CONCEPTUALIZATION AND MEASUREMENT OF HEALTH FOR ADULTS IN THE HEALTH INSURANCE STUDY: VOL. IV, SOCIAL HEALTH

PREPARED UNDER A GRANT FROM THE DEPARTMENT
OF HEALTH, EDUCATION, AND WELFARE

CATHY A. DONALD, JOHN E. WARE, JR., ROBERT H. BROOK,
ALLYSON DAVIES-AVERY

R-1987/4-HEW
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PREFACE

The Rand Health Insurance Study, funded by a grant from the U.S. Department of Health, Education, and Welfare, is a social experiment being conducted in six sites across the United States to investigate the effects of different health care financing arrangements (differing coinsurance and deductible rates and fee-for-service practice versus prepaid group practice) on the use of personal medical care services, quality of care, satisfaction with care, and health status. Some 8000 people in 2750 families are enrolled in the experiment for periods of three or five years; health status is assessed for each person on entering the experiment, annually during the experiment, and on leaving.

Developing reliable and valid measures for assessing enrollee health status was a prerequisite to examination of the effects of health care financing on health status in the Health Insurance Study. The volumes that constitute Rand report R-1987-HEW (see below) contain detailed information on the conceptualization and measurement of the health status of adults (age 14 and older) in terms of physical, mental, and social health and general health perceptions. They also present data on the health status of adults upon enrollment in the experiment at the first site (Dayton, Ohio) and revisions made in measures of health status for repeated use in Dayton and other study sites. Measurement of physiologic health is discussed in Robert H. Brook, George A. Goldberg, L. Jeff Harris, Kenneth H. Applegate, Marc Rosenthal, and Kathleen N. Lohr, *Conceptualization and Measurement of Physiologic Health in the Health Insurance Study,* The Rand Corporation, R-2262-HEW, forthcoming. Measurement of the health status of children (under age 14) enrolled in the experiment is discussed in Marvin Eisen, Cathy A. Donald, John E. Ware, Jr., and Robert H. Brook, *Conceptualization and Measurement of Health for Children in the Health Insurance Study,* The Rand Corporation, R-2313-HEW, forthcoming.

The eight volumes in the R-1987-HEW series, which has the overall title *Conceptualization and Measurement of Health for Adults in the Health Insurance Study,* include:

John E. Ware, Jr., Robert H. Brook, Kathleen N. Williams, Anita L. Stewart, and Allyson Davies-Avery, *Vol. I, Model of Health and Methodology,* R-1987/1-HEW.

Anita L. Stewart, John E. Ware, Jr., Robert H. Brook, and Allyson Davies-Avery, *Vol. II, Physical Health in Terms of Functioning,* R-1987/2-HEW.

Shawn A. Johnston, John E. Ware, Jr., Allyson Davies-Avery, and Robert H. Brook, *Vol. III, Mental Health,* R-1987/3-HEW.

Cathy A. Donald, John E. Ware, Jr., Robert H. Brook, and Allyson Davies-Avery, *Vol. IV, Social Health,* R-1987/4-HEW.

John E. Ware, Jr., Allyson Davies-Avery, and Cathy A. Donald, *Vol. V, General Health Perceptions,* R-1987/5-HEW.

John E. Ware, Jr., Robert H. Brook, and Allyson Davies-Avery, *Vol. VI, Analysis of Relationships among Health Status Measures,* R-1987/6-HEW.

William H. Rogers, Kathleen N. Williams, and Robert H. Brook, *Vol. VII, Power Analysis of Health Status Measures,* R-1987/7-HEW.

Robert H. Brook, John E. Ware, Jr., Allyson Davies-Avery, Anita L. Stewart, Shawn A. Johnston, Cathy A. Donald, William H. Rogers, and Kathleen N. Williams, *Vol. VIII, Overview,* R-1987/8-HEW.

Volumes I–VII are directed primarily to those who will be using these measures during Health Insurance Study (HIS) analyses and to other investigators who are interested in using or adapting HIS measures for their own research. Volume VIII summarizes the results and conclusions of studies of these HIS measures of health status for a more general audience. Although every attempt was made to write the volumes so that they might be read without reference to others in the series, this was not always possible. The reader is urged to consult the first volume, in particular, as it describes the model of health adopted for use in the Health Insurance Study, the site and sample selection methods, and the methods used to construct health status measures and study their reliability and validity.

Subsequent reports will present results of revised measures of physical, mental, and social health status and general health perceptions currently in use in the Health Insurance Study.

Additional Rand reports and publications discuss other design and measurement issues related to the study. A preliminary report of issues in health status assessment appeared in Arnold I. Kisch and Paul R. Torrens, "Health Status Assessment in the Health Insurance Study," *Inquiry,* Vol. 11, 1974, pp. 40–52.

The experimental design for estimating the effects of financing on demand for care is described in Joseph P. Newhouse, "A Design for a Health Insurance Experiment," *Inquiry,* Vol. 11, 1974, pp. 5–27; and in Joseph P. Newhouse, *The Health Insurance Study: A Summary,* The Rand Corporation, R-965-OEO, March 1974. Features of the design that permit estimation of the effects on utilization behavior attributable solely to participation in the experiment are discussed in Joseph P. Newhouse, Carl N. Morris, Kent H. Marquis, Charles E. Phelps, and William H. Rogers, "Measurement Issues in the Second Generation of Social Experiments: The Health Insurance Study," *Proceedings,* Social Statistical Section, American Statistical Association, 1976.

Carl N. Morris, *A Finite Selection Model for Experimental Design of the Health Insurance Study,* The Rand Corporation, R-1837-HEW (forthcoming) describes the logic and techniques used to determine optimum sample sizes for the Health Insurance Study and to assign individual families to experimental plans.

The first in a projected series of reports dealing with measurement of consumption of medical services in the Health Insurance Study is Kent H. Marquis, *The Methodology Used To Measure Health Care Consumption during the First Year of the Health Insurance Experiment,* The Rand Corporation, R-2126-HEW, August 1977. The application of reliability theory to evaluation of the quality of survey data such as those in the Health Insurance Study is discussed in M. Susan Marquis and Kent H. Marquis, *Survey Measurement Design and Evaluation Using Reliability Theory,* The Rand Corporation, R-2088-HEW, June 1977.

Other methodological issues related to techniques for obtaining precise, unbiased estimates of medical care expenditures are examined in Kent H. Marquis, M. Susan Marquis, and Joseph P. Newhouse, *The Measurement of Expenditures for Outpatient Physician and Dental Services: Methodological Findings from the Health Insurance Study,* The Rand Corporation, R-1883-HEW, April 1976.

SUMMARY

Social health status is measured annually in the Health Insurance Study to test hypotheses regarding the effects of differences in coinsurance and deductibles in a comprehensive health insurance benefits package and differences in use of medical care services on individual health status. This report presents a review of the literature performed to clarify the meaning of social health as it has been viewed by others and the utility of the construct in theory, and to identify major issues involved in developing and validating social health measures. It also describes the conceptualization and measurement of social health used in the Health Insurance Study, and presents plans for analyzing the variability, reliability, and validity of the scores they yield. Because the enrollment Medical History Questionnaire fielded in the first Health Insurance Study site (Dayton, Ohio) did not include measures explicitly constructed to assess social health, this report contains no data on social health from the Health Insurance Study.

The literature review includes both theoretical and empirical evidence for distinguishing social health from other health status components. Social health is conceptualized both as a component of health status outcomes (as a dependent variable) and in terms of social support systems that might intervene and modify the effect of the environment and life stress events on physical and mental health (as an intervening variable). Measurement of social health focuses on the individual and is defined in terms of interpersonal interactions (e.g., visits with friends) and social participation (e.g., memberships in clubs). Both objective and subjective constructs (e.g., number of friends and a rating of how well one is getting along, respectively) are included in this definition.

The literature review discusses 11 studies in detail to establish conceptual guidelines for defining social health and for distinguishing social health items from those measuring physical and mental health. Social health appears to differ from physical and mental health constructs in that it extends the definition of health beyond the physiologic, physical, and psychological status of the organism and focuses on the quantity and quality of interpersonal ties and extent of involvement with the community. Participation and interaction are measured in four major role areas: family and home, social life, community involvement, and work or major role activity. Within these four role areas, the following social health constructs are reviewed:

Family and Home

- Primary family
  - Spousal support
  - Marital functioning
  - Family adjustment
- Extended kinship
  - Number of close relatives
  - Interactions with relatives

Social Life/Community Involvement

- Friendships
  - Number of close friends/neighbors/acquaintances
  - Interactions with friends/neighbors/coworkers
- Community activities
  - Membership in groups
  - Participation in group activities
  - Church membership/attendance

Work/Role

- Employment status
- Work activities
- Work performance
- Educational level

Other Social Phenomena

- Leisure activities
- Hobbies
- Political activity

Items included in global measures of social health varied considerably in the extent to which they overlap with physical and mental health constructs as well as in the degree to which they combine subjective with objective data. Empirical criteria were rarely used to decide which constructs to aggregate in a social health index or to determine social health levels for scaling purposes. Major issues involved in aggregation have been ignored in empirical research, although a variety of techniques have been used to aggregate social health data.

Additional scale and single-item measures that appear to measure aspects of social health were reviewed to establish which constructs have been measured most frequently, to serve as a basis for categorizing empirical studies relevant to validity, and to assess the comprehensiveness of social health measures used in the Health Insurance Study. Measures most commonly used to define social health pertained to number of contacts and activities with family and friends and participation in group activities. They focused on interactions within specific role areas as well as on behavior evident across social roles. Objective and subjective constructs were included in social health indexes without clear understanding of the overlap between these measures and those of mental health. Restrictions in the applicability of social health scores to all individuals in the general population limit the usefulness of many social health measures fielded thus far.

Reported reliability estimates were moderate to high for both single-item and scale measures of social health constructs, suggesting that social health constructs can be reliably measured by a single item in the Health Insurance Study. Reports of higher test-retest coefficients than internal-consistency coefficients suggested that although social health items are reliable, they may not have much common variance.

Interrelationships among presumed measures of social health have not been extensively studied. Available evidence indicated either nonsignificant or weakly

significant associations among social health measures, suggesting that social health constructs are heterogeneous and much less interrelated than either physical or mental health constructs. Associations among social, physical, and mental health measures supported the distinction of social health from other components of health status and the validity of social health indexes as measures of health status, and indicated an important link between social health and both physical and mental health status. Significant associations between subjective ratings of social health and mental health scores supported the hypothesis that subjective measures of social participation overlap substantially with mental health scores. Whether this reflects faulty measurement, confounded definitions, or the true relationship between these constructs is not clear.

Evidence regarding associations between social health scores and age was scanty, but suggests that the relationship may be a function of the social construct being measured. When defined in terms of role performance, social health tends to increase through middle age and then to decrease.

No conclusive empirical evidence was found regarding whether medical care improves the social health of people in the general population. Theoretical arguments suggest, however, that health care providers can be direct sources of social support and can facilitate development of interpersonal ties necessary to achieve social health.

The final section of this report presents and discusses items in Health Insurance Study questionnaires that will be used to measure social health. These items emphasize objective social health constructs in the community, family, and social role areas and include a subjective global evaluation of social interaction. Future analyses of responses to social health items will include studies of frequency distributions of responses to assess variability, associations among items using both parametric and nonparametric statistics, cross-tabulations to determine if the development of cumulative scales is possible, empirical tests of whether aggregation of items is appropriate, and tests of the validity of social health items. Hypotheses regarding the role of social supports in cushioning the effect of life stress events will also be tested. Measures of mental health and use of medical care services will be included among the dependent variables in these analyses. The relative usefulness of social health as a dependent or an intervening variable in explaining relationships among health insurance plans, use of medical services, and physical, mental, and social health will also be explored during Health Insurance Study analyses.

ACKNOWLEDGMENTS

We are grateful to Dr. Berton H. Kaplan, University of North Carolina, and Dr. Jerome K. Myers, Yale University, for their detailed comments and suggestions on an earlier draft of this report. Thanks are due also to our Rand colleagues Joseph P. Newhouse and Kathleen N. Williams for their helpful contributions during the writing of this report.

CONTENTS

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I. INTRODUCTION

OVERVIEW

Social well-being is one of the major variables measured in the Health Insurance Study (HIS) and is viewed as a dimension of individual well-being distinct from both physical and mental health. As indicated in Vols. II and III, considerable progress has been made in conceptualization and measurement of both physical and mental health status. Empirical studies addressing the many issues involved in defining social well-being and results from field tests of survey measures of social well-being have been less frequently reported. Because this construct is less well understood, and because there is reason to question how much medical care can affect social well-being, fewer measurement resources have been devoted to social than to physical and mental health status in the HIS.

The literature was reviewed to clarify the meaning of social well-being as it has been viewed by others and to identify major issues involved in developing and validating measures of this construct. This review serves as a background for discussion of the conceptualization of social well-being adopted in the HIS, the specific measures that have been fielded, and plans for analyzing the variability, reliability, and validity of HIS social well-being measures.

Distinction of Social from Other Health Status Constructs

There are both theoretical and empirical justifications for distinguishing social well-being from physical and mental health constructs, and for considering it a separate component of health status. Thirty years ago, the World Health Organization defined health as not merely the absence of disease, but a state of complete physical, mental, and social well-being (WHO, 1948). Both Renne (1974) and Greenblatt (1975) conceptualized social health as a separate component of health status, defining it in terms of the degree to which people function adequately as members of the community. Durkheim (1951) also distinguished between social and other components of well-being, and extended the definition of well-being beyond the individual to include community influences. Lerner (1973) argued in favor of a multidimensional approach to the definition of health, including social, physical, and mental components, and for the use of social health measures in HIS analyses of the effect of varying levels of coinsurance and deductibles on health status.

In addition to these theoretical arguments and empirical evidence from the health field (presented in the literature review) indicating that social health should be distinguished from physical and mental health components, investigators in other fields seem to prefer separating social from physical and mental health dimensions. In education, nonacademic aspects of self-concept have been categorized into social, physical, and emotional dimensions. In their literature review, Shavelson, Hubner, and Stanton (1976) distinguished social self-concept from physical (e.g., physical ability and appearance) and emotional self-concept (e.g., particular emotional states). Conceptual distinctions between social, physical, and mental components have also been made and supported empirically in studies of personal value orientations. Ware and Young (1976) studied individual preferences regard-

ing the importance of specific health status outcomes, such as having a healthy mind. Their multivariate studies of relationships among these preferences in diverse populations clearly indicated that value preference ratings cluster into groups corresponding to social, physical, and mental dimensions of health.

Definitions of Social Health

As noted above, Renne, Greenblatt, and Durkheim all defined social health of individuals in terms of their functioning as members of a community. In his studies, Durkheim sought to establish that individual behavior (specifically, suicide) could be explained by the degree of social integration. He found that suicide rates were lower in communities characterized by social integration and active participation by people in social activities.

Lerner also noted that health status may be a function of nonhealth factors external to the individual, such as the environment, the community, and significant social groups. Lerner recommended that social well-being measures focus on such constructs as role-related coping, family health, and social participation. He hypothesized that socially healthy persons (1) would be more able to cope successfully with day-to-day challenges arising from performance of major social roles; (2) would live in families that are more stable, integrated, and cohesive; (3) would be more likely to participate in community activities; and (4) would be more apt to conform to norms or moral codes of society.

Leighton (1959), discussing the relationship between sociocultural factors and psychiatric disorders, described how individual personalities can be influenced by the quality and quantity of interpersonal relationships. Sociocultural units such as family, neighborhood, friendship groups, and associations have both favorable and unfavorable effects on the individual's overall functioning. These units meet basic needs and facilitate maintenance of the individual's psychological well-being. Leighton's emphasis was on the social integration of the community, which he defined in terms of the presence of interdependencies and patterns by which the system maintains and adjusts itself. Disintegration was defined as moving away from the functional effectiveness of the unit. Indexes of severe community social disintegration included high frequency of broken homes, few and weak associations and leaders, few patterns of recreation, high frequency of hostility, high frequency of crime and delinquency, and weak and fragmented communication networks. According to Leighton, severe community social disintegration may produce psychological stress and decrease the individual's resources for dealing with that stress, possibly resulting in psychiatric disorders.

Social Health of Individuals

These theoretical definitions of social health clearly focus on the health of individuals rather than communities; although Leighton's definition emphasized the social health of the community, his theoretical framework clearly indicates that community social health influences that of the individual. Empirical evidence supporting such a definition comes from a study by Russell (1973), who attempted to clarify the meaning of social health by posing the following questions: Is "social health" strictly a dimension of the individual? Is it synonymous with the quality

of life of people in a community? Or can it stand for both? Russell found that professional health educators, teachers, and health education students preferred a definition of social health or well-being that focused on the individual and his interactions with other persons, institutions, and mores rather than on the community.

This focus is also most appropriate for measuring social well-being in the HIS, which is investigating the effects of differences in coinsurance and deductibles and the use of personal medical care services on health status and well-being of individuals. Although the health and well-being of individuals is influenced by community maintenance activities (e.g., sanitation practices), public health services, and the general functioning of educational and other social systems (Lerner, 1973), such activities are not within the scope of the personal medical care delivery system. Furthermore, differences in the type and quality of personal medical care services are not likely to affect community health directly. For these reasons, HIS measures of social health focus on the health of individuals.

