

1. Density Index

Component variables:

a. Number of persons here/Number of rooms here
b. Living Space Small (interviewer observation)
   1) Large
   2) Medium
   3) Small

c. Living Space Crowded (interviewer observation)
   1) Spacious
   2) Average
   3) Crowded

b and c summed, recoded to
1) 2-3 Large/spacious; large/average; medium/spacious
2) 4 Large/crowded; medium/average; small/spacious
3) 5-6 Medium/crowded; small/crowded; small/average

3-point variable multiplied by Persons/Room for Density Index

Regrouped variables:		
	0. <.9	Less dense
	1. 1.0 - 1.7	
	2. 1.8+	More dense

2. 4 BP Categories

Original Variables: Mean of first three blood pressures, categorized:

4 Systolic Categories

1.	< 119mm	Low
2.	120-139	Normal
3.	140-159	Borderline
4.	160+	Hypertensive

4 Diastolic Categories

1.	< 83mm	Low
2.	84-89	Normal
3.	90-94	Borderline
4.	95+	Hypertensive

4 BP Categories, combines these:

4 Diastolic Categories	4 Systolic categories: 1	2	3	4
1	1	2	3	4
2	2	2	3	4
3	3	3	3	4
4	4	4	4	4

1. Low
2. Normal
3. Borderline
4. Hypertensive

3. Ulcer Index

Original Variables:

a. Doctor said Ulcer
   0. No (if no, How Proven not asked)
   1. Yes

b. How Ulcer Proven
   0. Ulcer not proven
   1. Proven by x-ray
   2. Proven by operation or both operation and x-ray

Sum these two variables for Ulcer Index:
   0. No ulcer
   1. Yes ulcer/not proven
   2. Yes ulcer/proven by x-ray
   3. Yes ulcer/proven by operation or both operation and x-ray

4. Myocardial Infarction Index

Original Variables:

a. Chest Pain Last Over 1/2 Hour
   0. No
   1. Yes

b. Number of Attacks in Last Year
   0-6 = 0-6
   7. 7+

Sum these two variables for Myocardial Infarction Index:

   0. No attacks
   1. 1 attack/pain <1/2 hour
   2. 2 attacks/pain <1/2hour; 1 attack/pain >1/2 hour
   3. 3 attacks/pain <1/2 hour; 2 attacks/pain >1/2 hour
   4. 4 attacks/pain <1/2 hour; 3 attacks/pain >1/2 hour
   5. 5 attacks/pain <1/2 hour; 4 attacks/pain >1/2 hour
   6. 6 attacks/pain <1/2 hour; 5 attacks/pain >1/2 hour
   7. 7+ attacks <1/2 hour; 6 attacks/pain >1/2 hour
   8. 7+ attacks/pain >1/2 hour

5. Cardiovascular Index

Sum the following variables:

a. Ever had Diabetes
   0. No
   1. Yes

b. Ever had Kidney Trouble
   0. No
   1. Yes

c. Ever had Stroke
   0. No
   1. Yes

d. Ever had Heart Trouble
   0. No
   1. Yes

Cardiovascular Index:

0. No cardiovascular history - 4. All cardiovascular traits

6. Family Income

Component Variables:

a. Respondent's earnings
b. Spouse's earnings
c. All other family members earnings
d. Respondent's income from all other sources
e. Spouse's earnings from all other sources
f. All other family members income from other sources

a-f are summed for Grouped Family Income

0. 6,999
1. 7,000 - 8,999
2. 9,000 - 10,999
3. 11,000 - 12,999
4. 13,000 - 14,999
5. 15,000 - 16,999
6. 17,000 - 20,999
7. 21,000

7. Health Services Utilization Index (HSU Index) (Not used due to reliability coefficient of .49, see page 51)

Component Variables:

a. Times to the physician/clinic in the past year.
   0. None
   1. Once
   2. 2-3
   3. 4+

b. Respondent has routine physical checkups
   0. No
   1. Yes

7. Health Services Utilization Index (HSU Index) cont.

c. Respondent has a regular physician/clinic
   0. No
   1. Yes

b and c are combined and recoded to d

d. First HSU Index[a]
   1. No physician, no physical checkup
   2. Regular physician, no physical
   3. No physician, regular physical checkup
   4. Regular physician, regular checkup

d and a are recoded to the HSU Index

Table 1.

Construction of the Health Services Utilization Index

a. Times to physician or clinic in past year	d. First Index 1	2	3	4
0	1	2	3	4
1	2	3	4	5
2	3	4	5	6
3	4	5	6	7

1. No utilization

7. Highest utilization

(See variable 113 in Appendix C for detailed description of HSU Index Coding)

8. Social Mobility Index

Social Mobility types are constructed for several concepts of social mobility, and are outlined as follows:

(1) Social Mobility in Socioeconomic Status (occupational, financial) (See questions 20, 21, 36, 37 and 39, Form 2M, Appendix A)

---

[a]Note that greater weight is given to having a routine physical examination over having a regular physician. The assumption is made that a routine physical examination is a more definite indication that the respondent is actually utilizing health services than is just having a regular physician or clinic.

8. Social Mobility Index cont.

Component Variables:

a. Importance of having enough money
   1. Not very important
   2. Very important

b. Importance of earning more money
   1. Not very important
   2. Very important

c. Change of earning more money
   1. Difficult
   2. Not difficult

d. Importance of advancement at work

e. Importance of getting ahead in the world

f. Chance of advancement
   1. Not too good
   2. Very good

a and c, b and c, c and e, d and f, and e and f were combined and recoded to 4 "achievement orientation" variables:

Table 2.

Achievement Orientations

Perceived Difficulty in Attaining Highest Status / Chance of (earning more money, advancement)	Perceived Important of Social Mobility / Important of (having enough money, earning more money, advancement at work, getting ahead in the world)	
	Very Important	Not Very Important
Not Too Good (Difficult)	A	C
Very Good (Not Difficult)	B	D

8. Social Mobility Index cont.

g. To form 4 Achievement Orientations:
   1. A, Important and difficult
   2. B, Important and not difficult
   3. C, Not important and difficult
   4. D, Not important and not difficult

Component Variables continued:

h. Promoted during the past five years
   0. Never
   1. Once
   2. Twice
   3. Three times
   4. Four+

i. How well have you done at getting ahead and moving up in the world
   1. Not too well
   2. Very well

j. How well have you done at having enough money so you and your family can live as you would like to.
   1. Not too well
   2. Very well

k. Intergenerational Mobility[a]
   1. Downward
   2. Same
   3. Upward

Achievement Orientations (g) were combined with h, i, j, and k in the following manner:

*Promotion - Advancement 1 (Occupational Mobility 3)
- Importance of advancement at work
- Perceived difficulty of advancement
- Times promoted

Promotion - Advancement 2
- Importance of getting ahead in the world
- Perceived difficulty of advancement
- Times promoted

Intergenerational - Advancement 1
- Importance of advancement at work
- Perceived difficulty of advancement
- Intergenerational mobility

---

[a]Intergenerational Mobility is based on Duncan Occupational status scores for head of household occupations and occupation of respondent's father. For more detail see Variables 62, 63 and 99 in Appendix C.