Social Participation and Interpersonal Interaction

On the basis of the foregoing theoretical definitions, one approach to assessing the social health of the individual is measuring the frequency of occurrence and level of individual social participation and interpersonal interaction in social groups to which he belongs. Kaplan (1975) outlined several areas of social support including:

- Work
  - Supervisors
  - Coworkers
  - Subordinates
- Work achievements
- Work tasks
- Family
  - Spouse support
  - Children
  - Kinship (extended) support
- Social life
  - Friendships
  - Leisure
  - Community activities
  - Opportunities to play
  - Hobbies
- Financial adequacy
- Social rituals
  - Religious life
  - Parties

- Personal community life
  - Warmth
  - Trust
  - Confidants
- Privacy
  - Personal time
  - Quiet time
- Value-identity support
  - Living preferred life-style
  - Personal philosophy
  - Sense of achievement
  - Recognition
  - New experiences
- Sexual satisfaction

The following literature review emphasizes those sources of social support and areas of social participation and interpersonal interaction that can potentially be affected by medical care. Thus, some of the domains listed by Kaplan were excluded from consideration (e.g., financial adequacy, personal community life, privacy, and value-identity support).

Social Health as an Intervening Variable

Other researchers have viewed social well-being not only as a component of health status outcomes (as a dependent variable), but also in terms of social support systems that intervene and modify the effect of the environment and life stress events on physical and mental health (as an intervening variable). Caplan (1974) and Cassel (1976) described social support systems as mechanisms that make it possible for people to obtain feedback about themselves and to judge whether their expectations regarding others are valid. According to Caplan, social support systems increase personal ability to cope with both stress and disease because the individual is viewed as unique and is treated personally.

Kaplan, Cassel, and Gore (1977) argued that social support systems play an important role in preventing physical and mental illness. Social support systems apparently act as protective factors, cushioning the individual from noxious stimuli (e.g., stressful life events). Numerous studies supporting this conclusion were reviewed by Cassel. Kaplan, Cassel, and Gore hypothesized two dimensions of social support: (1) the number and types of links in the network of people with whom one communicates (e.g., number of direct contacts, length and complexity of person or group networks, extent to which a person can contact people who are important to him, and proportion of people in a network who know each other); and (2) the nature of these links (the meaning that people in the network give their relationships, amount of reciprocity, strength of commitment, and frequency of interaction). From these dimensions, the investigators hypothesized two relationships: (1) the greater the number of links in the network (termed "structural availability"), the greater the health protectiveness of social supports; and (2) the greater the support functions of the links, the more health protective the network.

These hypotheses have been supported empirically by other investigators (e.g., Myers, Lindenthal, Pepper, et al., 1972; Myers, Lindenthal, Pepper, 1975).

Quantitative versus Qualitative Definitions of Social Health

The social health of individuals has been defined both quantitatively, in terms of frequency of contacts with friends, relatives, and coworkers and other such events that can be observed by others, and qualitatively, in terms of subjective ratings of the adequacy of interpersonal contacts and community participation. Some investigators who attempted to construct a social health index (e.g., Greenblatt, 1975) purposely restricted their definitions to quantitative data. One reason for doing so is to minimize confounding the social health index with mental health constructs that are known to be correlated with subjective ratings of social health. Other definitions of social health (e.g., Cobb, 1976) included such constructs as feeling cared for, loved, esteemed, and valued. Clearly, such feelings cannot be observed by others and are subjective by that definition. In favor of the more subjective approach is the argument that individuals have different needs and tastes; therefore, the nature and number of interpersonal contacts with friends, relatives, and others necessary to achieve social health may vary greatly. These differences may not be adequately reflected in measures of objective social health constructs.

Hypothesized Effects of Medical Care on Social Health

Differences in personal medical care services can affect in several ways the social health of individuals, defined in terms of interpersonal interactions and social participation. Models of these effects vary depending on whether social interaction and participation are treated as part of the social component of health status—a dependent variable—or as an intervening variable in health status outcomes. When viewed as a component of health status, social health suffers directly whenever there is a loss of interpersonal ties (e.g., death of a loved one). The interrelationship between social and other components of health status is exemplified by the worsening in mental and physical health that may result indirectly from such a loss. Social participation and interaction are also affected indirectly by changes in mental and physical health status. For example, treatment of acne resulting in cosmetic improvement may facilitate acceptance of an individual by others.

When social well-being, defined in terms of the extent and nature of social supports, is viewed as an intervening variable, the issue is whether medical care can influence the effect of environment and stressful life events on physical and mental health by modifying the extent of social support. People who are essentially isolated from the community may, if given generous health insurance, spend more time with health care providers than those with less generous coverage. Thus, health care providers may become part of an individual's social support system and, by definition, increase social health. These providers would also have greater opportunity to integrate their patients into the community, and, in Caplan's (1974) terms, to remedy whatever disorders exist in their interpersonal relationships. In addition to the many naturally occurring social supports (e.g., marital and family ties), Caplan has described interventions by health care providers that could be used to improve social supports available to people, such as providing

consultation groups in an institution, establishing peer and reference groups, and making authoritative persons available.

Whether social participation and interaction are viewed as dimensions of health status or as support systems intervening on health status outcomes, they should be included in an analytic model to test the effects of differences in coinsurance and deductibles and in use of services on health. Their relative usefulness as dependent or intervening variables in explaining the interrelationships among health insurance plans, use of medical care services, physical, mental, and social health, and other forces that act on the individual (e.g., stressful life events) will be explored during HIS analyses. This investigation will be greatly facilitated by the repeated-measures design of the HIS, in which data on health and health-related variables are collected at least once a year.

CONTENT AND ORGANIZATION

This report reviews the types of measures used to define the social interaction and participation of individuals as reported in the published literature. Critical evaluation of the state of the art of measurement of these constructs focuses on the following issues, which must be resolved in order to determine their usefulness as survey measures of individual social well-being in general populations:

- What items in the literature have been classified as measures of social health? Taken at face value, how do these items differ from those used to measure physical and mental components of health?
- Which measures of social health have been developed for and tested in general populations?
- How have social health constructs been aggregated? What empirical methods have been used to justify grouping items?
- To what extent are social health measures applicable to all members of a general population (e.g., can employed and unemployed persons be scored on the same measures)?
- What evidence is available on normative definitions of social health (e.g., for a given construct, what is the cutoff point between socially healthy and unhealthy levels of performance)?
- What is the reliability and validity of published social health measures? Are single-item measures sufficiently reliable for between-group comparisons in the HIS?
- What empirical evidence is available to support the distinction between social, physical, and mental components of health status?
- To what extent do measures of feelings about social relationships overlap with measures of mental health?
- Is there evidence that medical care can positively affect individual social health?

In an attempt to clarify these issues for the HIS, this report first reviews the work of investigators who specifically developed measures of social health or well-being, paying particular attention to those applicable in general populations. This review served as a basis for identifying other published single-item and scale mea-

sures of social health constructs. In addition to conceptual issues, the review of social health measures focuses on item content, methods of aggregating items into scale measures, reliability and validity of published social health measures, and variability of social health scores. Following the literature review, the conceptualization and measurement of social health in the HIS and plans for scoring and analyzing the adequacy of HIS social health measures are presented. Items related to social health (other than those pertaining to role functioning, which are discussed in Vol. II) were not included in the Medical History Questionnaire until after its first administration during enrollment of the HIS sample in Dayton, Ohio. Results from empirical studies of HIS social health measures are therefore not reported here.

II. LITERATURE REVIEW

BACKGROUND

The literature review[1] focuses on published studies of variables used to define social health, including studies of variables referred to as social "adjustment," "functioning," and "well-being." Eleven studies published between 1955 and 1976 and explicitly conducted to measure one or more of these social health variables are discussed in detail; in several cases the measures were included in a comprehensive health status battery. This review helped to define the universe of social health variables and to distinguish social health questionnaire items from those pertaining to physical and mental health. It also provided information on data-gathering methods, scaling and scoring procedures, methods used to aggregate social health variables, and insight into normative definitions of social health.

Following detailed review of these 11 studies, scale and single-item measures that appeared to assess various aspects of social health are discussed. Although these often were not termed "social health" measures, they were reviewed because their content appeared similar to definitions of social health derived from the first 11 studies. These additional measures were found in 57 theoretical and empirical articles published between 1928 and 1977. In selecting these articles for review, emphasis was placed on those that focused on social health of individuals rather than on communities, measured objective social health constructs,[2] or studied the effect of medical care on social health.

APPROACHES TO MEASURING SOCIAL HEALTH

Table 1 summarizes information about each of the 11 studies that developed measures of overall social health or specific social health variables, including population characteristics, stated purpose of each study, and methods of data collection. Only four studies constructed measures specifically for use in general populations (Dohrenwend, Dohrenwend, and Cook, 1973; Renne, 1974; Greenblatt, 1975; Chambers, Sackett, Goldsmith, et al., 1976). The remaining measures were used in more select populations (e.g., psychiatric populations) and may represent more limited conceptualizations of social health. This point should be kept in mind when evaluat-

[1] Articles were selected for review on the basis of suggestions made by Bruce P. Dohrenwend and Jerome K. Myers, consultants to the Health Insurance Study during development of social health measures, and after reviewing a file of articles on health status maintained by the staff of the Health Insurance Study. The file contains 500 to 600 articles and is updated by reviewing journals that frequently publish articles on the conceptualization and measurement of health status. These journals include *American Sociological Review, British Journal of Preventive and Social Medicine, Health Services Research, Health and Society/Milbank Memorial Fund Quarterly, Inquiry, International Journal of Epidemiology, Journal of Health and Social Behavior, Medical Care, Social Indicators Research,* and *Social Science and Medicine.* An initial scan of these sources identified the 11 studies that explicitly concentrated on measurement of social health constructs. Definitions of social health derived from these studies served as the basis for identifying the remaining 57 relevant articles.

[2] Attitudes toward or feelings about specific aspects of one's life, such as social activities or friendships, can be expected to reflect attitudes toward life in general (general psychological well-being) to a greater extent than they reflect more objective phenomena such as participation in social activities or number of friendships, which have been termed "social health" measures. Evidence supporting the hypothesis that subjective measures of social phenomena correlate more with measures of mental health than with objective measures of social health is presented in the validity section (see pp. 48-68).

Table 1

SUMMARY OF INFORMATION REGARDING MAJOR SOCIAL HEALTH MEASURES REPORTED IN THE LITERATURE

Investigator(s)	Population Studied	N	Purpose(s) of Study	Data Source/Method of Data Collection
Barrabee, Barrabee, and Finesinger (1955)	(a)		Develop a measure of social adjustment for use in a psychiatric population	Interviewer
Katz and Lyerly (1963)	Previously hospitalized psychiatric patients, ages 22-57	30	Develop measures of adjustment and social behavior for use in psychiatric populations; test of reliability and validity	Interviewer-administered questionnaire (patient and relatives)
Ellsworth, Foster, Childers, et al. (1968)	Male schizophrenics	178	Determine functioning and adjustment of psychiatric population Evaluate effectiveness of in-hospital treatment program	Trained observer ratings and self-administration (patient and relative)
Linn, Sculthorpe, Evje, et al. (1969)	Psychiatric patients and normals	80	Assess aspects of social dysfunction	Rater combined with self-report
Paykel, Weissman, Prusoff, et al. (1971)	Women from general population and depressed women	80	Investigate dimensions of social and interpersonal functioning in depressed patients	Interviewer
Gurland, Yorkston, Stone, et al. (1972)	Psychiatric patients	164	Assess social maladjustment (outcomes of patients post-psychotherapy)	Interviewer

Table 1—continued

Investigator(s)	Population Studied	N	Purpose(s) of Study	Data Source/Method of Data Collection
Dohrenwend, Dohrenwend, and Cook (1973)	Prisoners (n=11); psychiatric patients (n=93); general population (n=167)	271	Develop objective measures of social performance comparable across social class for use in both psychiatric and general populations	Interviewer (psychiatrists)
Renne (1974)	General population, ages 20+, or 16-19 and ever married	6928	Define and measure the social health of individuals	Self-report
Greenblatt (1975)	General population, ages 20+, or 16-19 and ever married[b]	6928	Refine and simplify Renne's Index of Social Health	Self-report
Bergner, Bobbitt, Pollard, et al. (1976)	Rehabilitation medicine patients Speech pathology patients Outpatients with chronic problems Group practice enrollees, ages 18-75	278	Assess outcomes of health care programs	Interviewers and self-administration
Chambers, Sackett, Goldsmith, et al. (1976)	General population (pilot test on hospitalized patients), ages 15+	273	Develop index to measure social function of free-living populations	Interviewer

[a]Barrabee, Barrabee, and Finesinger's study (1955) did not test the measure in a population survey; for results regarding their measure, see Miles, Waldfogel, Barrabee, et al. (1954).

[b]Greenblatt's research was based on population data collected by Renne (1974).

ing the usefulness of these measures in general populations, such as that enrolled in the HIS.

The 11 studies are reviewed chronologically in terms of several issues raised in the Introduction: definitions of concepts, items that were classified as social health measures, methods of aggregating items and scales, and definitions of levels of social health.

Barrabee, Barrabee, and Finesinger

Barrabee, Barrabee, and Finesinger (1955) developed a measure of "social adjustment" to evaluate outcomes of psychotherapy and social casework. They defined social adjustment as "the degree to which a person fulfills the normative social expectations of behavior that constitutes his roles." They identified four major social role areas: employment, economics, family life, and community. Examples of variables identified as components of these specific role areas on the basis of their literature review and consultation with experts included:

- Employment: job hours, regularity of work, job changes, interpersonal relationships, attitude toward performance of this role.
- Economics: financial status, attitudes.
- Family life: marital adjustment, parent-child relationship, personal self-care, child care, household care, parental adjustment, sibling adjustment, attitudes.
- Community: sociability (number of friends, degrees of socializing with friends or relatives), activity (use of community facilities and/or participation in community organizations), attitudes.

In accordance with the investigators' conceptualization of social adjustment, items in each role area encompassed both performance (e.g., number of friends) and attitudes (i.e., feelings about performance). Many items assessing aspects of performance dealt with interactions among people (e.g., interpersonal relationships); this was particularly true of items pertaining to community roles. The family life area included items that appeared to reflect subjective feelings (e.g., affection).

The investigators defined five levels of social role performance ranging from "ideal" (social norms) to "deviant" (markedly unacceptable) for each area. Norms, which were derived from available studies as well as the investigators' own experiences, were defined as follows: working regularly at a full-time job; changing jobs for improvement; maintaining harmonious relations with others at work; being financially independent; maintaining harmonious and loving relationships with parents, siblings, spouse, and children; functioning efficiently in home responsibilities; having many friends that one visits often; participating in organizations; and having a positive attitude toward the above relationships. The investigators assigned weights to the five levels to reflect their "relative social importance"; they did not report further details regarding weights.

A trained interviewer administered the social adjustment battery and scored the level of behavior achieved in each role category by each respondent. This score and the corresponding weight were multiplied and results averaged across variables to achieve one score for each of the four role areas. Empirical tests of the validity of item groupings within each role area were not reported. The investigators recommended using the four role area scores as a profile of social adjustment,

rather than weighting each of the four areas and aggregating scores into an overall social adjustment index. They reasoned that an overall score would be misleading because of loss of information about separate role areas.

Katz and Lyerly

Katz and Lyerly (1963) argued that measures of social behavior, adjustment, and functioning were needed for further research on both the course of mental illness and the quality of community adjustment. They attempted to quantify these concepts for former psychiatric patients. Social adjustment was viewed as a positive dimension of mental health (i.e., absence of psychopathology). They designed a profile of measures to detect positive signs of the patient's coming to satisfactory terms with himself and the community. Measures were selected to (1) be multidimensional, reflecting all facets of adjustment; (2) reflect information from both personal (i.e., the patient) and social references (e.g., a relative); (3) be objective; (4) distinguish actual behavior from attitudes toward behavior; and (5) describe ways in which people relate to others.

Katz and Lyerly drew the following distinctions between social behavior, adjustment, and functioning, reflecting the five criteria noted above: "social behavior" referred to characteristic ways in which people relate to others (e.g., withdrawal, independence); "social adjustment" referred to the satisfaction of "parties most concerned" (e.g., relatives) with the patient's level of social functioning; "personal adjustment" referred to lack of distress from psychiatric symptoms and satisfaction with functioning in work, social, and home roles; and "social functioning" referred to performance of occupational, self-care, home, social, and community role responsibilities and free-time activities.

Based on these criteria and definitions and items derived from clinical assessments of social adjustment, the investigators developed five measures of social behavior and adjustment:

1. Ratings of Patient Symptoms and Social Behaviors: 127 items covering psychiatric symptoms, positive characteristics of social behavior (e.g., pleasant, dependable, quiet), and socially disturbing characteristics (e.g., argues, gets into fights with others, critical of others).
2. Level of Performance of Socially Expected Activities: 16 items describing activities relating to family, self-care, home adjustment, and community activities.
3. Level of Expectations: 16 items identical with those in the socially expected activities measure on which the respondent rated his expectations regarding patient performance.
4. Level of Free-Time Activities: 23 items covering hobbies, social and community activities, and self-improvement activities.
5. Level of Satisfaction with Free-Time Activities: 23 items identical with those in the level of free-time activities measure on which the respondent rated satisfaction with the patient's free-time activities.

These measures emphasized both performance of social behaviors and attitudes (of the patient and relatives) toward their performance.

Four scales were administered both to patients and one of their relatives. The Ratings of Patient Symptoms Scale was administered only to relatives, both before

the patient's psychiatric hospitalization and after his return to the community. The five scales were scored separately by summing responses to items within each battery. Results of empirical studies of the appropriateness of aggregating items and how to best aggregate items within each of the scales were not reported. The clinical staff's classification of patients as well-adjusted or poorly adjusted served as the criterion in validating the measures.

Ellsworth, Foster, Childers, et al.

Ellsworth, Foster, Childers, et al. (1968) studied functioning and adjustment of male schizophrenics to evaluate outcomes of inpatient psychiatric treatment programs. Their measures of outcomes included both psychiatric and social aspects of functioning and adjustment and assessed both patient performance and relatives' expectations about and satisfaction with patient performance. The measures focused on behaviors that cut across social role areas. Although five rating scales were used, only the two that appear most related to social health are discussed here.

The 39-item Community Adjustment Scale was administered to patients' relatives. Items describing behavior typical of patients before hospital treatment emphasized both social behavior (e.g., spending time with friends, organizational participation) and manifestations of psychological symptoms (e.g., hearing voices, losing track of time). A factor analysis of associations among items in this scale yielded six dimensions of measurement including three social health-related factors termed "friendship skills," "organization participation," and "employment." As discussed in the validity section of this report, factor analytic results lend support to the conceptual distinction between social and other dimensions of health.

A Social Work Scale was constructed to enable social workers to rate relatives' expectations and satisfaction with patient performance and to rate actual level of patient performance in four areas: personal comfort, employment, family interpersonal relations, and socialization.[3] Two additional scores were derived for each area to indicate congruence between expectation and performance and between satisfaction and performance. Item scores were summed as in summated rating scales, and scale scores were standardized; patients scoring above the mean were classified as "well-adjusted."

The Social Work Scale focused chiefly on performance in relation to the expectations and satisfaction of others, while the Community Adjustment Scale focused on the frequency of social behavior. The Community Adjustment Scale included measures of psychological symptoms as well as social behaviors; as with the measures developed by Katz and Lyerly, adjustment scores reflected both social and mental health.

Linn, Sculthorpe, Evje, et al.

Linn, Sculthorpe, Evje, et al. (1969) developed the Social Dysfunction Rating Scale to assess adjustment. As evident in the name of their scale, the investigators concentrated on the negative end of the functioning continuum. They defined func-

[3] Ellsworth, Foster, Childers, et al. did not publish their definitions of these four areas of performance, number of items in the scale, or sample rating items.

tioning as "equilibrium within the person and in his interaction with his environment"; dysfunction was defined as coping with the environment in a maladaptive manner.

The Social Dysfunction Rating Scale was constructed from 21 six-point rating scales derived from earlier research. Scales most obviously pertaining to social health were labeled lack of satisfying relationships with significant persons, lack of friends and social contacts, expressed need for more friends and social contacts, and lack of participation in community activities. The remaining scales appear (from their labels) to have emphasized mental health (e.g., anxiety, hostility, emotional withdrawal, low self-concept), general health perceptions (e.g., self-health concern), life satisfaction (e.g., lack of satisfying philosophy or meaning of life), or their focus is not clear from the labels used (e.g., adaptive rigidity).

Scores for each scale were computed by combining the rater's opinion and the subject's self-evaluation. Raters stressed personal satisfaction and self-fulfillment as more important elements of functioning than social role performance. For analytic purposes, the investigators recommended separate interpretation of the 21 rating scales, use of the five factors that accounted for most of the variance in scale scores,[4] or computation of a total scale score apparently based on the simple algebraic sum of the 21 scale scores.

Paykel, Weissman, Prusoff, et al.

Paykel, Weissman, Prusoff, et al. (1971) conducted an empirical investigation of dimensions underlying ratings of social and interpersonal functioning. Their operational definition of functioning included both specific behaviors and attitudes toward occurrence of these behaviors; they concentrated, as did Linn, Sculthorpe, Evje, et al., on the negative end of the functioning continuum. They proposed a conceptual framework for evaluating social functioning that differs from the definition of functioning in terms of behavior specific to particular role areas (e.g., work, family). Instead, items were grouped across role areas in three categories: satisfaction and feelings, global judgments, and ratings of behavior (performance, interpersonal relations, and friction).[5]

The investigators drew specific item content from a review of published studies dealing with social adjustment. Sample items from their 48-item Social Adjustment Scale (grouped by role area) include:

- Work: time lost, impaired performance, friction, distress.
- Social and leisure: diminished contact with friends, diminished social interactions, impaired leisure activities, reticence, hypersensitive behavior, friction.
- Extended family: reticence, withdrawal, family attachment, friction, guilt.
- Marital: diminished intercourse, sexual problems, domineering behavior, dependency, friction.

[4] A principal components analysis of associations among the 21 rating scales was performed using data from 80 psychiatric and nonpsychiatric subjects. Five components were identified; two pertained primarily to social health, and of these one appeared primarily to tap the evaluative aspect (i.e., satisfaction) of social health (Linn, Sculthorpe, Evje, et al., 1969).

[5] Items in the "interpersonal relations" and "friction" categories were derived from items used during development of the Structured and Scaled Interview To Assess Maladjustment (Gurland, Yorkston, Stone, et al., 1972).

- Parental: lack of involvement, impaired communication, friction.
- Marital family unit: economic inadequacy of family unit, guilt, worry.

The items were administered to 40 normal and 40 depressed female patients. Most items in the scale were rated on a five-point response continuum pertaining to the degree of the impaired function. The investigators used two methods of grouping and scoring items and compared the results. In the first method, they summed the scores for items in each of the six role areas to obtain a score for that role (e.g., work, family). To account for differences in the number of items across role areas, scores were expressed as averages across items. In the second method, they summed the scores for items in each category across role areas (e.g., a score for the friction category was computed by aggregating ratings of friction at work, home, and so on).

The investigators performed a principal components analysis of 37 items[6] to study their interrelationships. They identified and labeled six components: work performance, interpersonal friction, communication, submissive dependency, attachment or orientation to the family, and anxious rumination. All components (except work performance) were associated with high loadings for items across role areas and included items related to both behavior and satisfaction ratings. These results suggest that social health can be operationally defined in terms of styles of behavior (and possibly attitudes) across social role areas.

Gurland, Yorkston, Stone, et al.

Gurland, Yorkston, Stone, et al. (1972) developed the Structured and Scaled Interview To Assess Maladjustment (SSIAM) to study psychiatric patients. They defined social maladjustment as "ineffective performance in the roles and tasks for which an individual has been socialized," including failure to obtain satisfaction from performance in these activities. Objective behavior (performance) and subjective reactions (satisfaction) were given equal importance. They identified five major role areas: work, social, family, marriage, and sex. Within each role area, they measured similar types of maladjustment: deviant behavior, friction with others, and subjective distress. The measures were specifically developed to be multidimensional, reflecting different aspects of maladjustment.

The SSIAM was designed for administration by trained interviewers. It contained 60 items selected from previously constructed measures and based on suggestions of psychotherapists, including 45 items that pertained to maladjustment (e.g., behavior, friction, distress) and 15 items that required the interviewer to rate stress in the patient's environment, prognosis, and positive mental health. Although the investigators did not report the content of specific items, they summarized sample item content in the five major role areas:

1. Work: unstable, inefficient, unsuccessful, overworking, friction, stress.
2. Social: isolated, constrained, unadaptive, apathetic in leisure, friction, distressed by company.
3. Family: reticent, overcompliant, rebellious, family-bound, withdrawn, friction.

[6] Global ratings, items pertaining to economic inadequacy, and four other items that had few responses or highly skewed distributions were excluded from the components analysis.

4. Marriage: constrained, submissive, domineering, friction, feeling deprived, feeling inadequate.
5. Sex: undesirous, inadequate, rejected by partner, tension.

Four psychotherapists defined five levels of maladjustment for each item. Within each role area, maladjustment, deviant behavior, friction between the patient and others, and the patient's distress were scored separately.

Dohrenwend, Dohrenwend, and Cook

Dohrenwend Dohrenwend, and Cook (1973) constructed measures of social performance that would be comparable across social classes. To evaluate outcomes of psychiatric services, they developed the Structured Interview Schedule (SIS), which focused on work performance, job morale, marriage, social relations, housework, parenthood, and leisure. They either adapted items from previous studies or constructed them. Item content was reported for four scales:

1. Work Performance: number of times left for better job, why left last job, current employment, length of time unemployed last year.
2. Job Morale: satisfaction with present pay, satisfaction with kind of work, satisfaction with future in job, how good a job you think you do, interest in work.
3. Marital: differ about not showing love, strike each other when quarrel, talk about personal feelings and problems, feel uncomfortable, feel affectionate, friends both enjoy, think spouse does not love you, satisfied with marriage.
4. Social Relations: seldom see anyone, no friends to count on, do not visit or invite.

The scales measured both objective and subjective aspects of social performance. The Marital and Job Morale scales, in particular, assessed feelings about performance.

Psychiatrists administered the SIS to 271 subjects including prisoners, psychiatric patients, and community residents. Scales for each role area were reliable across social classes (see further discussion, pp.46-47). The investigators noted a disadvantage of these measures in that some respondents could not be scored in a particular role area (e.g., only married respondents received a score on the Marital scale).

Renne

Renne (1974) distinguished physical, psychological, and social components of well-being. She constructed the Social Health Index to measure the degree to which individuals function as members of the community and the extent to which they live up to community expectations and standards. Ability to function in four major role areas was emphasized: work (potential in the job market), family relations (marital satisfaction), community involvement (church attendance, political participation, organizational memberships), and interpersonal involvement outside the family (number of close friends seen monthly). Scores for each major role area were aggregated to define the index.

Renne developed separate measures of employability for men and women. She included educational level, occupational status, and job stability for men; men who reported three or more jobs in 10 years were considered to have an unstable work history. She included the same three constructs (with different definitions for occupational status and the same criterion for job instability) in the index for working women. Educational level and work history were used to score housewives; work history was defined as the proportion of life spent in full-time employment. Employability scores could not be computed for retired persons and students.

Individuals were scored dichotomously as satisfied or dissatisfied with marriage. Dissatisfaction was scored for those who gave the most extreme response to any one of three items related to marital regret, divorce, or overall marital rating, or who answered other items in a manner that indicated dissatisfaction. Unmarried persons could not be scored on this index.

Individual functioning in roles outside the family (i.e., church attendance, political participation, and organizational memberships) was measured to define community involvement. Weights were assigned as a basis for aggregating items.[7]

Interpersonal involvement outside the family (i.e., sociability) was defined as the extent to which close or supportive contacts were maintained (e.g., number of close friends seen at least once a month). Scores for variables within this category were combined using weights in a manner similar to that described for the community involvement index. Cutting points for the sociability index were determined from subjective feelings of isolation.

Renne scored the overall Social Health Index by combining trichotomized scores on each of the four component measures described above. The lowest Social Health Index score represented extreme low scores on at least two components and no high scores on other components; a high score indicated no extreme low scores and at least two (for unmarried persons) or three (for married persons) extreme high scores. According to this method, different patterns of scores on component measures could result in the same overall score. Renne (1970, 1974) reported analyses based on both the four component scores and on the overall Social Health Index score.

Greenblatt

Greenblatt (1975) attempted to refine and simplify Renne's work (1974) in constructing the Index of Social Well-Being (ISWB). His goal was to measure the social health of individuals in a general population survey. He emphasized, as did Renne, the concept of community role performance. The extent to which a person assumes roles and performs them adequately defined functioning in the community. Greenblatt pointed to several problems with Renne's index that limited its usefulness in general population surveys: (1) almost one-fourth of the respondents could not be scored (e.g., retired persons and students); (2) different scoring criteria were used for men and women in the employability scale; (3) the scale for married persons contained more items than the scale for unmarried persons; and (4) the emphasis on "psychological" items in the marital satisfaction component needed to

[7] For example, memberships in two or more types of organizations were considered equivalent to participating in two or more political activities, in addition to voting, or to attending church as often as once or twice a month.

be eliminated to achieve a distinct social health dimension. In making this last criticism, Greenblatt argued that the sense of gratification or personal fulfillment derived from the marital role was a reflection of psychological rather than social well-being.

To construct a social health index that would not measure physical and mental health constructs (to the extent that Renne's appeared to) and that could be scored for all respondents, Greenblatt deleted the employability and marital satisfaction components and concentrated on domiciliary, friendship, work, and community roles. Items in the four role areas included:

1. Domiciliary: marital status, self-rating as a spouse, marital regret, living arrangements (e.g., living alone or with minor children).
2. Friendship: number of close friends or relatives seen monthly.
3. Work: major economic activity (employed, housewife, student), job self-rating, job stability.
4. Community participation: political activity such as voting; membership in social-recreational, church-connected, child-oriented, and service organizations; church attendance.

Although components of the marital satisfaction variable were deleted, some "psychological" items were retained (e.g., marital regret) in the domiciliary role area.

Scores for each of the four role areas ranged from 0 to 6. For example, respondents who reported seeing six or more close friends monthly were given the same score (in the friendship area) as were respondents reporting six memberships/activities or more (in the community participation area). In the domiciliary area, respondents who were not now married but were living with another adult received the same scores as those who were married but expressed marital regret and low spousal self-rating. In the work area, respondents who were employed but rated either job stability or job self-rating low received the same scores as those who kept house or were students. The ISWB score represented the sum of scores on the four role areas.

Greenblatt concluded that the ISWB had improved Renne's index because (1) scores could be assigned to all respondents (housewives and students were assigned the median score for job self-rating and job stability); (2) current social well-being rather than potential status (e.g., employability) was measured; and (3) component variables were summed for a total score rather than recombined in the complex scoring used by Renne. By not dichotomizing or trichotomizing scores in each of the four role areas before aggregation, Greenblatt may have retained more information. He achieved some of these apparent gains by making assumptions in the absence of empirical justification (e.g., equating cohabitation with being married and regretful) and perhaps at the expense of other measurement goals. (For example, assigning median scores for self-rating and job stability reduces score variance.) These and other tradeoffs remain to be evaluated.

Bergner, Bobbitt, Pollard, et al.

Bergner, Bobbitt, Pollard, et al. (1976) included social health in the Sickness Impact Profile (SIP), which was designed to measure the impact of sickness on an individual in terms of altered or ineffective functioning. They constructed items

describing these behavioral changes from descriptions of sickness-related dysfunctions obtained from individuals during illness episodes and from a literature review. They identified and categorized over 300 items including 65 items (in the 1974 long-form SIP) that appear to tap social health in four categories (sample items presented below):

1. Social Interaction (24 items): talk less with people, show less affection, avoid arguments.
2. Leisure Pastimes and Recreation (9 items): doing more physically inactive pastimes, cutting down on some physical activities.
3. Interaction with Family Members (17 items): isolate self from family, pay less attention to children.
4. Usual Daily Work (15 items): do light work, not accomplishing as much.

The investigators instructed respondents to check only those items that described themselves. Using the Method of Successive Intervals (Edwards, 1957), they assigned a scale value derived from ratings by 25 judges to each item. They then computed sums of weighted item scores to define the overall SIP score as well as scores for each category.

Chambers, Sackett, Goldsmith, et al.

Chambers, Sackett, Goldsmith, et al. (1976) constructed a Social Function Index to predict a physician's assessment of a person's overall health status. They considered social function as a component of health status distinct from physical and mental components and defined it in terms of activities common to different role areas.

They drew items for the Social Function Index from earlier studies, including those that focused on social participation and leisure activities. Items concerning community activities, selected life events, socioeconomic status, and subjective ratings of experiences were also considered. Items had to identify positive functioning, be applicable to a general population, be suitable to administer at low cost, and not include responses requiring content analysis.

Interviewers administered the initial 64-item questionnaire in a pilot study of patients during hospitalization in acute general medicine wards and again soon after discharge. The questionnaire was then administered to a sample of persons in families cared for by a family physician. The 14 items that best predicted the physician's assessment of patient status were combined in a cumulative Social Function Index. The investigators calculated the index score by assigning weights to dichotomous responses (social function responses defined as "good" and "poor" were assigned scores of one and zero, respectively) and summing across questions. The composite index considered the patient's interaction with others (e.g., visits with or telephone calls from relatives, friends, social agencies, or other individuals), subjective feelings of happiness and health, length of residence in dwelling place, and social and recreational activities (e.g., social clubs, movies). Studies of interrelationships among items and other issues related to scaling were not reported.

Summary of Overall Measures

Conceptually, social health has been differentiated from physical and mental

health constructs by extending the definition of health beyond the physiological, physical, and psychological status of the organism to include both the quantity and quality of an individual's interpersonal ties and extent of involvement with the community. Although several investigators developed social health measures based only on data obtained from the individual in question, many relied on information from professional staff, friends, and relatives in addition to self-ratings in developing social health measures.