*Used in testing the social mobility hypotheses and renamed "Occupational 1, 2, and 3."

*Intergenerational - Advancement 2 (Occupational Mobility 1)
- Importance of getting ahead in the world
- Perceived difficulty of advancement
- Intergenerational mobility

*Done at advancing 1 (Occupational Mobility 2)
- Importance of advancement at work
- Perceived difficulty of advancement
- How well have you done at getting ahead in the world

Done at advancing 2
- Importance of getting ahead in the world
- Perceived difficulty of advancement
- How well have you done at getting ahead in the world

Done at earning money 1
- Importance of having enough money
- Perceived difficulty of earning more money
- How well have you done at having enough money

Done at earning money 2
- Importance of getting ahead in the world
- Perceived difficulty of earning more money
- How well have you done at having enough money

**Done at earning money 3 (Financial Mobility)
- Importance of higher pay
- Perceived difficulty of earning more
- How well have you done at having enough money

(2) Social Mobility in Change of Residence and Ownership

Component Variables

a. Present residence
   1. Rent house or apt.
   2. Buying or own home

b. Type last residence
   1. Rent house or apt.
   2. Buying or own home

a and b were combined and recoded as:

c. Residential Mobility
   1. Downward (ownership to rental)
   2. Same
   3. Upward (rental to ownership)

---

*Used in testing the social mobility hypotheses and renamed "Occupational 1, 2, and 3."

**Used in testing social mobility hypotheses and renamed "Financial Mobility."

8. Social Mobility Index cont.

Component Variables cont.

d. Moved in 5 years
   1. No
   2. Yes

e. Importance of moving
   1. Not important
   2. Important

f. Chance to move
   1. Not good
   2. Good

g. Difficulty moving
   1. Difficult
   2. Not difficult

e and f, f and g were combined and recoded to Achievement Orientations in a manner similar to Social Mobility in Socioeconomic Status.

Achievement Orientations were combined with c and d in the following manner:

Residential Mobility 1
- Importance of moving
- Chance to move
- Residential mobility

Residential Mobility 2
- Importance of moving
- Difficulty moving
- Residential mobility

Residential Mobility 3
- Importance of moving
- Chance to move
- Times moved in 5 years

Residential Mobility 4
- Importance of moving
- Difficulty moving
- Times moved in 5 years

8. Social Mobility Index cont.

Each of the thirteen combinations described above for Social Mobility in Socioeconomic Status and Residential Social Mobility was recoded as follows:

Table 3.

Mobility Types

	Achievement Orientation A	B	C	D
Non-Mobile or downward	Type 8 Important Difficult Non-Mobile	Type 3 Important Not difficult Non-Mobile	Type 5 Not important Difficult Non-Mobile	Type 1 Not important Not difficult Non-Mobile
Upwardly Mobile	Type 6 Important Difficult Upwardly Mobile	Type 2 Important Not difficult Upwardly Mobile	Type 7 Not important Difficult Upwardly Mobile	Type 4 Not important Not difficult Upwardly Mobile

Types: 1,2 = zero inconsistencies between Achievement Orientation and Mobility
3-6 = one inconsistency each
7-8 = two inconsistencies each

APPENDIX C

DICTIONARY

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Dictionary for Constant and Control Variables

Var #	Variable Name and Code	Source: PUHR Merge Tape	Recode Variable	Questionnaire: Form	Item
1	Respondent identification	1		1,2,3	
2	Age	2		1	4
3	Grouped age 0. under 24 5. 45-49 1. 25-29 6. 50-54 2. 30-34 7. 55-59 3. 35-39 8. 60+ 4. 40-44	9,2	7,8 combined	1	
4	Sex 0. Male 1. Female	3,1		1	
5	Race 0. Black 1. White	4,1		1	
6	High-Low Stress 0. High 1. Low	5,1		1	

Constant and Controls, cont

Var #	Variable Name and Code	Source: PUHR Merge Tape	Recode Variable	Questionnaire: Form	Item
7	4-Point Skin Color 1. Light 2. Somewhat light 3. Somewhat dark 4. Dark	6		1	113
8	Stress Area Sample - Stress, Race, Sex 1. Black Male High 2. Black Male Low 3. White Male High 4. White Male Low 5. Black Female High 6. Black Female Low 7. White Female High 8. White Female Low	8,1		1	
9	Grouped Family Income 0. 0-6999 5. 15000-16999 1. 7000-8999 6. 17000-20999 2. 9000-10999 7. 21000+ 3. 11000-12999 4. 13000-14999	125	0,1 2 3,4 5,6,7	3	83-88
10	Grouped Education Level 0. Less than 7 1. 8th 2. 9-10th 3. 11th 4. High School diploma 5. Some college 6. College Graduate 7. Some graduate to MA degree 8. Advanced degree	104	83	1	106
11	Regrouped years at address: 2 0. less than 1 yr. 1. 1-4 yrs 2. 5+ yrs	152	84	3	4
13	Grouped work hrs/week 1. Less than 10 2. 11-20 3. 21-30 4. 31-40 5. 41-50 6. 51-60 7. 61+	1011	85	2	7
14	Grouped hrs Spouse work/week (same as 13)	1016		2	50

Constant and Controls, cont

Var #	Variable Name and Code	Source: PUHR Merge Tape	Recode Variable	Questionnaire: Form	Item
15	Work Status 1. Housewife 2. Unemployed, disabled, retired, on welfare, not worked for 5 years 3. Unemployed, not worked for 4 years 4. Working now	877	86	2	1
16	Grouped Children at Home 0. None 1. 1-2 2. 3 3. 4+	190	87	7	93
17	Regrouped Density: 1 0. Low 1. Medium 2. High	188(see details Appendix B, Item 1)		3	7,8
18	Regrouped People Here 0. 2 1. 3-4 2. 5 3. 6+	186		3	7
19	Number of Cars in Family 0. No car 1. One 2. 2 or more	1000		3	89a
20	Regrouped Father Nationality White 0. American 1. Canada, Britain Neth., Ire., Scan. 2. France, Belgium 3. Aust., Switz., Ger. 4. Poland, Russ., Slovak, East. Eur. 5. S. Eur. & Latin Amer. 6. Middle East, Asia 7. Don't know Black 0. Negro 1. Amer., Amer. Negro, Canadian Negro, Neg. Amer. 2. Black Amer., Afro-Amer., Black, Soul Bro/Sis., African 3. Indian, Black-Indian 4. N. Indian, Jamaican 5. Negro Mix (white, Arab, etc.) 6. Colored 7. Don't know	821		1	31
21	Regrouped Mother Nationality (Same as 20)	822		1	38
119	Pregnant Now 1. No 2. Yes	428		1	53