Among the more frequently identified areas in which social participation and interaction are manifested were family and home, social life (e.g., friendships), community involvement (e.g., participation in organizations), and work (or major role activity if unemployed in the traditional sense). Although different terms were used to designate these areas, examination of operational definitions indicates that these four areas represent the major thrust of research thus far. Although measures concentrated on behaviors in specific role areas, several (Katz and Lyerly, 1963; Paykel, Weissman, Prusoff, et al., 1971) focused on styles of social functioning across role areas (e.g., withdrawal, independence). This distinction in conceptual approaches—whether to score social functioning by major role areas or by style of functioning across role areas—has several measurement implications. If social health is defined in terms of styles of functioning (e.g., deviant behavior or strife) across role areas as exemplified by Gurland, Yorkston, Stone, et al. (1972), it would be necessary to operationalize each style or type of maladjustment in each major role area. Measures of each style of functioning across role areas must then be more highly interrelated than measures of variables within role areas.

Although most investigators clearly differentiated social and physical health, some included constructs (such as self-care limitations) that have been shown in other research to reflect primarily physical health (see Vol. II). The distinction between social and mental health components has been less clearly drawn. At one extreme, Katz and Lyerly (1963) treated social health (defined as social adjustment and community functioning) as a positive dimension of mental health. All other investigators distinguished between social and mental health components and seemed to acknowledge that both cause and effect relationships were involved in associations among social and mental health measures in cross-sectional studies.

Many investigators combined subjective data (e.g., ratings of satisfaction with social role performance) with objective data (e.g., a count of the number of friends) to construct social health measures. Only Greenblatt (1975) advocated avoiding this practice, on the grounds that it might confound social with mental health concepts. The extent to which such subjective ratings primarily reflect differences in psychological rather than social well-being appears to be the primary consideration in the decision regarding whether to include subjective ratings in social health measures. This issue is unresolved. Subjective ratings, which appear to measure mental health, may have been included in social health indexes because most of the measures in question were used in populations having psychological disorders. This does not explain the inclusion of subjective ratings in Renne's Social Health Index (1974). The issue cannot be resolved by examination of the manifest content of mental and social health measures; information regarding associations among objective and subjective constructs is required. As noted in the Introduction, there are good arguments both for and against the definition of social health in terms of objective *and* subjective data. Some of the evidence about interrelationships among

measures of objective and subjective social health constructs discussed on pp. 56-68 is relevant to these arguments.

Although many investigators attempted to aggregate social health measures in an overall index, they apparently ignored several issues involved in such aggregation. Those who simply summed item and scale scores to score an index ignored differences in score variability that determine the contribution of each part to the index score. Standardization of item or subscale scores before summing them equates the contribution of each part; this practice was rarely used. Other investigators approached aggregation by assigning different weights to the component parts before computing an index score; with one or two exceptions, the validity of the weights used is open to question.

Of crucial importance is the decision of what constructs to aggregate in a social health index. Some investigators included (in what they termed "social" health indexes) measures accepted by others as more indicative of mental health status (e.g., anxiety) or physical health status (e.g., self-care limitations). This practice is more consistent with the goal of constructing an overall health status index than a social health index.

Determining what should be included in a social health index has infrequently been approached empirically. An exception is the regression of physician ratings of social health on various measures to determine the measures' validity. Although this practice has the advantage of using an empirical criterion, it restricts the definition of social health to the awareness of the physician. Other empirical approaches used to evaluate the validity of measures before aggregating them in an index include those based on studies of interrelationships among measures of physical, mental, and social health (e.g., factor analysis or cluster analysis of associations among a comprehensive set of social health and other health status measures). In the absence of agreed-on criteria for validating health status measures, this is a promising avenue of research because multivariate empirical approaches are likely to increase understanding of how social health differs from other health components. Groups of items hypothesized to measure the same constructs can be tested empirically; some multivariate methods also make it possible to identify unhypothesized social health constructs. These methods can become unwieldy, however, increasing the likelihood of chance factors or clusters and population-specific results. Cross-validation studies should therefore precede generalization of findings. Other methodological considerations applicable to all multivariate studies have apparently been ignored. These include the representativeness of populations studied, whether both linear and nonlinear relationships are taken into account, and the reliability of scores. (These issues are addressed in greater detail in Vols. I and VI.)

Three different approaches have been used to define the value of social health levels. Some investigators assigned weights to levels of social health as the basis for scoring within a certain category of social health. In some cases, weights were obtained from outside judges; in others, investigators relied on their own personal judgments. Other investigators did not use weights but imposed normative definitions of social health and ill health as a basis for classifying respondents on their scales. Although these definitions seemed logical in view of certain assumptions (e.g., that having more friends is better), investigators who used this approach rarely based their definitions on empirical evidence, and in many cases the defined cutoff point between social health and ill health appeared somewhat arbitrary. One

exception is the study of friendships and psychological risk described by Langner and Michael (1963). For example, they reported that beyond four close friends there was no decrease in risk of poor social health, and that only people friendly with ten or more neighbors were significantly healthier than the rest of those studied. Other investigators assumed that quantitative differences defined by a given indicator (e.g., a count of number of friends) indicated different levels of social health. Investigators using this approach often collapsed scores or arbitrarily assigned the same value to scores within specified ranges (e.g., five or more friends was assigned a score of five), again without reporting empirical support for these distinctions. The size of the interval between scores assigned to different levels of social health was generally ignored in constructing measures of social health; an exception are the scales in the Sickness Impact Profile (Bergner, Bobbitt, Pollard, et al., 1976) constructed according to the Method of Successive Intervals. Thus, there is considerable need for empirical work in scaling social health levels.

Although most of the issues raised in the preceding discussion were rarely addressed explicitly in empirical research reported in the literature, published results helped clarify other important issues. For example, published studies of interrelationships among measures of objective and subjective social health constructs and measures of psychological well-being were helpful in defining the major components of health status for purposes of HIS measurement. (These studies are discussed in a later section of this report; see pp. 48-68.)

This review of conceptual approaches to measuring social health also identified constructs pertaining to social health common to several studies, which provided a basis for narrowing the focus of further review and critique. As noted earlier, these constructs were interpersonal interaction and social participation, and were most frequently measured within four major social role areas (family and home, social life, community involvement, and work).

SCALE AND SINGLE-ITEM MEASURES

Scale and single-item measures that appear (from their manifest content) to assess aspects of social health as defined above are discussed in this section for several reasons. First, the content of these measures helped establish which social health constructs had been measured frequently in studies other than the 11 discussed thus far and served as a basis for categorizing empirical studies pertaining to validity. Content analysis of scales and items was necessary because different labels were often assigned to the same or similar items, and similar labels were often assigned to different items or groups of items. Second, content analysis of items served as the basis for defining the universe of social health constructs. This information was used to assess the content validity (i.e., comprehensiveness) of the HIS social health measures. Finally, content analysis facilitated selecting the wording to be used in HIS social health items.

In summarizing, an attempt was made to classify the constructs according to a taxonomy paralleling as closely as possible the four role areas identified above. A fifth category (Other Social Phenomena) was added for activities and behavior that appeared to be related to social health but did not clearly fall into one of the other areas. The five categories included:

1. Family: number of activities or contacts with family members and close relatives (e.g., counts of the number of visits).
2. Social: number of activities or contacts with friends.
3. Community: participation in community and group activities (e.g., membership in clubs).
4. Work: work functioning (e.g., employment status).
5. Other Social Phenomena: social activities that may or may not involve interactions with other persons (e.g., visits to places, watching television).

Measures were categorized on the basis of their manifest content; inclusion of some measures in the same category may not be supported by empirical studies of appropriateness of item groupings.

Table 2 provides a summary list of scales hypothesized to measure some aspect of social health. Included are the overall indexes and subscales developed by the 11 groups of investigators discussed above as well as scales identified during the second part of the literature review. Table 2 contains information on the name of each scale, the number of items included (when given), an expanded definition of the scale with examples of item content, and a brief description of the basis for aggregating items. Global indexes and their component scales (if component scales were scored and interpreted separately) appear in the first part of Table 2. Because of the comprehensiveness of their item content, they could not be grouped according to the five categories defined above. Scales less global in nature, which could be grouped in terms of similarity of constructs in the five categories, appear in the second part of the table. Because items pertaining to social activities (i.e., with friends), activities with family and relatives, and community involvement were often combined, these three categories have been combined in Table 2.

Table 3 summarizes single-item measures identified during the literature review that focus on some aspect of social health. It contains the name assigned to the construct measured by each item and an expanded definition of the construct (when the name is not self-explanatory). Items included in Table 3 may have been scored separately or included in a scale or social health index.

Not included in Tables 2 and 3 were items and scales specifically designed to measure only qualitative phenomena (e.g., satisfaction and other feeling states); as noted earlier, such subjective constructs were hypothesized to overlap excessively with measures of mental health.[8] Constructs were also excluded if their manifest content appeared to pertain primarily to aspects of physical or mental health, published information about item content was insufficient for appropriate classification (e.g., specific items were not presented or content was not exemplified), or they focused on events outside the purview of the medical care system (e.g., social crises).

Common themes underlying the various definitions of social health in these measures pertain to individual interaction with others and to social participation. These themes can be distinguished from those underlying behavioral measures of physical and mental health, which often relate to symptomatic manifestations of behavior (e.g., inability to climb stairs, crying).

More commonly fielded measures pertained to numbers of contacts and activities with family and friends and to participation in group activities. Specifically,

[8] For further discussion of this issue, see validity results, pp. 48-68.

Table 2

Index and Scale Measures of Social Health Constructs

Index/Scale	No. of Items	Definition/Item Content	Scaling and/or Scoring Method	Investigator(s)
I. OVERALL INDEXES				
Social Health Index (4 subscales)	Not Given	Extent to which respondent is functioning member of community	Complex process of trichotomizing and assigning weights to components, then combining to form a 9-point index (6 for single, widowed, or divorced persons)	Renne (1974)
Employability	Not Given	Potential in the labor market	Weights assigned to values of the items and then summed for each cell of the index	Renne (1974)
Marital Satisfaction	6	Attitudes toward marriage	Weights assigned to values of the items and then summed for each cell of the index	Renne (1974)
Community Involvement	5	Extent to which respondent functions in community outside familial and occupational roles	Weights assigned to values of the items and then summed for each cell of the index	Renne (1974)
Sociability	3	Extent to which respondent maintains close contacts outside family	Weights assigned to values of the items and then summed for each cell of the index	Renne (1974)
Index of Social Well-Being (4 subscales)		Degree to which respondent is functioning member of the community	Components assigned equal weights, then summed	Greenblatt (1975)
Work Role Performance	Not Given	Performance in work role (includes housekeeping)	A priori weights assigned, then summed	Greenblatt (1975)
Community Participation	Not Given	Includes membership, church attendance, voting, political activity	A priori weights assigned, then summed	Greenblatt (1975)
Friendship Score	1	Informal group participation outside the home: friends seen monthly	A priori weights assigned, then summed	Greenblatt (1975)
Domiciliary Group Score	Not Given	Includes marital status, self-rating as a spouse, and marital regret	A priori weights assigned, then summed	Greenblatt (1975)
Social Function Index	14	Includes items dealing with happiness, health satisfaction, life events, visits, telephone calls, social activities, marital status	Items dichotomized, given weights of 0 to 1, and summed for composite score	Chambers, Sackett, Goldsmith, et al. (1976)

Table 2—continued

Index/Scale	No. of Items	Definition/Item Content	Scaling and/or Scoring Method	Investigator(s)
Social Dysfunction Scale	21	Items dealing with self, intrapersonal systems, and performance system	Equal interval values assigned to response categories and summed for total score	Linn, Sculthorpe, Evje, et al. (1969)
Adjustment Scale (5 subscales)		Ability to come to satisfactory terms with the environment and with oneself	Overall scale not scored	Katz and Lyerly (1963)
Ratings of Patient Symptoms and Social Behavior	127	Items covering psychiatric symptoms, social behavior	Summated ratings	Katz and Lyerly (1963)
Level of Performance of Socially Expected Activities	16	Activities relating to family, self-care, home adjustment, and community	Summated ratings	Katz and Lyerly (1963)
Level of Expectations for Performance of Social Activities	16	Whether or not respondent was expected to engage in certain activities	Summated ratings	Katz and Lyerly (1963)
Level of Free-Time Activities	23	Items covering hobbies, social and community activities	Summated ratings	Katz and Lyerly (1963)
Level of Satisfaction with Free-Time Activities	23	Satisfaction with level of activities	Summated ratings	Katz and Lyerly (1963)
Community Adjustment Scale	39	Items describing patients' community behavior: social and symptomatic areas	Summated ratings; scores standardized	Ellsworth, Foster, Childers, et al. (1968)
Social Work Scale	12	Items dealing with the relative's expectation and degree of satisfaction with and the patient's level of performance in personal comfort, employment, family interpersonal relations, and socialization	Summated ratings; scores standardized	Ellsworth, Foster, Childers, et al. (1968)
Standard and Scaled Interview To Assess Maladjustment (5 subscales)		Behavioral maladjustment, friction, distress	Summated ratings of equal-interval values	Gurland, Yorkston, Stone, et al. (1972)
Work	9	Unstable, inefficient, unsuccessful	Summated ratings of equal-interval values	Gurland, Yorkston, Stone, et al. (1972)
Social	9	Isolated, constrained, apathetic	Summated ratings of equal-interval values	Gurland, Yorkston, Stone, et al. (1972)
Family	9	Reticent, rebellious, withdrawn	Summated ratings of equal-interval values	Gurland, Yorkston, Stone, et al. (1972)

Table 2—continued

Index/Scale	No. of Items	Definition/Item Content	Scaling and/or Scoring Method	Investigator(s)
Standard and Scaled Interview To Assess Maladjustment (cont.)				
Marriage	9	Constrained, submissive, overdependent	Summated ratings of equal-interval values	Gurland, Yorkston, Stone, et al. (1972)
Sex	9	Inadequate, cold, rejected	Summated ratings of equal-interval values	Gurland, Yorkston, Stone, et al. (1972)
Adjustment Scale	Not Given	Includes items dealing with occupation, social participation, and family life	Guttman scalogram analysis	Adler (1955)
Sickness Impact Profile (4 "social health" subscales)		Items describing sickness-related behavioral change (dysfunction)	Weights assigned and percent score calculated	Bergner, Bobbitt, Pollard, et al. (1976)
Social Interaction	24	Includes items such as: talks less with people, shows less affection, visits less, etc.	Weights assigned and percent score calculated	Bergner, Bobbitt, Pollard, et al. (1976)
Usual Daily Work	15	Includes items such as: acts irritable toward associates, works short periods, works more slowly	Weights assigned and percent score calculated	Bergner, Bobbitt, Pollard, et al. (1976)
Leisure Pastimes and Recreation	9	Includes items dealing with hobbies, community activities, entertainment	Weights assigned and percent score calculated	Bergner, Bobbitt, Pollard, et al. (1976)
Interaction with Family Members	17	Includes items such as: isolating self, paying less attention to others, outbursts of anger	Weights assigned and percent score calculated	Bergner, Bobbitt, Pollard, et al. (1976)
II. SCALES				
Family Interrelations				
Extended Family Orientation Scale	4	Extent to which respondent identifies with family	Guttman scalogram analysis	Stuckert (1963)
Extended Family Unity Scale	3	Concern with maintaining unity in family	Guttman scalogram analysis	Stuckert (1963)
Extended Family as Reference Scale	2	Use of family as reference group	Not Given	Stuckert (1963)
Family Orientation Scale	4	Degree of family attachment	Guttman scalogram analysis	Litwack (1960)

Table 2—continued

Index/Scale	No. of Items	Definition/Item Content	Scaling and/or Scoring Method	Investigator(s)
Family Life Scale	Not Given	Includes marital adjustment, parent-child relationships, affect	Weighted and then averaged	Barrabee, Barrabee, and Finesinger (1955); Bockoven, Pandiscio, and Solomon (1956)
Marital Scale	12	Includes items about showing love, quarreling, talking about personal feelings, love for spouse, satisfaction with marriage, etc.	Summated ratings	Dohrenwend, Dohrenwend, and Cook (1973)
Family/Social/Community				
Voluntary Association Participation Scale	5	Participation in group activity including membership, contributions, attendance, committee membership, official position	Weights assigned and summed	Chapin (1928)
Voluntary Association Participation Scale	Not Given	Membership, involvement, and frequency of attendance at voluntary associations	Summated ratings	Cutler (1973)
Voluntary Association Participation Scale	Not Given	Membership, frequency of attendance, serving on committees	Summated ratings	Olsen (1970)
Formal Social Participation Scale	6	Manifest and latent participation in community development program including membership, serving on committee, holding office	Summated ratings	Young and Mayo (1959)
Political Organization Participation Index	Not Given	Membership, attendance, office/community activity	Summated ratings	Olsen (1970)
Church Participation Index	3	Membership, attendance, participation in activities	Summated ratings	Olsen (1970)
Organizational Activity Scale	18	Number of religious services and other meetings attended each month	Summated ratings	Palmore and Luikart (1972)
Community Participation Scale	16	Memberships in organizations and participation in community affairs	One point assigned for each affirmative answer or for frequency of activity above a certain level and then summed	Foskett (1955)

Table 2—continued

Index/Scale	No. of Items	Definition/Item Content	Scaling and/or Scoring Method	Investigator(s)
Social Participation Scale (10 subscales)				
Number of Memberships	Not Given	Memberships in voluntary organizations	Weights assigned and summed	Wilensky (1961)
Frequency of Contact	Not Given	Number of meetings attended, time spent on activities	Weights assigned and summed	Wilensky (1961)
Range of Secondary Participation: Heterogenity	Not Given	Interactions with people who differ in social characteristics	Weights assigned and summed	Wilensky (1961)
Range of Secondary Participation: Institutional Spheres	Not Given	Number of spheres covered by memberships: economic, political, etc.	Weights assigned and summed	Wilensky (1961)
Community Attachment	Not Given	Voting and charitable contributions	Weights assigned and summed	Wilensky (1961)
Range of Primary Relations	Not Given	Visits socially, living with spouse	Weights assigned and summed	Wilensky (1961)
Role Integration Work	Not Given	Degree to which social relations at work overlap those off work	Weights assigned and summed	Wilensky (1961)
Friendship Circles	Not Given	Friends who know one another well	Weights assigned and summed	Wilensky (1961)
Overlapping Friendship	Not Given	Membership in common with friends	Weights assigned and summed	Wilensky (1961)
Duration of Friendships	Not Given	Number of friends known for 10 years or more	Weights assigned and summed	Wilensky (1961)
Index of Life Chances	Not Given	Includes socioeconomic status, working class identification, age, group participation, marital status, religious preference	Items dichotomized, assigned weights of 0 or 1, and summed	Meier and Bell (1959)
Community Activities Index	Not Given	Attendance and participation in community service programs	Summated ratings	Olsen (1970)
Index of Community Involvement	4	Interest in local news, membership in organizations, knowledge of community problems	Not Given	Form (1975)
Social Participation Scale	Not Given	Includes visits, watching television, attending clubs, religious services	Summation of performed activities	Angrist, Dinitz, Lefton, et al. (1961)
Social Participation Scale	Not Given	Participation in formal and informal groups (memberships and contacts with others)	Guttman scalogram analysis	Adler (1955)
Social Contacts Scale	Not Given	Number of visits or telephone calls with friends/relatives and number of meetings attended	Summated ratings	Palmore and Luikart (1972)

Table 2—continued

Index/Scale	No. of Items	Definition/Item Content	Scaling and/or Scoring Method	Investigator(s)
Sociability Index	3	Being in touch with relatives, getting together with friends, and telephone contacts with friends	Each item dichotomized at the median, items combined into a scale ranging from 0 to 3	Bradburn (1969)
Friends Interaction Index	4	Number of friends, frequency of visits, membership and participation in informal friendship groups	Summated ratings	Olsen (1970)
Relatives Interaction Index	2	Number of relatives in community, frequency of visits	Summated ratings	Olsen (1970)
Community Scale	Not Given	Includes number of friends, contacts with friends, participation in community organizations, and affect	Weights assigned and averaged	Barrabee, Barrabee, and Finesinger (1955); Bockoven, Pandiscio, and Solomon (1956)
Index of Neighborhood Involvement	4	Includes number of neighborhood friends, visits, discussions, church attendance	Not Given	Form (1975)
Index of Familism	2	Visits relations; relatives live in neighborhood	Not Given	Form (1975)
Mobility Scale	Not Given	Number of trips last week to people and places	Summation of frequencies	Fine (1975)
Mobility Scale	Not Given	General frequency of visits to people and places	Summation of frequencies	Fine (1975)
Activity Inventory	19	Physical mobility, intimate social contacts, use of leisure time, organizational membership, and work role	Summated ratings	Maddox (1963) (same as Cavan, Burgess, Havighurst, et al., 1949 Index)
Activity Scale	4	Visits, walks or rides, trips to town, and church attendance	Guttman scalogram analysis	Dicicco and Apple (1958)
Activity Inventory	20	Participation in the area of intimate contacts, leisure, security ideas, health problems, religious activities	Summated ratings	Jeffers and Nichols (1961) (same as Cavan, Burgess, Havighurst, et al., 1949 Index)
Voluntary Social Isolation Scale	3	Seeing friends, hobbies performed alone or with others, participation in voluntary associations	Zero-cell analysis to form three-point cumulative scale	Teele (1962)
Social Isolation Scale	Not Given	Lack of participation with kin, peers, neighbors, organizational membership and attendance	Responses dichotomized into isolates and participants	Meier and Bell (1959)
Social Relations Scale	3	Seldom sees anyone, no friends, does not visit	Summated ratings	Dohrenwend, Dohrenwend, and Cook (1973)

Table 2—continued

Index/Scale	No. of Items	Definition/Item Content	Scaling and/or Scoring Method	Investigator(s)
Social Isolation Scale	5	Contacts with friends or neighbors	Summated ratings	Paykel, Myers, Lindenthal, et al. (1974)
Social Isolation Scale	2	Visits to and from others	Summed and then dichotomized (none; any)	Ludwig and Collette (1970)
Other Social Phenomena				
Index of National Involvement	2	Interest in and ability to name national problems	Not Given	Form (1975)
Mass Media Exposure Index	Not Given	Listening to informational programs, reading serious magazines and newspapers	Weights assigned to responses and then summed for index score	Olsen (1970)
Political News Exposure Index	Not Given	Listening to news programs, reading political articles	Weights assigned to responses and then summed for index score	Olsen (1970)
Cultural Events Index	Not Given	Attendance at cultural events	Weights assigned to responses and then summed for index score	Olsen (1970)
Political Discussion Index	Not Given	Discussing politics with friends, neighbors, relatives	Weights assigned to responses and then summed for index score	Olsen (1970)
Voting Index	Not Given	Registration and voting patterns	Weights assigned to responses and then summed for index score	Olsen (1970)
Partisan Political Activities Index	Not Given	Activities in campaign work	Weights assigned to responses and then summed for index score	Olsen (1970)
Partisan Political Involvement Index	Not Given	Serving on political committees, holding office	Weights assigned to responses and then summed for index score	Olsen (1970)
Recreational Activities Scale	17	Number of activities in which respondent takes part: cards, reading	Weight of 1 assigned for minor participation and 2 assigned for major participation; scores for activities then averaged	Burgess (1954)
Governmental Contacts Index	Not Given	Contacting public officials	Weights assigned to responses and then summed for index score	Olsen (1970)

Table 2—continued

Index/Scale	No. of Items	Definition/Item Content	Scaling and/or Scoring Method	Investigator(s)
Social Activity Scale	Not Given	Number of hours last week spent in social activities such as sports events, concerts, parties	Summated ratings	Palmore and Luikart (1972)
Neighborhood Integration	6	Extent to which respondent fits into neighborhood	Not Given	Stuckert (1963)
Work Related Functioning				
Employment Scale	5	Employment status including job hours, regularity, job changes, interpersonal relations and affect	Weighted and averaged	Barrabee, Barrabee, and Finesinger (1955); Bockoven, Pandiscio, and Solomon (1956)
Economics Scale	2	Financial status and affect	Weighted and averaged	Barrabee, Barrabee, and Finesinger (1955); Bockoven, Pandiscio, and Solomon (1956)
Work Performance Scale	4	Includes current employment status, time unemployed, number of job changes, why left last job	Summated ratings	Dohrenwend, Dohrenwend, and Cook (1973)
Work Regularity Scale	Not Given	Includes regular work in months prior to interview as well as employment at time of interview	Guttman scalogram analysis	Adler (1955)
Productive Hours Scale	Not Given	Number of hours spent working on the job, as a volunteer, or at home	Summated ratings	Palmore and Luikart (1972)

Table 3

Single-Item Measures of Social Health Constructs

Category/Construct	Definition[a]	Investigator(s)
FAMILY		
Number of close relatives		Bell and Boat (1957) Renne (1974) Greenblatt (1975)
Contact with family[b]	Frequency of contact/ visits with relatives	Axelrod (1956) Bell and Boat (1957) Litwak (1960) Wilensky (1961) Teele (1962) Katz and Lyerly (1963) Stuckert (1963) Bradburn (1969) Olsen (1970) Fine (1975) Form (1975) Bergner, Bobbitt, Pollard, et al. (1976)
Reliance on relatives	Number of relatives individual can rely on for help	Bell and Boat (1957)
Family cohesion	Extent of identification with family (use as reference group)	Stuckert (1963)
Family adjustment	Relationships with parents and siblings	Barrabee, Barrabee, and Finesinger (1955) Bockoven, Pandiscio, and Solomon (1956) Paykel, Weissman, Prusoff, et al. (1971)
Marital status		Adler (1955) Meier and Bell (1959) Renne (1974) Greenblatt (1975) Chambers, Sackett, Goldsmith, et al. (1976)
Marital adjustment	Ability to function in marital role	Barrabee, Barrabee, and Finesinger (1955) Bockoven, Pandiscio, and Solomon (1956)

Table 3—continued

Category/Construct	Definition	Investigator(s)
Living arrangements	Living alone, with another adult, with children	Greenblatt (1975)
Talk about personal feelings		Dohrenwend, Dohrenwend, and Cook (1973)
Show love		Dohrenwend, Dohrenwend, and Cook (1973)
Lack of affection	Parents and/or spouse	Paykel, Weissman, Prusoff, et al. (1971)
Sexual behavior	Sex problems/diminished intercourse	Paykel, Weissman, Prusoff, et al. (1971)
Physical quarrels		Dohrenwend, Dohrenwend, and Cook (1973)
Marriage breaking up		Dohrenwend, Dohrenwend, and Cook (1973)
Friends spouse enjoys		Dohrenwend, Dohrenwend, and Cook (1973)
Family interactions	Types of interactions	Katz and Lyerly (1963) Ellsworth, Foster, Childers, et al. (1968) Bergner, Bobbitt, Pollard, et al. (1976)
SOCIAL		
Number of close friends		Jaco (1954) Barrabee, Barrabee, and Finesinger (1955) Bockoven, Pandiscio, and Solomon (1956) Bell and Boat (1957) Wilensky (1961) Olsen (1970) Renne (1974) Greenblatt (1975) Tornstam (1975)

Table 3—continued

Category/Construct	Definition	Investigator(s)
Contact with friends[b]	Frequency of contact or visits	Jaco (1954) Axelrod (1956) Bockoven, Pandiscio, and Solomon (1956) Bell and Boat (1957) Wilensky (1961) Teele (1962) Katz and Lyerly (1963) Ellsworth, Foster, Childers, et al. (1968) Bradburn (1969) Olsen (1970) Paykel, Weissman, Prusoff, et al. (1971) Paykel, Myers, Lindenthal, et al. (1974) Fine (1975) Form (1975) Bergner, Bobbitt, Pollard, et al. (1976)
Outside friends	Has outside friends of own	Ellsworth, Foster, Childers, et al. (1968)
Number of good friends at work		Bell and Boat (1957) Wilensky (1961) Form (1975)
Neighbors known	Number of families in two-block radius known well enough for mutual home visiting	Stuckert (1963)
Number of neighborhood friends		Bell and Boat (1957) Litwak (1960) Paykel, Myers, Lindenthal, et al. (1974) Form (1975)
Number of acquaintances		Jaco (1954)
Number of friends known for 10 years or more		Wilensky (1961)
Number of friends in same formal groups		Bell and Boat (1957)

Table 3—continued

Category/Construct	Definition	Investigator(s)
Contact with neighbors		Axelrod (1956) Bell and Boat (1957) Wilensky (1961) Paykel, Myers, Lindenthal, et al. (1974) Form (1975)
Contact with coworkers		Axelrod (1956) Bell and Boat (1957) Wilensky (1961)
Contact with friends at work		Wilensky (1961)
Friendship choices		Burgess (1954)
Reliance on friends/ coworkers/neighbors	Number of people individual can rely on for help	Bell and Boat (1957)
Lack of friends	Need for more friends based on quantity or quality of present friendships	Linn, Sculthorpe, Evje, et al. (1969)
No friends to count on		Dohrenwend, Dohrenwend, and Cook (1973)
Membership in voluntary groups/number of memberships		Chapin (1928) Jaco (1954) Adler (1955) Foskett (1955) Axelrod (1956) Meier and Bell (1959) Young and Mayo (1959) Litwak (1960) Jeffers and Nichols (1961) Wilensky (1961) Teele (1962) Maddox (1963) Ellsworth, Foster, Childers, et al. (1968) Olsen (1970) Cutler (1973) Renne (1974) Form (1975) Greenblatt (1975)

Table 3—continued

Category/Construct	Definition	Investigator(s)
Frequency of group attendance	Participation in or number of times individual attends group meetings	Chapin (1928) Adler (1955) Barrabee, Barrabee, and Finesinger (1955) Foskett (1955) Axelrod (1956) Meier and Bell (1959) Young and Mayo (1959) Wilensky (1961) Teele (1962) Katz and Lyerly (1963) Maddox (1963) Stuckert (1963) Ellsworth, Foster, Childers, et al. (1968) Linn, Sculthorpe, Evje, et al. (1969) Olsen (1970) Palmore and Luikart (1972) Cutler (1973) Garrity (1973) Tornstam (1975)
Active in organizations	Number of organizations respondent takes an active part in	Bradburn (1969)
Church membership[c]		Jaco (1954) Wilensky (1961) Olsen (1970) Paykel, Myers, Lindenthal, et al. (1974) Renne (1974) Greenblatt (1975) Myers, Lindenthal, and Pepper (1975)
Frequency of church attendance		Jaco (1954) Dicicco and Apple (1958) Angrist, Dinitz, Lefton, et al. (1961) Jeffers and Nichols (1961) Wilensky (1961) Teele (1962) Katz and Lyerly (1963) Maddox (1963)

Table 3—continued

Category/Construct	Definition	Investigator(s)
Frequency of church attendance (continued)		Ellsworth, Foster, Childers, et al. (1968) Olsen (1970) Palmore and Luikart (1972) Paykel, Myers, Lindenthal, et al. (1974) Renne (1974) Form (1975) Greenblatt (1975)
Committee membership		Chapin (1928) Young and Mayo (1959)
Community activities	Taking part in local issues	Foskett (1955) Olsen (1970)
Place of meeting	Meeting friends in neighborhood and/or work	Bell and Boat (1957)
WORK/ROLE		
Occupational mobility	Inter-generational mobility in terms of changes in occupational prestige	Meier and Bell (1959) Litwak (1960) Stuckert (1963) Form (1975)
Employment	Absence or presence of gainful employment	Jaco (1954) Adler (1955) Barrabee, Barrabee, and Finesinger (1955) Bockoven, Pandiscio, and Solomon (1956) Angrist, Dinitz, Lefton, et al. (1961) Jeffers and Nichols (1961) Katz and Lyerly (1963) Palmore and Luikart (1972) Dohrenwend, Dohrenwend, and Cook (1973) Garrity (1973) Greenblatt (1975) Myers, Lindenthal, and Pepper (1975)

Table 3—continued

Category/Construct	Definition	Investigator(s)
Orderly career	Progression through related jobs in an ordered sequence	Wilensky (1961)
Work	Work-related activities and/or quantity	Maddox (1963) Paykel, Weissman, Prusoff, et al. (1971) Gurland, Yorkston, Stone, et al. (1972) Palmore and Luikart (1972) Bergner, Bobbitt, Pollard, et al. (1976)
Occupation		Renne (1974)
Job stability/history	Number of times individual changes jobs or past job history	Jaco (1954) Barrabee, Barrabee, and Finesinger (1955) Bockoven, Pandiscio, and Solomon (1956) Dohrenwend, Dohrenwend, and Cook (1973) Renne (1974) Greenblatt (1975)
Lack of work	Insufficient level of work activity	Linn, Sculthorpe, Evje, et al. (1969) Paykel, Weissman, Prusoff, et al. (1971)
Time unemployed		Dohrenwend, Dohrenwend, and Cook (1973)
Why left last job		Dohrenwend, Dohrenwend, and Cook (1973)
Held a full-time job		Ellsworth, Foster, Childers, et al. (1968)
Amount of earnings from job		Ellsworth, Foster, Childers, et al. (1968)
Financial status		Barrabee, Barrabee, and Finesinger (1955) Bockoven, Pandiscio, and Solomon (1956)
Education		Renne (1974)

Table 3—continued

Category/Construct	Definition	Investigator(s)
OTHER SOCIAL PHENOMENA		
Frequency of visits to places		Fine (1975)
Outside interests		Ellsworth, Foster, Childers, et al. (1968)
Neighbors as a reference group		Stuckert (1963)
Discusses neighborhood problems		Form (1975)
Concern with neighborhood unity		Stuckert (1963)
Telephone calls	Calls from or to friends/relatives	Bradburn (1969) Palmore and Luikart (1972) Bergner, Bobbitt, Pollard, et al. (1976) Chambers, Sackett, Goldsmith, et al. (1976)
Leisure activities	Types of hobbies	Jeffers and Nichols (1961) Teele (1962) Katz and Lyerly (1963) Maddox (1963) Linn, Sculthorpe, Evje, et al. (1969) Garrity (1973) Bergner, Bobbitt, Pollard, et al. (1976)
Impaired leisure activities		Paykel, Weissman, Prusoff, et al. (1971)
Recreational activities	Solitary and group activities	Burgess (1954)
Listens to radio		Angrist, Dinitz, Lefton, et al. (1961) Katz and Lyerly (1963)
Reads the paper		Olsen (1970)

Table 3—continued

Category/Construct	Definition	Investigator(s)
Trips to town		Jaco (1954) Dicicco and Apple (1958)
Television watching	Watches and/or enjoys television	Nettler (1957) Angrist, Dinitz, Lefton, et al. (1961) Katz and Lyerly (1963)
Lack of interest in community affairs		Linn, Sculthorpe, Evje, et al. (1969)
Writes letters		Katz and Lyerly (1963)
Attends movies, lectures, etc.		Katz and Lyerly (1963) Olsen (1970) Palmore and Luikart (1972) Chambers, Sackett, Goldsmith, et al. (1976)
Interest in local news/ community problems/ national news and problems		Foskett (1955) Nettler (1957) Olsen (1970) Form (1975)
Sports	Participates in sports, games; interested in or attends sport events	Nettler (1957) Katz and Lyerly (1963) Palmore and Luikart (1972)
Political discussion		Foskett (1955) Olsen (1970)
Voting behavior		Jaco (1954) Foskett (1955) Nettler (1957) Olsen (1970) Renne (1974) Greenblatt (1975)

Table 3—continued

Category/Construct	Definition	Investigator(s)
Political activity	Takes part in political activities such as passing out leaflets, volunteer work, holding office	Olsen (1970) Renne (1974) Greenblatt (1975)
Remembers names of others/friends		Katz and Lyerly (1963) Stuckert (1963)

[a]Expanded definition when construct is not self-explanatory.