Dictionary for the Dependent Variables, Health Services Utilization

Var #	Variable Name and Code	Source: PUHR Merge Tape	Recode Variable	Questionnaire: Form	Item
22	Times to Doctor in Past Year 0. None 1. Once 2. 2 or 3 3. 4+	74		1	43
23	Respondent has Physical Checkups 0. No 1. Yes	75		1	44
24	Respondent has Regular Doctor or Clinic 0. No 1. Yes	76		1	42
25	Respondent seen Doctor for Nerves 0. No 1. Yes	236		1	76

Dictionary for the Independent Variables, Social Mobility

Var #	Variable Name and Code	Source: PUHR Merge Tape	Recode Variable	Questionnaire: Form	Item
26	Size of Childhood Residence 0. Rural, less than 2500 1. Town, 2500-30,000 2. City, 30,000+	713		1	89
27	Grouped Age Moved to Detroit 0. Raised in Detroit 4. 20-24 1. Less than 10 yrs 5. 25-29 2. 10-14 yrs 6. 30-34 3. 15-19 7. 35-44	723		1	90
28	Grouped Fathers Occupation 0. Professional 1. Manager, Manager (Self-Employ) 2. Clerk 3. Sales 4. Craft 5. Operative 6. Household 7. Service 8. Laborer 9. Not in Labor Force	1040		1	98-100
29	Grouped Head of Household Occup. (same as 28)	31		2	3-4 46-48
30	Renting or Buying Now 1. Rent apartment or Flat 2. Rent house 3. Buying house 4. Own home	1005		3	89d
31	Type of Last Residence (same as 30)	370		3	6
32	Times Moved in Last 5 Years 0. 0 1. 1 2. 2 3. 3 4. 4 5. 5+	369		3	5
33	Times Promoted Last 5 Years 0. Never 3. Three times 1. Once 4. 4+ 2. Twice	884		2	12

Independent Variables, Cont

Var #	Variable Name and Code	Source: PUHR Merge Tape	Recode Variable	Questionnaire: Form	Item
34	Times Spouse Promoted in Last 5 Years (Same as 33)	946		2	55
35	Number of Places Worked in 5 yrs	880		2	9
36	Number of Companies Spouse Worked in 5 Years	942		2	52
37	Want to Find a New Job 1. Not at all 2. Not much 3. Fairly much 4. Very much	886		2	14
38	Importance of Higher Pay (Same as 37, with 5. Extremely)	889		2	20a
39	Importance of Advancement (Same as 38)	894		2	20f
40	Importance More Family Income (Housewives) (Same as 38)	910		2	36a
41	Importance of Husband Advance (Same as 38)	915		2	36f
42	Importance Get Ahead (Same as 38)	929		2	39h
60	Importance Enough Money 1. Not at all 2. Somewhat 3. Fairly 4. Very 5. Extremely	930	69	32	39i
43	Ease to Find New Job 1. Very easy 2. Somewhat easy 3. Somewhat hard 4. Very hard	887		2	15
44	Chance to Earn More 1. Not good at all 2. Somewhat good 3. Fairly good 4. Quite good 5. Very good	895		2	21a

Independent Variables, Cont

Var #	Variable Name and Code	Source: PUHR Merge Tape	Recode Variable	Questionnaire: Form	Item
45	Chance to Advance (Same as 44)	900		2	21f
46	Chance Husband Advance (Housewives) (Same as 44)	921		2	37f
47	Chance of More Income (Housewives) (Sames 44)	916		2	37a
12	How Well Have You Done-- Advance in Life 1. Not done well at all 2. Not too well 3. Somewhat well 4. Fairly well 5. Very well 6. Extremely well	955	67	3	1L 3n
61	How Well Have You Done-- Enough Money to Live as You Would Like 1. Not done well at all 2. Somewhat 3. Fairly 4. Very 5. Extremely	956	68	3	1m 3o
48	Want to Move 1. Not at all 2. Not too much 3. Fairly much 4. Very much	378		3	14
49	Hard to Move 1. Not hard at all 2. Not too hard 3. Somewhat hard 4. Very hard	379		3	15
50	Chance to Move 1. Very good 2. Fairly good 3. Somewhat good 4. Not too good 5. No change	380		3	16

Dictionary for Intervening Variables, Symptoms and Signs of Stress Related Illnesses

Var #	Variable Name and Code	Source: PUHR Merge Tape	Recode Variable	Questionnaire: Form	Item
51	Low-High % (Overweight) 0. Underweight/Normal/ 12% Overweight 1. 13% + Overweight	503		1	4,17,18
52	Trouble with Overweight 0. No 1. Yes	423		1	45
53	Respondent has High Blood Pressure 0. No 1. Yes	436		1	60
59	4-Blood Pressure Category 1-3 (See Details Appendix B, Item 2) 1 = low 2 = normal 3 = borderline 4 = hypertensive	19	78		
54	Chest Pain Attacks 0. None 4. 7-8 1. Less than 2 5. 9-10 2. 3-4 6. 11+ 3. 5-6	492	121 MI Index	1	77,86
55	Frequency of Indigestion 0. Never 1. A few times/yr 2. 1-2/month 3. 1/week 4. 2-3/week	212	80	1	67
56	Frequency of Insomnia 0. Never 1. Rarely 2. Occasionally 3. Fairly Often 4. Very Often	213	81	1	70
57	Frequency of Nervousness (Same as 56)	214	82	1	71
58	Nervous Breakdown (Years Since Expected) 0-7. 0-7 Years 8. 8+	448		1	73,74

Intervening Variables,Cont

Var #	Variable Name and Code	Source: PUHR Merge Tape	Recode Variable	Questionnaire: Form	Item
120	Ulcer Index (Details, Appendix B Item 3) 0. No ulcer 1. Possible ulcer 2. Definite ulcer	462	0 1,2	1	67-69
121	Myocardial Infarction Index (See details Appendix B, Item 4) 0. 0-6, No Myocardial Infarct. 7. 7+, probable Myocardial Infarct.	463		1	77,86
122	Cardiovascular Index (See details Appendix B, Item 5) 0. No cardiovascular history 4. All cardiovascular traits (diabetes, kidney trouble, stroke, heart trouble)	465		1	65

Recode Dictionary

Var #	Variable Name and Code	Source Variable	Recode Variable
62	Fathers Occupation 1. Operative, household, service laborer, not in labor force 2. Professional, craft, sales, clerk, manager self-employed	28	99
63	Heads of Household Occupation (Same as 62)	29	99
64	Rent/Buy Now 1. Rent 2. Own	30	100
65	Type Last Residence 1. Rent 2. Own or Buying	31	100
66	Promoted last Five Years 1. No 2. Yes	33	101,102
67	Done At Advancing 1. Not too well 2. Very well	12	107,108
68	Done at Having Enough Money 1. Not very important 2. Very important	61	109,110,111
69	Importance of Enough Money 1. Not very important 2. Very important	60	94
70	Importance of Advancement 1. Not very important 2. Very important	39,41	92
71	Importance of Higher Pay 1. Not very important 2. Very important	38,40	96
72	Importance of Getting Ahead in the World 1. Not very important 2. Very important	42	93,95
73	Importance of Moving 1. Not important 2. Important	48	97

Recode Dictionary, Cont

Var #	Variable Name and Code	Source Variable	Recode Variable
74	Chance to Earn More 1. Not too good 2. Very good	44,47	94,95,96
75	Chance to Advance 1. Not too good 2. Very good	45,46	92,93
76	Chance to Move 1. Not good 2. Good	50	97
77	Difficulty Moving 1. Difficult 2. Not difficult	49	98
78	Blood Pressure Category 1. Normal or low 2. Borderline or Hypertensive	59	
79	Chest Pain 1. None 2. One or more attacks a year	54	
80	Frequency of Indigestion 1. Never 2. A few times a year 3. 1-4 times a month 4. 2-3 times a week	55	1,2 3,4
81	Frequency of Insomnia 1. Never 2. Rarely 3. Occasionally 4. Often	56	1,2 3,4
82	Frequency of Nervousness 1. Never, rarely 2. Occasionally 3. Often	57	1,2 3
83	Educational Level 1. Less than High School 2. High School Graduate 3. College	10	
84	Years at Present Address 1. Less than one year 2. One year or more	11	

Recode Dictionary, Cont

Var #	Variable Name and Code	Source Variable	Recode Variable
85	Hours Work per Week 1. 40 hours or less 2. More than 40 hours	13	
86	Work status 1. Housewife 2. Other	15	
87	Children at Home 1. None 2. Yes	16	
88	Fathers Nationality (Blacks) 1. Negro, American, Amer. Negro, Canadian Negro, Black Amer., African Amer., Black, Soul-Brother, African 2. Black Indian, Jamaican, Negro mix 3. Colored 4. Don't know	5,20	
89	Mothers Nationality (Blacks) (Same as above)	5,21	
90	Fathers Nationality (Whites) 1. American 2. Canadian or N. European 3. Central European, S. Europe, Latin America 4. Asian 5. Don't know	5,20	
91	Mothers Nationality (Whites) 1. American 2. Canada, Britain, Neth., Ire., Scan. 3. France, Belgium, Austria, Germany, Poland, Russia, Slovak, Switz., East Eur., S. Eur., L. Amer. 4. Middle East, Asia 5. Don't know	5,21	
92	Advancement Type 1 (Importance of advancement, Chance to Advance) 1. A/O A 2. A/O B 3. A/O C 4. A/O D	70,75	

Recode Dictionary, Cont

Var #	Variable Name and Code	Source Variable	Recode Variable
93	Advancement Type 2 (Importance of getting ahead, Chance to Advance)	72,75	
94	Earn More Type 1 (Importance enough money, chance to earn more)	69,74	
95	Earn More Type 2 (Importance of getting ahead, chance to earn more)	72,74	
96	Earn More Type 3 (Importance of higher pay, chance to earn more)	71,74	
97	Moving Type 1 (Importance of moving, chance to move)	73,76	
98	Moving Type 2 (Importance of moving, difficulty in moving)	73,77	
99	Intergenerational Mobility 1. Downward 2. Same 3. Upward	62,63	
100	Intragenerational Mobility (Same as 99, and based on residential change)	64,65	
101	Promotion-Advancement 1	66,92	

Importance of Advancement
Chance to Advance
Promoted

1. Non-mobile, Not difficult, Not important
2. Mobile, Not difficult, Important
3. Non-mobile, Not difficult, Important
4. Non-mobile, Not difficult, Not important
5. Mobile, Difficult, Not important
6. Mobile, Difficult, Important
7. Mobile, Difficult, Not important
8. Non-mobile, Difficult, Important

Recode Dictionary, Cont

Var #	Variable Name and Code	Source Variable	Recode Variable
102	Promotion-Advancement 2 Importance of Getting Ahead (Same as 101) Chance to Advance Promoted	66,93	
103	Residential Mobility-Moving 1 Importance of Moving Chance to Move	97,100	114
104	Residential Mobility-Moving 2 Importance of Moving Difficulty Moving Residential Mobility	98,100	115
105	Intergenerational-Advancement 1 Importance of Advancement Chanct to Advance Intergenerational Mobility	92,99	116
106	Intergenerational Advancement 2 Importance of Getting Ahead Chance to Advance Intergeneraltional Mobility	93,99	117
107	Done Advancing-Advance 1 Importance of Advancement Chance to Advance Done at Advancing	67,92	
108	Done Advancing-Advance 2 Importance of Getting Ahead Chance to Advance Done at Advancing	67,93	
109	Done-Money-Earn 1 Importance of Having Enough Money Chance to Earn More Done at Having Enough Money	68,94	
110	Done Money-Earn 2 Importance Getting Ahead Chance to Earn More Done at Having Enough Money	68,95	

Recode Dictionary, Cont

Var #	Variable Name and Code	Source Variable	Recode Variable
111	Done Money-Earn 3 Importance of Higher Pay Chance to Earn More Done at Having Enough Money	68,96	
112	Health Services Utilization Index-1 1. No physician, no physical 2. Regular physician, no physical 3. No physician, regular physical 4. Regular physician, regular physical	23,24	113
113	Health Services Utilization Index-2 1. No physician, no physical, no visits 2. a. No visits, regular physician, no physical b. One visit, no physician, no physical 3. a. 2-3 visits, no physician, no physical b. One visit, regular physician, no physical c. No visits, regular physician, no physical 4. a. 4+ visits, no physicians, no physical b. 2-3 visits, regular physician, no physical c. One visit, regular physician, no physical d. No visits, regular physician, regular physical 5. a. 4+ visits, no physician, regular physical b. 2-3 visits, no physician, regular physical c. One visit, regular physician, regular physical 6. a. 4+ visits, no physician, regular physical b. 2-3 visits, regular physician, regular physical 7. a. 4+ visits, regular physician, regular physical	112,25	118
114	Residential Mobility-Moving 1 Code same as 101-111 with the exception that Mobility can be either upward or downward	Correction of 103	

Recode Dictionary, Cont

Var #	Variable Name and Code	Source Variable	Recode Variable
115	Residential Mobility-Moving 2	Correction of 104	
116	Intergenerational-Advancement 1	Correction of 105	
117	Intergenerational-Advancement 2	Correction of 106	
118	Health Services Utilization Index 3 1. Categories 1-4 in V113 2. Categories 5-7 in V113	113	

BIBLIOGRAPHY

Aday, L.A. The Utilization of Health Services: Indices and Correlates; A Research Bibliography, 1972. Layfayette, Indiana: Purdue, 1972.

Andersen, R., et al. Medical Care Use in Sweden and the United States: A Comparative Analysis of Systems and Behavior. Chicago: University of Chicago Press, 1970.

Andersen, R. A Behavioral Model of Families' Use of Health Services. Research series #25, Center for Health Administration Studies. Chicago: University of Chicago Press, 1968.

Andersen, R., and Anderson, O.W. A Decade of Health Services. Chicago: University of Chicago, 1967.