[b]Counts of contacts with friends and with relatives were confounded in 12 studies: Adler (1955); Barrabee, Barrabee, and Finesinger (1955); Dicicco and Apple (1958); Meier and Bell (1959); Angrist, Dinitz, Lefton, et al. (1961); Ludwig and Collette (1970); Palmore and Luikart (1972); Dohrenwend, Dohrenwend, and Cook (1973); Garrity (1973); Renne (1974); Greenblatt (1975); and Chambers, Sackett, Goldsmith, et al. (1976). Information was not sufficient to determine whether Jeffers and Nichols (1961) and Maddox (1963) confounded or distinguished contacts with friends and relatives in their measures.

[c]Information was not suffficient to determine whether Jeffers and Nichols (1961) or Maddox (1963) included church membership along with church attendance.

frequency of contacts with family and friends, membership in voluntary groups, frequency of attendance at group meetings, and attendance at church were most commonly measured. This suggests that there is conceptual agreement regarding the importance of social participation and interpersonal interaction. Constructs related to employment status were commonly included in global social health indexes, as were those related to group (rather than individual) hobbies, family relationships, and leisure activities. These constructs have been less frequently measured by scale or single-item measures of social health.

Thus, the four major roles defined by those publishing conceptualizations of social health have been frequently studied by investigators who did not necessarily set out to measure social health. The content of items placed in the same scale or category by these investigators supports the content validity of items in specific major role areas defined by those who constructed social health indexes (discussed in the first part of this section). A number of measures (referred to as "Other Social Phenomena" in Tables 2 and 3), however, were not explicitly included in the family, social, community, or work categories defined by those who published social health indexes. Inclusion of items measuring other social phenomena, such as listening to the radio, watching television, and spectator sports, would improve the content validity of social health indexes in relation to the literature; whether their empirical validity would be improved is not clear.

Although they were grouped together in some social health measures, contacts with relatives and close friends should perhaps be distinguished from contacts with friends and neighbors; the former may represent greater involvement and possibly more positive social health. Such a distinction is consistent with the role areas (i.e.,

family as distinguished from social) delineated by those who constructed social health indexes. Distinction of group membership from actual attendance at meetings or other forms of active participation may also be important; those who participate may be more involved socially than those who simply belong but do not attend group functions. If measures of memberships and actual participation are combined in a single scale, their cumulative nature should be tested empirically.

Some investigators measured "social isolation" using only objectively defined items, while others (whose measures were not included in Tables 2 and 3) used subjective ratings. Meier and Bell (1959) and Teele (1962) defined social isolation in terms of group memberships and attendance at voluntary organizations and contacts with friends, relatives, and neighbors. Five investigators (Dean, 1961; Klemmack, Carlson, and Edwards, 1973; Renne, 1974; Greenblatt, 1975; Tornstam, 1975) constructed social isolation scales based entirely on self-ratings of isolation.

A major difference in content of items and scales used to measure social health constructs was whether favorable or unfavorable characteristics were described. For example, items in Renne's (1974) Sociability Scale focused on how many close friends a person has, how many relatives he feels close to, and how many friends or relatives he sees monthly. Barrabee, Barrabee, and Finesinger (1955) also concentrated on number of friends and frequency of visits in their Sociability Scale. In contrast, Gurland, Yorkston, Stone, et al. (1972) focused on behavior that was isolated, constrained, unadaptable, and unconforming. Paykel, Weissman, Prusoff, et al. (1971) included items describing both favorable and unfavorable events and activities, such as contact with friends and social interactions as well as reticence, friction, and social discomfort. In addition to whatever implications these different definitions of social health have for the predictive validity of the measures, they may also influence the extent and nature of bias due to response set. For example, the tendency to agree with items regardless of their content will bias upward scores computed from favorably worded items and bias downward those computed from unfavorably worded items.

Data for social health measures have been collected primarily by trained interviewers. Other methods of data collection included self-report as well as self-administered questionnaires filled out by family, friends, or professional staff. Data reported by Ellsworth, Foster, Childers, et al. (1968) suggested that family and staff ratings were equally predictive of patients' self-ratings of community adjustment. Comparison of interviewer- and self-administration of the Sickness Impact Profile (Gilson, Bergner, Bobbitt, et al., 1975) indicated that self-administration was both feasible and reliable. These findings suggest that self-administered questionnaires (such as those used in HIS) will yield satisfactory data on social health.

Investigators who constructed indexes of social health were often unable to develop measures applicable to all individuals in the population. For example, in Renne's Social Health Index the employability score could not be computed for retired persons or students. Similarly, Dohrenwend, Dohrenwend, and Cook (1973) could not compute scores for all persons on their Marriage, Job Morale, or Work History scales. For policy research in general populations, categories of social health should be defined and operationalized so that scores can be estimated for everyone likely to be affected by the policy and so that scores have the same meaning across social class groups. Restrictions in the applicability of social health scores across groups of interest, such as those noted above, limit the usefulness of many social health measures fielded thus far.

In summary, social health has been defined primarily in terms of interaction with others and ability to participate adequately in these interactions. Emphasis has been placed on interactions within specific role areas as well as on social behavior evident across areas. Social health has been most commonly measured in terms of activities with family and friends and membership and activity in voluntary groups. Both objective and subjective social health measures have been used, without a clear understanding of the extent of overlap between subjective measures and those of mental health. Findings suggest that self-administered questionnaires may be used reliably to elicit social health information. Investigators often grouped items together in scales without taking into account the nature of their interrelationships. They generally computed total scores by summing responses across items, a method that does not allow for differences in the relative importance of items. Finally, investigators ran into problems in trying to construct overall indexes applicable to all people, particularly when measures of work and marriage were included.

VARIABILITY

An attempt was made to summarize data on the prevalence of different levels of social health, as defined by measures reported in the published literature. Such a summary would indicate the variability that can be expected in social health scores, and provide information useful in developing norms for social health measures. Summarizing published data, however, was difficult because of lack of comparability in operational definitions of variables measured (including different recall periods), and in populations studied (e.g., general populations versus psychiatric or former mental patient populations).

The absence of score distributions and precise definitions of social health variables in published reports greatly limits their usefulness in estimating population prevalence and in making comparisons across studies.

Of the studies reviewed, only three published prevalence data that met the following criteria: (1) their definitions of social health in terms of interpersonal interaction and community participation were very similar to those most frequently adopted in the published literature and were thus most relevant to HIS purposes; (2) their measures were administered to noninstitutionalized populations that most closely approximated the HIS population; and (3) there was some comparability in definitions and in some cases results could be compared across the three studies. In several instances, studies that reported prevalence data met these criteria but did not specify exact levels of responses (e.g., percentages of respondents with few social contacts were reported without defining the exact meaning of "few"). Because such data are not useful in establishing norms for social health measures, they were not included in this summary.

Both Axelrod (1956) and Teele (1962)[9] reported estimates of the frequency of association with friends. Looking at the extremes of the distributions, 20.3 to 31

[9] Teele's data were based on a sample of white relatives of former mental patients (N=649). Although noninstitutionalized, the sample may not be typical of a general population; relatives of former mental patients might be expected to exhibit poorer mental health than the general population. For this reason, generalization based on Teele's data should be made cautiously.

percent reported no contacts with friends during a one-month period, while 28 to 51.6 percent reported seeing friends as often as four or more times per month.[10]

Only Axelrod reported estimates of the frequency of association with neighbors or coworkers. The distribution was bimodal with 29 percent reporting visits at least once a week and 50 percent reporting them less than once a month. Very few respondents were categorized between these two extremes. Associations with coworkers were reported less frequently; 62 percent visited coworkers less often than once a month and only 12 percent reported visits at least once a week.

Both Axelrod and Teele reported data on associations with relatives. Because of noncomparability in operational definitions of this variable, the data from the two studies could not be compared. Axelrod reported that 49 percent of his sample visited with relatives at least once a week, while 22 percent did so less than once a month. Studying the actual number of relatives seen in the past month, Teele found that 23.3 percent of his sample saw none in the past month (comparable to Axelrod's finding that 22 percent associated with relatives less often than once a month), while 19.9 percent saw five or more relatives during the past month.

Comparison of prevalence data for the four variables included in Axelrod's study (associations with relatives, friends, neighbors, and coworkers) suggests that persons are most likely to report visiting relatives. The next group most likely to be associated with is friends, followed by neighbors and coworkers.

Prevalence data for contacts with both friends and relatives were reported in two studies. Differences in definitions preclude comparison of results across studies. At the extremes of the distribution in Greenblatt's study (1975), 8 percent did not contact friends or relatives at least monthly; 35 percent reported seeing six or more friends or relatives monthly. Axelrod reported that 18 percent of his sample saw relatives, friends, neighbors, and coworkers less often than once a week, while 30 percent saw them at least twice a week.

All three studies reported data on participation in voluntary groups or activities. Estimates of no memberships or activities ranged from 10 to 37 percent for samples studied by Greenblatt and Axelrod; Teele reported that 58 percent of his sample did not belong to voluntary associations. (Recall that Teele's population may be atypical.) The majority of people in both Greenblatt's and Axelrod's studies had one, two, or three memberships. In both populations, only 2 percent of those persons who were members of at least one group reported six or more memberships. Axelrod reported that 24 percent never attended a group meeting during the previous three months, while 19 percent attended at least three meetings in the previous three months and had engaged in other related activities.

Only Teele reported estimates of frequency of church attendance. In his sample, 32.8 percent had attended church during the previous month, and 53 percent had attended one or more times per week. Teele also reported data on the amount of time spent in social hobbies per week; 85.8 percent of his sample spent no time in hobbies, and 14.2 percent spent one or more hours per week in hobbies.

[10] The two higher estimates were reported by Teele.

RELIABILITY

Reliability of measurement refers to the extent to which measured variance is due to true score (rather than random error), and establishing reliability is a prerequisite to using a score for any purpose. Only ten investigators whose measures were reviewed reported tests of the reliability of social health measures. Table 4 summarizes reliability findings for single-item and scale measures and other information relevant to the interpretation of reliability estimates. Only one investigator studied reliability in a general population; the remainder reported reliability for measures administered to select populations, chiefly those of psychiatric patients.

Some of the information in Table 4 pertains only to reliability of measurement (e.g., internal-consistency reliability coefficients); other information reflects both reliability of measurement and other factors that may influence scores. When high, test-retest coefficients indicate high reliability and stability of the trait being measured over time. When these coefficients are low, poor reliability or trait instability may be the cause. A high reproducibility coefficient indicates both high internal-consistency reliability and a reproducible scale. A reproducibility coefficient is low when reliability is low or when a cumulative scale has not been achieved. High correlations between raters indicate both high reliability for ratings by each rater (i.e., intrarater agreement) and the objectivity of ratings (i.e., interrater agreement). Either low reliability or subjectivity of ratings may explain low correlations between raters. (Volume I, Sec. II, provides a more detailed discussion of methods used to estimate reliability, and defines standards used to evaluate the strength of reliability coefficients.)

All coefficients in Table 4 are moderate to high; certainly they suggest sufficient reliability for purposes of group comparisons, such as those planned for analysis of HIS social health data. Reproducibility coefficients ranged from 0.87 to 0.93; coefficients of scalability[11] were not reported. High interrater reliabilities were reported for the Social Dysfunction Rating Scale (Linn, Sculthorpe, Evje, et al., 1969) and for the Standard and Scaled Interview To Assess Maladjustment (Gurland, Yorkston, Stone, et al., 1972). In addition, high interrater reliability (calculated using the stringent intraclass coefficient) was achieved with single-item measures included in the Social Dysfunction Rating Scale (Linn, Sculthorpe, Evje, et al.). Ellsworth, Foster, Childers, et al. (1968) also achieved high reliability with scales containing few items (e.g., the two-item Community Adjustment Scale), perhaps because four (rather than two) response choices were offered per item.

Ellsworth, Foster, Childers, et al. and Gilson, Bergner, Bobbitt, et al. (1974, 1975) reported internal-consistency and test-retest reliability coefficients for social health measures. In both cases, test-retest coefficients tended to be higher than the internal-consistency coefficients. The most plausible explanation is that items in the same scale contained a substantial amount of unique reliable variance (i.e., tended to reliably measure different things) in addition to whatever variance they shared. This finding, along with frequent observations of low to moderate associations among social health measures (reported in the validity section below), suggests that

[11] The coefficient of scalability represents the proportion of possible improvement in the coefficient of reproducibility that was achieved. For a further discussion of this statistic in the context of Guttman scalogram analysis, see Vol. I, Sec. II.

Table 4

Summary of Reliability Estimates for Social Health Measures Reported in the Literature

Social Health Measure	No. of Items	Reliability Coefficients[a] ICR	TRT	CR	IRR	Scaling Method	Sample Characteristics	Investigator(s)
Reported activity	4			≥.90		Guttman scalogram analysis	Elderly persons 65 years of age and older (N=95)	Dicicco and Apple (1958)
Extended family orientation	4			.90		Guttman scalogram analysis	White married women (N=266)	Stuckert (1963)
Extended family unity	3			.93		Guttman scalogram analysis	White married women (N=266)	Stuckert (1963)
Community Adjustment Scale						Summated ratings	Male schizoparenics (ICR sample = 90) (TRT sample = 31)	Ellsworth, Foster, Childers, et al. (1968)
Good contact	12	.91[b]	.87[c]					
Calm, friendly	11	.75[b]	.92[c]					
Acceptable behavior	4	.61[b]	.81[c]					
Friendship skills	5	.73[b]	.90[c]					
Organization participation	4	.62[b]	.74[c]					
Employment	2	.89[b]	.98[c]					
Social Work Scale[d]						Summated ratings	Male schizoparenics (ICR sample = 90) (TRT sample = 31)	Ellsworth, Foster, Childers, et al. (1968)
Personal comfort	3	.85[b]						
Productivity	3	.85[b]						
Family-interpersonal	3	.80[b]						
Socialization	3	.75[b]						
Social Dysfunction Rating Scale	21				.91[e]	Summated ratings	Schizophrenic patients (N=10)	Linn, Sculthorpe, Evje, et al. (1969)
Social Dysfunction Rating Scale						Summated ratings	General population (N=40)	Linn, Sculthorpe, Evje, et al. (1969)
Lack of friends, contacts	1				.86[f]			
Need for more friends	1				.79[f]			
Lack of participation in community affairs	1				.79[f]			
Lack of leisure time activities	1				.76[f]			
Lack of work	1				.75[f]			
Lack of satisfaction in work	1				.73[f]			
Lack of satisfying family relationships	1				.72[f]			
Social Adjustment Scale	48				.80[g]	Summated ratings	Depressed women (N not given)	Paykel, Weissman, Prusoff, et al. (1971)

Table 4—continued

Social Health Measure	No. of Items	Reliability Coefficients[a] ICR	TRT	CR	IRR	Scaling Method	Sample Characteristics	Investigator(s)
Standard and Scaled Interview To Assess Maladjustment						Summated ratings	Psychiatric patients (N=15)	Gurland, Yorkston, Stone, et al. (1972)
Factors:								
Social isolation	5				.90[h]			
Work inadequacy	5				.97[h]			
Friction with family	3				.84[h]			
Dependence on family	2				.88[h]			
Sexual dissatisfaction	3				.78[h]			
Friction outside family	3				.81[h]			
Social Relations Scale	3	.69[i]				Summated ratings	Prisoners, psychiatric patients, community residents (N=269)	Dohrenwend, Dohrenwend, and Cook (1973)
Job Morale Scale	5	.75[i]						
Marital Scale	12	.83[i]						
Anomia	5			≥.87[j]		Guttman scalogram analysis	Automobile industry workers in U.S., Italy, Argentina, and India (N=1092)	Form (1975)
Sickness Impact Profile (long form)	235	.97[i]	.88[k]			Items weighted and percent score calculated	Patients at three health facilities (TRT sample of 119; ICR sample for short form ranged from 10 to 29, for long form ranged from 58 to 103)	Gilson, Bergner, Bobbitt, et al. (1974, 1975)
Social interaction	24	.76[i]	.75[k]					
Usual daily work	15	.13[i]	.65[k]					
Leisure pastimes and recreation	9	.54[i]	.68[k]					
Interactions with family	17	.76[i]	.70[k]					
Sickness Impact Profile (short form)	145	.97[i]	.87[k]					
Social interaction	12	.72[i]	.72[k]					
Usual daily work	10	.00[l]	.65[k]					
Leisure pastimes and recreation	7	.44[i]	.67[k]					
Interactions with family	10	.77[i]	.61[k]					

[a] ICR = internal-consistency reliability; TRT = test-retest reliability; CR = coefficient of reproducibility; IRR = interrater reliability.