Andersen, R., and Benham L. "Factors Affecting the Relationship between Family Income and Medical Care Consumption." Empirical Studies in Health Economics. Edited by Klarman. Baltimore: Johns Hopkins Press, 1970.

Anderson, O.W., and Andersen R. "Patterns of Use of Health Services." Handbook of Medical Sociology. Edited by H. Freeman, et al. Englewood Cliffs, New Jersey: Prentice Hall, 1972.

Antonovsky, A. "The Life Crisis History as a Tool in Epidemiological Research." Journal of Health and Social Behavior, 8 (March, 1967), 15-21.

Antonovsky, A. "Social Class and Illness: A Reconsideration." Sociological Inquiry, 27 (Spring, 1967), 311-322.

Avnet, Helen H. Physician Service Patterns and Illness Rate. Group Health Insurance, Inc., 1967.

Battistella, R.M. "Factors Associated with Delay in the Utilization of Physician's Care Among Late Adulthood Persons." American Journal of Public Health, 61 (July, 1971), 1348-1361.

Beck, J.D., and Cassel, J.C. "Role Consistency and Health Status." Social Science and Medicine, 6 (1972), 737-751

Bergner, L., and Yerby, A.S. "Low Income and Barriers in Use of Health Services." New England Journal of Medicine, 278 (March, 1968), 541-546.

Bice, T.W. "Medical Care for the Disadvantaged: A Report on a Survey of Use of Medical Services in the Baltimore SMSA, 1968-69, Final Report. National Center for Health Services Research and Development, Health Services Administration. Washington, D.C.: Government Printing Office, 1971.

Bice, T.W., and Eichhorn, R.L. "Socio-economic Status and Use of Physicians' Services: A Reconsideration." Medical Care, 12 (May-June, 1972), 261-271.

Blackwell, B. "The Literature of Delay in Seeking Medical Care for Chronic Illnesses." Health Education Monographs, 16 (Fall, 1963), 3-31.

Blau, P.M., and Duncan, O.D. The American Occupational Structure. New York: John Wiley and Sons, 1967.

Bloom, S.B. The Doctor and His Patient. New York: Russell Sage Foundation, 1963.

Borsky, P., and Sagen, O.K. "Motivation Toward Health Examinations." American Journal of Public Health, 49 (April, 1959), 514-527.

Brady, J.V. "Behavioral Stress and Physiological Change: A Comparative Approach to the Experimental Analysis of Some Psychosomatic Problems." New York Academy of Science, 26 (February, 1964), 483-496.

Brehm, M.L., et al. "A Physiological Effect of Cognitive Dissonance Under Stress and Deprivation." Journal of Abnormal and Social Psychology, 69 (1964), 303-310.

Caffrey, B. "Factors Involving Interpersonal and Psychological Characteristics: A Review of Empirical Findings." Milbank Memorial Fund Quarterly Part II, 45 (April, 1967), 119-139.

Campbell, D.T., and Stanley, J.C. Experimental and Quasi-Experimental Designs for Research. Chicago: Rand McNally, 1963.

Christenson, W., and Hinkle, L. "Differences in Illness and Diagnostic Signs in Two Groups of Young Men." Journal of the American Medical Association, 177 (1961), 247-253.

Cline, D.W., and Chosy, J.J. "A Prospective Study of Life Changes and Subsequent Health Changes." Archives of General Psychiatry, 27 (July, 1972), 51-53.

Coe, R.M., and Wessen, A.F. "Social-Psychological Factors Influencing the Use of Community Health Resources." American Journal of Public Health, 55 (July, 1965), 1024-1030.

Collver, A., et al. "Factors Influencing the Use of Maternal Health Services." Social Science Medicine, 1 (September, 1967), 293-308.

Densen, P.M., et al. "Concerning High and Low Utilizers of Services on a Medical Care Plan, and the Persistence of Utilization Levels over a Three Year Period." Milbank Memorial Fund Quarterly, 37 (July, 1959), 217-250.

Donabedian, A., and Rosenfeld, L.S. "Some Factors Influencing Prenatal Care." New England Journal of Medicine, 265 (July 6, 1961), 1-6.

Dubos, Rene. Man Adapting. New London: Yale University Press, 1969.

Duncan, O.D. "A Socio-economic Index for All Occupations." Occupations and Social Status. Edited by A.J. Reiss. New York: Free Press, 1961, 109-138.

Dunn, J.P., and Cobb S. "Frequency of Peptic Ulcer Among Executives, Craftsmen and Foremen." Journal of Occupational Medicine, 343 (1962).

Epstein, L.M. "Validity of a Questionnaire for Diagnosis of Peptic Ulcer in an Ethically Heterogeneous Population." Journal of Chronic Disease, 22 (1969), 49-55.

Erfurt, J.C., Harburg, E., and Rice, R. "A Method for Selection of Census Tract Areas Differing in Ecological Stress." Program for Urban Health Research, Department of Psychology, University of Michigan, December, 1970.

Feinberg, I., et al. "Patterns of Sleep over a Lifetime." Program Analysis and Evaluation Branch: Mental Health Program Reports No. 2, Public Health Service Publication No. 1743, U.S. Department of Health, Education and Welfare, February, 1968, 167-183.

Festinger, L. A Theory of Cognitive Dissonance. Stanford University Press, 1957.

Fink, R. "The Measurement of Medical Care Utilization." Conceptual Issues in the Analysis of Medical Care Utilization. Edited by Greenlick. U.S. Department of Health, Education and Welfare, Health Services and Mental Health Administration, 1969.

Fink, R., et al. "The Reluctant Participant in Breast Cancer Screening Programs." Public Health Reports, 83 (June, 1968), 479-490.

Fischer, L.A. The Use of Services in the Urban Scene--The Individual and the Medical Care System. Chapel Hill: University of North Carolina Press, 1971.

Freeman, H.E., and Lambert, J. "Preventive Dental Behavior of Urban Mothers." Journal of Health and Human Behavior, 6 (Fall, 1965), 141-147.

Friedson, E. Patients' Views of Medical Practice. New York: Russell Sage Foundation, 1961.

Geschwender, J. "Continuities in Theories of Status Inconsistency and Cognitive Dissonance." Social Forces, 46 (1967), 160-171.

Geschwender, J. "Status Inconsistency, Social Isolation and Individual Unrest." Social Forces, 46 (1968), 477-483.

Glock, C.Y., and Lennard, H.L. "Studies in Hypertension; V. Psychologic Factors in Hypertension: An Interpretive Review." Journal of Chronic Disease, 5 (1957), 175.

Gornick, M.E., et al. "Use of Medical Services as Demanded by the Urban Poor." American Journal of Public Health, 59 (August, 1969), 1302-1311.

Graham, D.T., and Stevenson, I. "Disease as Response to Life Stress." Psychological Basis of Medical Practice. Edited by Lief, et al. New York: Harper and Row, 1963.

Graham, S. "Socioeconomic Status, Illness, and the Use of Medical Services." Milbank Memorial Fund Quarterly, 35 (January, 1957), 58-66.

Graham, S., and Reeder, L.G. "Social Factors in the Chronic Diseases." Handbook of Medical Sociology. Edited by Freeman, et al. Englewood Cliffs, New Jersey: Prentice Hall, 1972.

Gray S. "Stress and the Gastrointestinal Tract, Endocrine Aspects of Peptic Ulcer Disease." American Journal of Gastroenterology, 41 (1964), 243-247.

Green, W.A. "Disease Response to Life Stress." Journal of the American Medical Womens' Association, 20 (February, 1965), 133-141.

Greenlick, M.R., et al. "Determinants of Medical Care Utilization." Health Services Research, 3 (Winter, 1968), 296-315.

Grosser, G.H., et al. The Threat of Impending Disaster. Cambridge, Massachussetts: Massachussetts Institute of Technology, 1964.

Guilford, J.P., and Fruchter, B. Fundamental Statistics in Psychology and Education. New York: McGraw-Hill, 1973.

Gunderson, E.K., et al. "The Epidemiology of Illness in Naval Environments. II. Demographic, Social Background, and Occupational Factors." Military Medicine, 135 (June, 1970), 453-458.

Harburg, E., et al. "Socioecological Stressor Areas and Black-White Blood Pressure: Detroit." Journal of Chronic Disease, 26 (1973), 595-611.

Harburg E., et al. "Socio-Ecological Stress, Suppressed Hostility, Skin Color, and Black-White Male Blood Pressure: Detroit." Psychosomatic Medicine, 35 (July-August, 1973), 276-296.

Harburg, E., et al. Stress and Heredity in Negro-White Blood Pressure Differences. Progress Report. Fall, 1969. Program for Urban Health Research, Department of Psychology, University of Michigan, Ann Arbor, Michigan.

Harmon, D.K., et al. "The Social Readjustment Rating Scale: A Cross-Cultural Study of Western Europeans and Americans." Journal of Psychosomatic Research, 14 (1970), 391-400.

Harmon, E.L. "Third Party Payment Increases Utilization of Home Care Services." Hospitals, 42 (September 1, 1968), 68-72.

Harris, R.E., et al. "Response to Psychologic Stress in Persons Who are Potentially Hypertensive." Circulation, 7 (1953), 874.

Hawkes, R. "Some Methodological Problems in Explaining Social Mobility." American Sociological Review, 37 (June, 1972), 294-301.

Hays, W.L. Statistics for the Social Sciences. New York: Holt, Rinehart and Winston, 1973.

Henry, J.P., and Cassel, J.C. "Psychosocial Factors in Essential Hypertension: Recent Epidemiologic and Animal Experimental Evidence." American Journal of Epidemiology, 90 (September, 1969), 171-200.

Hetzel, B.S. "Cannon Revisited: Emotions and Bodily Changes: Their Relevance to Disease." Medical Journal of Australia, 47 (February 6, 1960), 193-198.

Hinkle, L.E., and Wolff, H.G. The Role of Emotional and Environmental Factors in Essential Hypertension. Pathogenesis of Essential Hypertension. Prague: State Medical Publishing House, 1961.

Hinkle, L.E., and Wolff, H.G. "Ecologic Investigations of the Relationships Between Illness, Life Experiences and the Social Environment." Annals of Internal Medicine, 49 (1958), 1373.

Hinkle, L.E., et al. "An Investigation of the Relation Between Experience, Personality Characteristics and General Susceptivility to Illness." Psychosomatic Medicine, 20 (1958), 278.

Holmes, T.H. "Multidiscipline Studies of Tuberculosis." Personality, Stress and Tuberculosis. Edited by P. Sparer. New York: International University Press, 1956.

Homans, G.C. Social Behavior: Its Elementary Forms. New York: Harcourt-Brace, 1961.

Howard, J., and Holman, B.L. "The Effects of Race and Occupation on Hypertension Mortality." Milbank Memorial Fund Quarterly, 48 (July, 1970).

Hulka, B.S., and Cassel, J.C. "The AAFP-UNC Study of the Organization, Utilization, and Assessment of Primary Medical Care." American Journal of Public Health, 63 (June, 1973), 494-500.

Indik, B., et al. "Demographic Correlates of Psychological Strain." Journal of Abnormal and Social Psychology, 69 (1964), 26-38.

Jackson, E. "Status Inconsistency and Symptoms of Stress." American Sociological Review, 27 (August, 1962), 469-480.

Jacobs, M.A., et al. "Life Stress and Respiratory Illness." Psychosomatic Medicine, 32 (May-June, 1970), 233-242.

Jacobs, M.A., et al. "Relationship of Life Change, Maladaptive Aggression, and Upper Respiratory Infection in Male College Students." Psychosomatic Medicine, 31 (January-February, 1969), 31-44.

Johnson, L.C. "Physiological and Psychological Changes Following Total Sleep Deprivation." Sleep: Physiology and Pathology, A Symposium. Philadelphia: J.B. Lippincott, 1969.

Kahn, R.L., et al. Organizational Stress: Studies in Role Conflict and Ambiguity. New York: John Wiley and Sons, 1964.

Kales, A., and Tan, T. "Sleep Alterations Associated with Medical Illness." Sleep: Physiology and Pathology, A Symposium. Philadelphia: J.B. Lippincott, 1969.

Kasl, S., and Cobb, S. "Some Psychological Factors Associated with Illness Behavior and Selected Illnesses." Journal of Chronic Disease, 17 (April, 1964), 325.

Kasl, S., and Cobb, S. "Health Behavior, Illness Behavior and Sick Role Behavior." Archives of Environmental Health, 12 (February, 1966), 245-266.

Kasl, S.V., Cobb, S., and Gore, S. "Changes in Reported Illness and Illness Behavior Related to Termination of Employment: A Preliminary Report." International Journal of Epidemiology, 1 (1972).

Katkin, E.S. "Relationship Between Manifest Anxiety and Two Indices of Autonomic Response to Stress." Journal of Personality and Social Psychology, 2 (September, 1965), 324-333.

Kegeles, S.S. "Some Motives for Seeking Preventive Dental Care." Journal of the American Dental Association, 67 (July, 1963), 91-98.

Kerlinger, Fred N. Foundations of Behavioral Research. New York: Holt, Rinehart and Winston, Inc., 1964.

Kessel, N., and Munroe, A. "Epidemiological Studies in Psychosomatic Medicine, 8 (1964), 67-81.

Kessel, N., and Shepard, M. "The Health and Attitudes of People Who Seldom Consult a Doctor." Medical Care, 3 (January-March, 1965), 6-10.

King, S.H. "Social-Psycholgical Factors in Illness." Handbook of Medical Sociology. Edited by Frieman, et al. Englewood Cliffs, New Jersey: Prentice-Hall, 1972.

Kirscht, J.P. "The Gamma Coefficient." Unpublished Mimeo, School of Public Health, University of Michigan, October, 1964.

Kirscht, J.P., and Gochman, D.S. "A Model for Personal Health Behavior." Mimeo, Program in Health Behavior, School of Public Health, University of Michigan, 1972.