[b] Split-half internal-consistency reliability with Spearman-Brown correction.

[c] 10-day test-retest reliability of Community Adjustment subscales rated by 10 relatives.

[d] Ratings of patient done by social worker.

[e] Kendall's rank order correlation (W) for independent ratings by seven observers; a group interview was used and thus all ratings were made on the same information.

[f] Intraclass correlations of agreement in ratings between two observers.

[g] Mean Pearson correlation for relative agreement between two raters.

[h] Intraclass correlations of agreement in ratings between three raters.

[i] Cronbach's Alpha.

[j] Scale administered to samples in various countries differed slightly; all CRs greater than or equal to 0.87.

[k] 24-hour test-retest reliability coefficients.

[l] Coefficient reported as -0.31; rounded to zero according to convention (scales cannot have negative reliability).

loss of information due to item heterogeneity is a major problem faced in aggregating social health items and scales. In addition, test-retest coefficients for social health items in the Sickness Impact Profile (SIP) may have been inflated because of the effects of recall; the SIP was administered twice during a 24-hour period (Gilson, Bergner, Bobbitt, et al.). The effect of recall on test-retest coefficients reported by Ellsworth, Foster, Childers, et al. is likely to have been less, because the measures were administered ten days apart (on the average).

Although measures of most constructs listed in Table 4 achieved satisfactory reliability, measures of some constructs tended to be more reliable than others. For example, the Ellsworth, Foster, Childers, et al. Employment Scale yielded high reliability when both internal-consistency and test-retest methods were used. In contrast, the internal-consistency reliability of the SIP Usual Daily Work category (Gilson, Bergner, Bobbitt, et al., 1975) approximated zero. Given generally favorable results regarding reliability of single-item social health measures and relatively higher test-retest coefficients for the SIP scales, this finding most likely reflects a lack of common variance among items (i.e., an excessively heterogeneous scale) rather than lack of reliability.

In summary, reliability estimates based on four methods were moderate to high for both single-item and scale measures of social health constructs. These results suggest that single-item measures of social health may be sufficiently reliable for the purposes of the HIS. Frequently observed low internal-consistency reliability coefficients appear to result from aggregation of relatively unrelated items rather than poor reliability. Generally speaking, single-item measures of these social health constructs tend to be more reliable than single-item measures of mental health constructs (see Vol. III). Thus, fewer items may be necessary when constructs are more objectively defined, as is the case in the HIS definition of social health.

VALIDITY

Validity refers to what is measured—the meaning of a score—and, in the case of social health, becomes an issue at two levels. First is the issue of criterion validity—the extent to which each social health item or scale measures what it was intended to measure. For example, does a questionnaire item pertaining to "number of friends" accurately reflect the respondent's actual number of friends? Little evidence pertaining to criterion validity was reported in the literature. Perhaps the best evidence were those instances in which independent raters agreed regarding the occurrence of events or in their ratings of individuals. For the most part, the criterion validity of social health items or scales has nearly always been presumed from their manifest content (i.e., face validity).

Second is the issue of construct validity—the extent to which a properly measured construct (e.g., a count of number of friends) constitutes a manifestation of social health. As discussed in Vol. I, Sec. II, there are many ways to estimate construct validity. Few investigators explicitly studied the construct validity of their social health measures, but many reported information relevant to this type of validity. This information pertained to (1) associations among measures of social health; (2) associations between social health and measures of physical and mental health; and (3) associations between social health and other health-related vari-

ables (e.g., use of medical care services). Associations among measures of social health should be significant and positive, reflecting an underlying construct common to the different operational definitions used. When this validity strategy is used, it seems reasonable to assume that the common factor is a manifestation of social health if there is evidence that the measures relate more to each other than to known measures of physical or mental health.[12]

If social well-being is a component of health status, social health measures should be significantly and positively related to measures of physical and mental health. These relationships would be expected if there is a general health construct underlying measures of all three components of health status. Thus, significant and positive correlations between presumed measures of social health and physical and mental health provide construct evidence of the validity of the social health measures. In general, associations among measures of social health would be expected to be higher than those between measures of social health and other health constructs. Construct validity can also be tested by studying the extent to which social health measures predict health-related behavior, such as use of services, in a manner consistent with theory.

Associations among Measures of Social Health

Table 5 summarizes published findings[13] regarding associations among presumed measures of social health, including the names of the social health measures studied, the reported direction of association between these measures, the statistical method of testing the association, results, and population characteristics. To facilitate interpretation of the results, signs associated with the coefficients have been adjusted (when necessary) to indicate the direction of the relationship that would have been observed if high scores had always been assigned to responses consistent with the name of each measure. For example, a high score on a measure of "contacts with friends" would indicate a greater number of contacts; a high score on a measure of "social isolation" would indicate greater isolation.

Several measures in Table 5 focused on subjective feeling states (e.g., ratings of social isolation, measures of alienation). These constructs were included to address an important conceptual issue: the extent to which subjective measures of social phenomena correlated with more objective measures of social participation and interpersonal interaction. Subjective measures of social health were hypothesized to reflect feeling states more indicative of mental health. Thus, subjective measures should correlate higher with measures of mental health than with more objective social health constructs. Evidence for both types of relationships is presented in this and the following subsection.

When the amount of information about interrelationships among social health measures (shown in Table 5) is viewed in terms of the large number of items and

[12] When matrices of associations among measures are large, it becomes difficult, if not impossible, to review and summarize the many relationships involved. Factor analysis is an effective way to summarize the associations contained in a large data matrix. To the extent that derived factors clearly differentiate measures of social health from measures of other health constructs in the same matrix, the construct validity of the social health measures is supported.

[13] Studies that examined associations among social health measures but did not report enough information to determine the method used to test the relationship and the resulting statistic are not included in Table 5. Those studies that reported the direction of the relationship and the method used to test it are included, although the resulting statistic and its significance were not reported.

Table 5

Associations among Measures of Social Health

Social Health Constructs[a]		Direction of Association	Measure of Association[b] Statistic	Method	Population Characteristics	Investigator(s)
Contacts with friends	Voluntary group membership	+	.09*	r	Relatives of ex-mental patients, ages 20-80; N=649	Teele (1962)
	Formal group association	+	NG[c]	¶	General population; N=749	Axelrod (1956)
	Church attendance	+	NS[d]	r	Relatives of ex-mental patients, ages 20-80; N-649	Teele (1962)
	Hobbies	+	.13*	r		
	Contacts with relatives	+	NS	r		
Contacts with relatives	Voluntary group membership	+	NS	r	Relatives of ex-mental patients, ages 20-80; N-649	Teele (1962)
	Church attendance	+	NS	r		
	Hobbies	+	NS	r		
Contacts with friends and relatives	Participation in community organizations	+	NS	r	White, male, myocardial infarction patients, ages 37-74; N=62	Garrity (1973)
	Leisure activities	-	NS	r		
	Employment	+	NS	r		
Number of trips to people and places last week	Optimism about the future	-	NS	r	Older, white, ages 65-89; N=169	Fine (1975)
Formal social participation	Length of residence	+	.38**	$\bar{C}$	Rural community ages: under 41, 41-55, and 56+; N=185	Young and Mayo (1959)
	Knowledge of community development	+	.72***	$\bar{C}$		
Participation in community organizations	Employment	+	.30*	r	White, male, myocardial infarction patients, ages 37-74; N=62	Garrity (1973)
	Leisure activities	-	NS	r		
Organizational activity	Employment	-	.12*[e]	r	Older population, ages 45-69; N=502	Palmore and Luikart (1972)
Voluntary group membership	Church attendance	+	NS	r	Relatives of ex-mental patients, ages 20-80; N=649	Teele (1962)
	Participation in social hobbies	+	.11*	r	Relatives of ex-mental patients, ages 20-80; N=649	Teele (1962)
Contacts with friends	Telephone calls to friends	+	.34	Y	General population; N=2787	Bradburn (1969)
	Contacts with relatives	+	.17	Y	General population; N=2787	Bradburn (1969)
	Active in organizations	+	.22	Y	General population; N=2787	Bradburn (1969)
Contacts with relatives	Telephone contacts with friends	+	.29	Y	General population; N=2787	Bradburn (1969)
	Active in organizations	+	.14	Y	General population; N=2787	Bradburn (1969)

Table 5—continued

Social Health Constructs[a]		Direction of Association	Measure of Association[b] Statistic	Method	Population Characteristics	Investigator(s)
Active in organizations	Telephone contacts with friends	+	.18	γ	General population; N=2787	Bradburn (1969)
Social interaction	Leisure pastimes and recreation					
	Rehab. sample	+	.55***	r	N=75 Patients aged 18-75	Gilson, Bergner, Bobbitt, et al. (1975)
	Chronic sample	+	.70***	r	N=80	
	Group health sample	+	.44****	r	N=75	
	Interactions with family members					
	Rehab. sample	+	.48***	r	N=75	
	Chronic sample	+	.61***	r	N=80	
	Group health sample	+	.35**	r	N=75	
Social well-being	Isolation Index[f]	-	NG[†]	Comparison of mean scores	General population, ages 20+ or 16-19 and ever married; N=6928	Greenblatt (1975)
Number of intimate friends	Degree of isolationism[g]	-	NG[†]	Path analysis	General population, ages 45-75; N=469	Tornstam (1975)
Participation in voluntary organizations	Degree of isolationism[g]	-	NG[†]	Path analysis	General population, ages 45-75; N=469	
Social isolation[h]	Powerlessness	+	.54**	r	General population; N=384	Dean (1961)
	Normlessness	+	.41**	r		
	Alienation	+	.75***	r		
Social isolation[i]	Work inadequacy	+	.27***	r	Psychiatric patients; N=164	Gurland, Yorkston, Stone, et al. (1972)
	Friction with family	+	.23**	r		
	Dependence on family	+	.19*	r		
	Friction outside family	+	.30***	r		
Social Function Index	Clinical assessment of social function	+	72%	Sensitivity	General population, ages 15+; N=273	Chambers, Sackett, Goldsmith, et al. (1976)
			77%	Specificity		
Friction with family	Dependence on family	-	NS	r	Psychiatric patients; N=164	Gurland, Yorkston, Stone, et al. (1972)
	Friction outside family	+	.26***	r		
Dependence on family	Friction outside family	-	NS	r		
Religious activity	Religious attitude	+	NG***	χ^2	Older people, ages 60-94; N=251	Jeffers and Nichols (1961)
Leisure activities	Employment	-	NS	r	White male, myocardial infarction patients, ages 37-74; N=62	Garrity (1973)

Table 5—continued

Social Health Constructs[a]		Direction of Association	Measure of Association[b] Statistic	Method	Population Characteristics	Investigator(s)
Hobbies	Church attendance	+	NS	r	Relatives of ex-mental patients, ages 20-80; N=649	Teele (1962)
Leisure pastimes and recreation	Interactions with family members				Patients aged 18-75	
	Rehab. subsample	+	.44***	r	N=75	Gilson, Bergner, Bobbitt, et al. (1975)
	Chronic problem subsample	+	.40***	r	N=80	
	Group health subsample	+	NS	r	N=75	
Isolates	Recreational activities	-	NG[†]	¶	Retired members of a fraternal order; N=34	Burgess (1954)
Anomia[j]	Index of Life Chances	-	NG[†]	¶	Men aged 21+; N=701	Meier and Bell (1959)
Anomia[k]	Index of Neighborhood Involvement	§	NS	χ^2	Automobile workers in four countries; N=1092	Form (1975)
	Index of Community Involvement	§	NS	χ^2		
	Index of National Involvement		NS	χ^2		
	Number of good friends at work	§	NS	χ^2		
	Quality of interaction with workmates	§	NS	χ^2		
Anomia[j]	Alienation	+	.31[†]	r	Alienated and unalienated individuals; N=345	Nettler (1957)
	Occupational mobility	§	NS	χ^2	Automobile workers in four countries; N=1092	Form (1975)
Hostile World Scale[l]	Alienation[m]	-	NS	r	Alienated and unalienated individuals; N not given	Nettler (1957)
Occupational mobility	Extended family orientation	-	NG[†]	¶	White married women; N=266	Stuckert (1963)
	Extended family orientation	+	NG[†]	¶	White married women; N=920	Litwak (1960)
	Extended family contacts	-	NG[†]	¶	White married women; N=266	Stuckert (1963)
	Extended family relations	+	NG[†]	¶	White married women; N=920	Litwak (1960)
	Extended family contacts	+	NG[†]	¶		
	Extended family as a reference	-	NG[†]	¶	White married women; N=266	Stuckert (1963)
	Concern for family unity	-	NG[†]	¶		
	Use of neighbors as reference	-	NG[†]	¶		

Table 5—continued

Social Health Constructs[a]		Direction of Association	Measure of Association[b] Statistic	Method	Population Characteristics	Investigator(s)
Occupational mobility (continued)	Concern with neighborhood unity	-	NG[†]	¶	White married women; N=266	Stuckert (1963)
	Voluntary group participation	-	NG[†]	¶		
Satisfaction with social life	Sociability Index	+	.17	γ	General population; N=2159	Bradburn (1969)
Work inadequacy	Friction with family	+	NS	r	Psychiatric patients; N=164	Gurland, Yorkston, Stone, et al. (1972)
	Dependence on family	+	NS	r		
	Friction outside family	-	NS	r		
Orderly work history	Number of memberships	+	NG**	‡	White, male members of labor force, ages 21-55 ever married; N=643	Wilensky (1961)
	Frequency in organizational activities	+	NG*	‡		
	Wide range secondary attachments	+	NG*	‡		
	Wide range institutional spheres	NG	NS	‡		
	Wide range primary relationships	+	NG**	‡		
	Role integration	+	NG**	‡		
	Friendship circles	+	NG*	‡		
	Stability of friendships	+	NS	‡		
	Overlapping friendships	+	NS	‡		

*p < .05.

**p < .01.

***p < .001.

[§]The direction of relationship was inconsistent among workers in four nations.

[a]Read table as follows: measure of construct in first column associated with measure of construct in second column.

[b]r = product-moment correlation coefficient; ¶ = descriptive statistics (percent of sample); $\overline{C}$ = corrected coefficient of contingency; γ = gamma; † = not tested for significance; χ^2 = chi-square; ‡ = difference in proportions.

[c]NG = information not given.

[d]NS = not significant.

[e]Significant for women only.

[f]Four-item measure of subjective feelings (e.g., "I often feel lonely or remote from other people").

[g]Not explained by investigators.

[h]Nine-item measure of feelings of separation from the group or isolation from group standards (e.g., "Sometimes I feel all alone in the world").

[i]Five-item measure defined by behavior that is isolated, bored, lonely, constrained.

[j]Five-item measure of despair, hopelessness, discouragement.

[k]Five-item measure regarding beliefs about amount of societal normlessness.

[l]Four-item measure of feelings about enemies.

[m]Seventeen-item measure reflecting feelings of estrangement from society and its culture.

scales that have been fielded, it becomes clear that interrelationships have not been extensively studied. Further, many investigators have aggregated measures of social health without considering or at least without reporting information about interrelationships among items that were combined.

The results summarized in Table 5 indicate that associations among social health measures are either nonsignificant or weakly significant. Given the generally favorable results regarding reliability of measurement (when reliability estimates were reported), these trends in associations probably do not result from faulty measurement. Instead, social health is a very heterogeneous concept. For example, individuals who participate in community activities may not necessarily visit their friends frequently or have many friends. More generally stated, social health measured in terms of participation and interpersonal interaction is manifested in many different ways and one aspect of social health cannot necessarily be predicted from another.

The strength of associations involved may not have been well represented by the statistical methods employed. One factor contributing to low correlations among measures of social health may be the skewness of score distributions. For example, Teele (1962) reported that about 80 percent of his sample (relatives of former mental patients) had at least one friend and that only 15 percent of his subjects spent an hour or more per week on social hobbies. Lack of variability in measures must be taken into account in studies of covariability. Because most investigators reporting associations relied on parametric statistics, the skewness of the distributions may have contributed to the almost universally low correlations. Regardless of whether score distributions are symmetrical, the assumption that associations among social health measures are linear is open to question. As illustrated in studies of associations among HIS measures of physical health (see Vol. II), associations among health status measures estimated as weak by product-moment correlations were often found to be very strong when curvilinear monotonic relationships were taken into account. These alternative interpretations of the results in Table 5 should be kept in mind.