Knutson, A. L. The Individual, Society, and Health Behavior. New York: Russell Sage Foundation, 1965.

Koos, E.L. The Health of Regionville. New York: Columbia University Press, 1954.

Kriesberg, L., and Treiman, B.R. "Socioeconomic Status and the Utilization of Dentists' Services." Journal of American College Dentists, 27 (September, 1960), 147-165.

Lachman, S.J. "A Behavioristic Rationale for the Development of Psychosomatic Phenomena." Journal of Psychology, 56 (July, 1963), 239-248.

Lazarus, R.S. Psychological Stress and the Coping Process. New York: McGraw Hill, 1966.

Lazarus, R.S., and Opton, E.M., Jr. "The Study of Psychological Stress: A Summary of Theoretical Formulations and Experimental Findings." Anxiety and Behavior. Edited by C.D. Spielberger. New York: Academic Press, 1966, 225-262.

Lenski, G.E. Power and Privilege. New York: McGraw Hill, 1966.

Lenski, G.E. "Social Participation and Status Crystalization." The American Sociological Review, 21 (1956), 458-464.

Levine, S., and Scotch, N. Social Stress. Chicago: Aldine, Publisher, 1970.

Lipset, S.M., and Bendix, R.G. Social Mobility in an Industrial Society. University of California Press, 1959.

Luce, G.G., and Segal, J. Insomnia. Garden City, New York: Doubleday and Company, 1969.

Ludwig, E., and Gibson, G. "Self Perception of Sickness and Seeking of Medical Care." Journal of Health and Social Behavior (June 10, 1969), 125.

Marks, R.V. "Factors Involving Social and Demographic Characteristics--A Review of Empirical Findings." Milbank Memorial Fund Quarterly, 45 (1967), 51-107.

McClelland, D.C. The Achieving Society. Princeton: Van Nostrand, 1961.

McKinlay, J.B. "Better Medical Care for Whom. . .?" The Medical Officer (November 15, 1968).

McKinlay, J.B., and John, B. "Some Approaches and Problems in the Study of the Use of Services--An Overview." Journal of Health and Social Behavior, 13 (June, 1972), 115-152.

Mechanic, D. "The Concept of Illness Behavior." Journal of Chronic Disease, 15 (March, 1962), 189-194.

Mechanic, D. Medical Sociology: A Selective View. New York: The Free Press, 1968.

Mechanic, D. "Social Psychologic Factors and Bodily Complaints." New England Journal of Medicine, 286 (May 25, 1972), 1133-1139.

The Merck Manual. 12th Edition. Rahway, New Jersey: Merck and Company, 1972.

Morris, J.N. Uses of Epidemiology. Edinburgh: Livingstone E. and S., 1967.

Muller, C. "Income and the Receipt of Medical Care." American Journal of Public Health, 55 (April, 1965), 510-521.

Nikias, M.K. "Social Class and the Use of Dental Care Under Prepayment." Medical Care, 6 (September-October, 1968), 381-393.

Nunnally, J.C. Psychometric Theory. New York: McGraw-Hill, 1967.

Perera, B.A., et al. "A Family Study of Primary Hypertension--Final Report." Journal of Chronic Disease, 25 (1972), 127-132.

Picken, B., and Ireland, G. "Family Patterns of Medical Care Utilization: Possible Influences of Family Size, Role and Social Class on Illness Behavior." Journal of Chronic Disease, 22 (August, 1969), 181-191.

Podell, L. Studies in the Use of Health Services by Families on Welfare: Utilization of Preventive Health Services. New York: City University of New York, 1969.

Pomeroy, J., et al. Studies of the Use of Health Services by Families on Welfare: Utilization by Publicly Assisted Families. New York: City University of New York, 1970.

Price, D.O. "Next Steps in Studying Mobility and Mental Health." Mobility and Mental Health. Edited by Kantor. Springfield, Illinois: Charles C. Thomas, 1965, 244-246.

Raffle, P.A. "Stress as a Factor in Disease." Lancet, 2 (November 14, 1959), 839-843.

Rahe, R.H. "Life Crisis and Health Change." Psychotropic Drug Response: Advances in Prediction. Edited by May and Wittenhorn. Springfield, Illinois: Charles A. Thomas, 1969, 92-125.

Rahe, R.H., and Ransom, J. "Life-Change Patterns Surrounding Illness Experience." Journal of Psychosomatic Research, 11 (1968), 341-345.

Rahe, R.H., et al. "Demographic and Psychosocial Factors in Acute Illness Reporting." Journal of Chronic Disease, 23 (1970), 245-255.

Rahe, R.H., et al. "The Epidemiology of Illness in Naval Environments. I. Illness Types, Distribution, Severity and Relationship to Life Change." Military Medicine, 135 (June, 1970), 443-452.

Rahe, R.H., et al. "Prediction of Near Future Health Change from Subjects Preceding Life Changes." Journal of Psychosomatic Research, 14 (1970), 401-406.

Rahe, R.H., et al. "Psychosocial Predictors of Illness Behavior and Failure in Stressful Training." Journal of Health and Social Behavior, 13 (December, 1972), 393-397.

Rahe, R.H., et al. "Social Stress and Illness Onset." Journal of Psychosomatic Research, 8 (July, 1964), 135-144.

Rein, M. "Social Class and the Utilization of Medical Care Services: A Study of the British Experience Under the National Health Service." Hospitals, 43 (July 1, 1969), 43-54.

Reiser, M., and Bakst, H. "Psychology of Cardiovascular Disorders." American Handbook of Psychiatry. Edited by S. Arieti. New York: Basic Books, 1959, 670.

Richardson, W.C. "Poverty, Illness and Use of Health Services in the United States." Hospitals, 43 (July 1, 1969), 34-40.

Rose, G. "Variability of Angina, Some Implications for Epidemiology." British Journal of Preventive Social Medicine, 22 (1968), 12-15.

Rosenblatt, D., and Suchman, E. "The Underutilization of Medical Services by the Blue-Collarites." Blue-Collar World. Edited by Shostak and Gomberg. Englewood Cliffs, New Jersey: Prentice-Hall, 1964.

Rosenman, R.H. "A Predictive Study of Coronary Heart Disease: The Western Collaborative Group Study." Journal of the American Medical Association, 189 (July 6, 1964), 103-110.

Rosenstock, I.M. "Why People Use Health Services." Milbank Memorial Fund Quarterly, 44 (July, 1966), 94-127.

Ross, J.A. "Social Class and Medical Care." Journal of Health and Human Behavior, 4 (Spring, 1962), 35-40.

Rubin, R.T. "Life Stress and Illness Patterns in the U.S. Navy. I. Environmental Variables and Illness Onset." Archives of Environmental Health, 19 (November, 1969), 740-747.

Sampson, E. "Status Congruence and Cognitive Consistency." Sociometry, 26 (1963), 146-162.

Savin, J.A. "Social Behavior and the Use of Medical Services." British Journal of Preventive and Social Medicine, 23 (February, 1969), 53.

Savishinsky, J.S. "Mobility as an Aspect of Stress in an Arctic Community." American Anthropologist, 73 (June, 1971), 437-446.

Schachter, S. "The Interaction of Cognitive and Physiological Determinants of Emotional State." Anxiety and Behavior. Edited by Spielberger. New York: Academic Press, 1966, 193-225.

Scotch, N.A., and Geiger H.J. "The Epidemiology of Essential Hypertension. II. Psychologic and Sociological Factors in Etiology." Journal of Chronic Disease, 16 (1963), 1183-1213.

Segal, B.E., et al. "Social Integration, Emotional Adjustment and Illness Behavior." Social Forces, 46 (1967), 237-246.

Selltiz, C., et al. Research Methods in Social Relations. New York: Holt, Rinehart and Winston, 1967.

Selye, H. The Stress of Life. New York: McGraw Hill, 1956.

Shaw, M.E., and Costanzo, P.R. Theories of Social Psychology. New York: McGraw-Hill, 1970.

Shuval, J.T. Social Functions of Medical Practice. San Francisco: John Wiley, 1970.

Smith, T. "Factors Involving Sociocultural Incongruity and Change." Milbank Memorial Fund Quarterly, 45 (April, 1967), 23-39.

Solon, J.A. "Patterns of Medical Care: Sociocultural Variations Among a Hospital's Outpatients." American Journal of Public Health, 55 (June, 1966), 884-894.

Stamler, R. "Acculturation and Negro Blue Collar Workers." Blue Collar World. Edited by Shostak and Bomberg. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1964, 282-298.

Stoeckle, J.D., et al. "On Going to see the Doctor, the Contributions of the Patient to the Decision to Seek Medical Aid, A Selective Review." Journal of Chronic Disease, 16 (September, 1963), 975-989.

Suchman, E.A. "Social Patterns of Illness and Medical Care." Journal of Health and Human Behavior, 6 (Spring, 1965), 2-16.

Suchman, E.A. "Stages of Illness and Medical Care." Journal of Health and Human Behavior, 6 (Fall, 1965), 114-128.

Suchman, E.A. "Health Orientation and Medical Care." American Journal of Public Health, 56 (January, 1966), 97-105.

Susser, M.W., and Watson, W. Sociology in Medicine. London: Oxford Press, 1962.

Syme, S.L., et al. "Cultural Mobility and the Occurrance of Coronary Heart Disease." Journal of Health and Human Relations, 6 (Winter, 1965), 178-189.

Theorell, T., and Rahe, R.H. "Behavior and Life Satisfactions Characteristics of Swedish Subjects with Myocardial Infarction." Journal of Chronic Disease, 25 (1972), 139-147.

Thiesen, J.W., et al. "An Objective Method of Assessing a Stress Syndrome Related to Achievement Motivation." Perceptual and Motor Skills, 19 (1964), 183-197.

Tyroler, H.A. "The Classification of Disease." Conceptual Issues in the Analysis of Medical Care Utilization Behavior. Edited by Greenlick. Department of Health, Education and Welfare, Health Services and Mental Health Administration, 1969.

Tyroler, H.A., and Cassel, J. "Health Consequences of Culture Change. II. The Effect of Urbanization of Coronary Heart Mortality in Rural Residents." Journal of Chronic Disease, 17 (1964), 167-177.

Tyroler, H., et al. "Patterns of Preventive Health Behavior in Populations, Parts I and II." Journal of Health and Human Behavior, 6 (Fall, 1965), 128-140.

Tzagournis, M. "Seasonal and Monthly Incidence of Peptic Ulcer." Journal of the American Medical Association, 193 (September 13, 1965), 200-202.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics, Volume of Physician Visits by Place of Visit and Type of Services, U.S., July 1957 - June, 1964, #18, Washington, D.C.: Government Printing Office, 1965.

U.S. Public Health Service. Dental Care in a Group Purchase Plan: A Survey of Attitudes and Utilization in the St. Louis Labor Health Institute, P.H.S. # 684. Washington, D.C.: Government Printing Office, 1959.

U.S. Public Health Service. Population Characteristics and Participation in the Poliomyelitis Vaccination Program, P.H.S. #723. Washington, D.C.: Government Printing Office, 1960.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Volume of Physician Visits by Place of Visit and Type of Service: U.S. July 1957 - June 1964, #18. Washington, D.C.: Government Printing Office, 1965.

U.S. Department of Health, Education and Welfare, Home Economics Series #1. Medical Care Frequency and Utilization. Washington, D.C.: Government Printing Office, 1962.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Personal Health Expenses Per Capita Annual Expenses: U.S. July - December 1962, #27. Washington, D.C.: Government Printing Office, 1966.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Medical Care, Health Status, and Family Income: United States, 1963 #9. Washington, D.C.: Government Printing Office, 1964.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Age Patterns in Medical Care, Illness, and Disability. United States, July 1963 - June 1965, #32. Washington, D.C.: Government Printing Office, 1966.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Family Use of Health Services: United States, July 1963 - June 1964, #55. Washington, D.C.: Government Printing Office, 1969, 1-60.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Volume of Physician Visits by Place of Visit and Type of Service: U.S., July 1957 - June 1964, #18.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Differentials in Health Characteristics by Color, United States, July 1965 - June 1967, #56. Washington, D.C.: Government Printing Office, 1969.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Volume of Physician Visits: United States, July 1966 - June 1967, #49. Washington, D.C.: Government Printing Office, 1968.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Current Estimates from the Health Interview Survey, U.S., 1971. Washington, D.C.: Government Printing Office, 1973.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Age Patterns in Medical Care, Illness, and Disability, 1968, 1969. Rockville, Maryland: National Center for Health Statistics, April, 1972.

U.S. Department of Health, Education and Welfare, National Center for Health Statistics. Physician Visits, Volume and Interval Since Last Visit, U.S., 1969, Series 10, #75. Washington, D.C.: Government Printing Office, 1972.

Verwoerdt, A., and Dovenmuehle, R.H. "Physical Illness and Depressive Symptomatology, Aspects and Awareness." Journal of Gerontology, 19 (1964), 330-335.

Watts, D.D. "Factors Related to the Acceptance of Modern Medicine." American Journal of Public Health, 56 (August, 1966), 1205-1211.

Westie, F.R. "Toward Closer Relations between Theory and Research: A Procedure and Example." American Sociological Review, 22, 1957.

White, E.L. "A Graphic Presentation on Age and Income Differentials in Selected Aspects of Morbidity, Disability and Utilization of Health Services." Inquiry, 5 (March, 1968), 18-30.

Wolf, S., and Goodell, H. Stress and Disease. Springfield, Illinois: Charles C. Thomas, 1968.

Zeisel, H. Say it With Figures. New York: Harper and Row, 1968.

Zola, I.K. "Pathways to the Doctor: From Person to Patient." Problems of Medical Care. Edited by P. McEwan. London: Tavistock Publications, 1971.

Zola, I.K. "Culture and Symptoms--An Analysis of Patients Presenting Complaints." American Sociology Review, 31, 1966.