Only six of the 22 studies reported in Table 5 examined relationships among social health measures in general populations (Axelrod, 1956; Dean, 1961; Bradburn, 1969; Greenblatt, 1975; Tornstam, 1975; Chambers, Sackett, Goldsmith, et al., 1976). Because so many studies involved select populations and because analyses were rarely replicated, the extent to which findings can be generalized is difficult to determine. Some trends are consistent with hypotheses. The more contacts individuals have with friends, the more likely they are to have hobbies and to belong to voluntary groups (Teele, 1962). The more people participate in community organizations, the more likely they are to be employed (Garrity, 1973). Strongest associations were reported between measures of formal social participation and both length of residence and knowledge of community development, and between measures of participation in community organizations and employment. Strong associations among SIP categories of social interaction, leisure pastimes and recreation, and interactions with family members were also reported for certain subsamples. Associations among Dean's measures of social isolation and powerlessness, normlessness, and alienation were due, at least in part, to overlap in the items.[14]

[14] Dean constructed the Alienation scale by combining the three subscales: Powerlessness, Normlessness, and Social Isolation. Thus, correlations between the subscales and the overall scale are spuriously inflated.

Several investigators addressed the question of construct validity through factor analyses of associations among items. Ellsworth, Foster, Childers, et al. (1968) performed a principal components analysis of items in their Community Adjustment Scale. Three components pertaining to social health emerged and were labeled friendship skills, organizational participation, and employment. High correlations (in absolute value) with the friendship skills component were reported for the following items: spends time with friends, has outside friends, has outside interests, socializes with people who visit, and has a drinking problem that interferes with family, job, or community adjustment. The following items had high correlations with the organizational participation component: participates in the activities of social organizations, attends social organizations, attends church, and is neat and clean. The employment component included high correlations for: held a full-time job and amount of earnings from job. Further analyses indicated that measures of organizational participation and friendship skill tended to share variance in common. Employment tended to correlate with a separate component, as did measures of motivation, cooperation, and productivity.

Linn, Sculthorpe, Evje, et al. (1969) extracted five factors from correlations among 21 variables based on the combined ratings of subjects and observers on the Social Dysfunction Rating Scale. From the manifest content of items, two of the rotated factors appeared primarily to measure social health. Variables associated with high loadings on the first factor pertained to participation in community affairs, work, friends, and family relationships. Variables associated with high loadings on the second factor applied to satisfaction with such phenomena as leisure activities and work, as well as feelings of the need for more friends. These two factors differed in that the second tapped satisfaction, a more subjective component. Items loading highest on the social health factors were not associated with mental health factors (e.g., anxiety, health concern) in the same matrix, supporting the validity of the social health measures and, in particular, the distinction between social and mental health constructs. Subjective ratings of social health did not load highest on the mental health factor, suggesting that subjective measures of mental and social health constructs can be distinguished. Because the investigators did not give information about the unrotated solution, conclusions about the relationships between social participation measures and a general health factor could not be drawn from these data.

Klemmack, Carlson, and Edwards (1973) reported factor loadings for items measuring social isolation, life satisfaction, and willingness to live. The nine items used to construct the Social Isolation Scale measured subjective aspects of social participation (e.g., "I don't get invited out by friends as often as I'd really like"). The constructs related to social isolation clustered together; however, in contrast with findings reported by Linn, Sculthorpe, Evje, et al., they were highly confounded with what appeared to be a general psychological well-being factor.

Secondary analyses of SIP correlation matrices published by Gilson, Bergner, Bobbitt, et al. (1975) were also performed using factor analysis in three samples. Associations among all SIP categories [15] for each sample were subjected to a principal components analysis. Categories of items thought to measure primarily social health (i.e., social interaction, leisure and pastimes, and family interactions) tended

[15] The Usual Daily Work category was excluded from these factor analyses because its internal-consistency reliability approximated zero.

to load highly on the same factor. The communication category, which contained items describing physical and mental health status as well as social health, also tended to load highly with the social health categories.

From the three published factor analytic studies and secondary analysis of SIP data, a few general comments can be made. Results differed with regard to the degree of confounding between mental and social components of health when measures included subjective constructs such as ratings of satisfaction. There was considerable support for the distinction between social health and other components of health. Measures pertaining to friendship and organizational participation were most related, and measures related to employment tended to group together on a separate factor.

Associations between Measures of Social Health and Other Health and Health-Related Constructs

Construct validity of social health measures can also be evaluated by studying their relationships with other health status measures (physical and mental), as well as variables with which health status measures should be correlated (e.g., use of health care services). Whether significant relationships are hypothesized and the direction and strength of hypothesized relationships depend on the theory adopted. When testing validity (as opposed to formulating theory), directional hypotheses must be stated in advance to permit an objective evaluation of the extent to which results are favorable or unfavorable with respect to the validity of the measures. Table 6 presents a list of hypothesized relationships between social health variables and measures of physical and mental health, use of health care services, health and illness behavior, and general health ratings. The following hypotheses were derived from the formulation of health status and use of health care services adopted for use in the HIS:

- Valid measures of social health should be positively associated with favorably worded measures of physical health (e.g., ability to function) and negatively associated with unfavorably worded measures of physical health (e.g., days in bed).
- Valid social health measures should also be positively associated with favorably worded measures of mental health (e.g., psychological well-being) and should differentiate between psychiatric and normal populations.
- Assuming that use of health care services is substantially motivated by need (i.e., poor health), social health should be inversely related to use of health care services (e.g., number of doctor visits).
- Social health scores should be directly related to general health ratings.

Table 7 summarizes findings reported in the published literature that are relevant to these hypotheses. The first column lists the index, scale, or single-item social health measure studied and the name of the social health construct (determined from the manifest content of questionnaire items). The second column lists the variables that were studied in relation to social health, including physical health, mental health, general health ratings, and use of services. In some instances, population comparisons (e.g., psychiatric versus nonpsychiatric) are relevant to the validity of social health measures and results are summarized. The remaining

Table 6

DEFINITION OF VALIDITY VARIABLES AND DIRECTION OF HYPOTHESIZED RELATIONSHIP TO POSITIVE SOCIAL HEALTH

Category/Variable	Definition	Hypothesized Relationship to Positive Social Health
PHYSICAL HEALTH		
Physical function rating	The level of present physical functioning as rated by a physician	+
Chronic problems	Presence or absence of any continuous or recurring health problem	-
Total bed days	Number of days in which all or part of the day was spent in bed because of illness or injury	-
Sickness	Presence or absence of sickness during a specified period	-
Functional ability	Ability to perform activities such as going outdoors or walking up and down stairs	+
MENTAL HEALTH		
Psychological well-being	Based on questions about daily feeling states	+
Neurotic traits (absence of)	Based on questions dealing with impulsiveness, immobilization, perfectionism, dissatisfaction, and isolation	+
Clinical judgment of psychiatric adjustment	Judgment of extent to which respondent is free of psychopathology (based on symptomatic behavior)	+
Psychiatric patients vs. normals	Ability of social health measure to discriminate psychiatric from normal population	-
Morale	Defined in terms of feelings of satisfaction, optimism, belonging, self-esteem	+
Life satisfaction	Defined in terms of feeling that life is worth living, satisfaction with life, optimism about the future	+

Table 6—continued

Category/Variable	Definition	Hypothesized Relationship to Positive Social Health
HEALTH AND ILLNESS BEHAVIOR		
Number of doctor visits	Number of doctor visits during a specified period	-
Psychiatric hospitalization	Based on questions about brevity of hospital stay and non-return to hospital	+
Compliance	Whether respondent has been following the doctor's orders exactly (for those who were given medical regimens)	-
GENERAL HEALTH RATING	Subjective rating of general health, often in terms of excellent, good, fair, or poor	+

columns indicate the direction of the association, the magnitude of the coefficient of association or other statistic reported and its significance, and relevant population characteristics.

The first part of Table 7 summarizes validity findings for social health indexes (measures tapping two or more of the social health role areas discussed previously). The remaining parts pertain to both single- and multiple-item measures, which have been grouped as follows: Activities with Family, Friends, and Neighbors; Participation in Group (Community) Activities; Work-Related Functioning; Family Interrelationships; Other Social Phenomena; and Qualitative Ratings of Social Phenomena. The latter category focuses primarily on feelings and ratings of subjective constructs (e.g., satisfaction with one's job, feelings of resentment toward family members). These subjective ratings were included to further evaluate the extent to which they overlap with measures of mental health.

Although the studies cited in Table 7 differed in many respects, making summaries difficult, some general trends in results can be noted. The first section summarizes 24 associations between global social health measures and other health variables from nine different publications. All associations were in the direction hypothesized in Table 6; 16 of 18 associations tested for significance were significant ($p < 0.05$). Social health scores were directly related to physical and mental health scores, general health ratings, length of hospital stay, and rehospitalization. In many instances, relationships were of substantial magnitude. Although these results do not prove that the measures in question are valid measures of social health, they provide support for that conclusion. The trends in Table 7 also indicate an important link between social health and both physical and mental health status.

Insights into the validity of measures of specific social health constructs can be gleaned from findings summarized in the second section of Table 7. One hundred seventy-five associations between single-item and scale measures of social health

Table 7

Associations among Measures of Social Health and Other Health and Health Care Variables

Social Health Measures	Health and Health Care Variables	Direction of Association	Measures of Association[a] Statistic	Method	Population Characteristics[b]	Investigator(s)
I. GLOBAL SCALES						
Activity Scale (participation in various activities)	Physical function rating	+	.39***	r_{pb}	Ages 60-94; N=251	Jeffers and Nichols (1961)
	Satisfaction with participation in activities	+	.54***	r		
	Morale (initial test)	+	70.1***	χ^2	Ages 60-94; N=182	Maddox (1963)
	(later test)	+	56.5***	χ^2		
	General health rating	+	.44*	ϕ	Ages 65+; N=95	Dicicco and Apple (1958)
Social Health Index	Physical health (rating of health in terms of symptoms and disabilities)	+	NG[†]	ridits	General population, ages 20+ or 16-19 and ever married; N=6928	Renne (1974)
	Psychological health	+	NG[†]	ridits		
	Neurotic traits (high = free of traits)	+	NG[†]	ridits		
	General health rating	+	NG[†]	ridits		
Index of Social Well-Being	Physical health (rating of health in terms of symptoms or disabilities)	+	.19**	r	General population, ages 20+ or 16-19 and ever married; N=6928	Greenblatt (1975)
	Psychological health	+	.31***	r		
	Neurotic traits (high = free of traits)	+	.29***	r		
	General health rating	+	.15*	r		
Social Dysfunction Rating Scale (from Linn, Sculthorpe, Evje, et al., 1969)	Addicts and alcoholics (vs. orthopedic patients)	+	17.6**	F	Male alcoholics, heroin addicts, orthopedic patients; N=92	Greenwald, Carter, and Stein (1973)
Community Adjustment Scale[c]	Brevity of psychiatric hospital stay	+	.35**	R	Male schizophrenics; N=146	Ellsworth, Foster, Childers, et al. (1968)
	Nonreturn to psychiatric hospital	+	NS	R	N=46	
	General health rating	+	.45**	R	N=148	
Social Work Scale[d]	Brevity of psychiatric hospital stay	+	NS	R	Male schizophrenics; N=146	Ellsworth, Foster, Childers, et al. (1968)
	Nonreturn to psychiatric hospital	+	.69**	R	N=46	
	General health rating	+	.47**	R	N=148	
Community Adjustment Scale	Nonreturn to hospital	+	NG[†]	Comparison of average scores	Ex-psychiatric patients; N=65	Bockoven, Pandiscio, and Solomon (1956)
Performance of Socially Expected Activities Scale	Clinical judgment of psychiatric adjustment Relative reporting	+	.79**	r_{pb}	Relatives of psychiatric patients; N=19	Katz and Lyerly (1963)
	Patient reporting	+	.55**	r_{pb}	Psychiatric patients, ages 22-57; N=30	
Interpersonal Activity Scale	Morale	+	NG[‡]	χ^2	Ages 60-94; N=182	Maddox (1963)

Table 7—continued

Social Health Measures	Health and Health Care Variables	Direction of Association	Measures of Association[a] Statistic	Method	Population Characteristics[b]	Investigator(s)
II. SUBSCALES AND ITEMS BY CONSTRUCT						
Number of activities with Friends/Family, or Neighbors						
A. Scales						
Intimate Contacts[e]	Physical function rating	+	NG*	χ^2	Ages 60–94	Jeffers and Nichols (1961)
	Attitude toward friends	+	NG***	χ^2		
Social Isolation	Poor mental health	+	13.68***	χ^2	Former applicants for Social Security disability benefits; N=479	Ludwig and Collette (1970)
	Suicidal feelings	+	8.40*	χ^2	General population, ages 18+; N=128	Paykel, Myers, Lindenthal, et al. (1974)
Friendship Skills[f]	Brevity of hospital stay	+	.24**	r	Male schizophrenics; N=146	Ellsworth, Foster, Childers, et al. (1968)
	Nonreturn to hospital	+	NS	r	N=46	
	General health rating	+	.19*	r	N=148	
Social Interaction[g] (dysfunction)	Self-assessment of sickness (high = sick)	+	.44***	r	Medical patients, ages 16–75; N=272	Gilson, Bergner, Bobbitt, et al. (1974)
	Self-assessment of dysfunction (high = dysfunction)	+	.35***	r	N=278	
	Activities of Daily Living Index (Rehabilitation Subsample) (high score = less activities)	+	.14		N=67	
	Assessment of speech pathology					Gilson, Bergner, Bobbitt, et al. (1974)
	Clinician I	+	.29*	r	N=45	
	Clinician II	+	NS	r	N=41	
	Clinical assessment of dysfunction (Chronic Problems Subsample)	+	.41***	r	N=75	
	Restricted activities/ bed days					
	First administration	+	.19***	r	N=272	
	Second administration	+	.47***	r	N=270	
Social Relations	Psychiatric patients vs. community residents	-	4.91**	t	Patients, prisoners, general population; N=201	Dohrenwend, Dohrenwend, and Cook (1974)
[illegible]	Functional ability: goes outdoors without difficulty	+	.47***	r	White, ages 65–96; N=169	[illegible] (1973)
	[illegible]	+	[illegible]	r		
	[illegible]	-	[illegible]	r		
	[illegible]	-	[illegible]	r		
	[illegible]	-	[illegible]	r		

Table 7—continued

Social Health Measures	Health and Illness Variables	Direction of Association	Measures of Association[a] Statistic	Method	Population or Subpopulation	Investigator(s)
B. Single Items						
Contacts with friends/ relatives	Chronic medical problems	-	.26*	r	White male myocardial infarction patients, ages 37-74; N=62	Garrity (1973)
	Severity of heart attack	-	NS	r		
	Morale	+	NS	r		
	General health rating	+	NS	r		
Contacts with friends	Positive affect	+	.25	γ	General population; N=2787	Bradburn (1969)
	Negative affect	+	.02	γ		
Contacts with relatives	Positive affect	+	.10	γ		
	Negative affect	+	.03	γ		
Number of visits to friends	High rate of schizophrenia vs. low rate	-	28.52***	χ^2	Communities with high and low rates of schizophrenia	Jaco (1954)
	High rate of manic depression vs. low rate	-	NS	χ^2	Communities with high and low rates of manic depression	
Number of trips to people and places	Functional ability: Goes outdoors without difficulty	+	.40***	r	White, ages 65-89; N=169	Fine (1975)
	Functional ability: Goes up and down stairs	+	.36***	r		
	Life satisfaction	+	NS	r		
	Political powerlessness	-	NS	r		
	General health rating	+	.33***	r		
Number of personal friends	High rate of schizophrenia vs. low rate	-	16.98***	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
	High rate of manic depression vs. low rate	-	NS	χ^2		
Number of acquaintances	High rate of schizophrenia vs. low rate	-	53.10***	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
	High rate of manic depression vs. low rate	-	24.18***	χ^2		
Know names of neighbors	High rate of schizophrenia vs. low rate	-	161.2***	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
	High rate of manic depression vs. low rate	-	5.01*	χ^2		
Lack friends	Psychiatric (vs. non-psychiatric)	+	6.33*	t	Psychiatric patients and normals; N=80	Linn, Sculthorpe, Evje, et al. (1969)
Participation in Group Activities						
A. Scales						
Voluntary Association Participation Index	Life satisfaction	+	.20*	η	Ages 65+; N=159	Cutler (1973)
	General health rating	+	.24**	η		
Organizational Activity	Physician rating of physical health status	+	.11*	r	Ages 45-69; N=502	Palmore and Luikart (1972)
Organizational Participation	Brevity of psychiatric hospital stay	+	NS	r	Male schizophrenic; N=146	Ellsworth, Foster, Childers, et al. (1968)
	Nonreturn to psychiatric hospital	-	NS	r	N=46	
	General health rating	+	NS	r	N=148	
Religious Activity	Physical function rating	+	NS	χ^2	Ages 60-94; N=251	Jeffers and Nichols (1961)

Table 7—continued

Social Health Measures	Health and Health Care Variables	Direction of Association	Measures of Association[a] Statistic	Method	Population Characteristics[b]	Investigator(s)
B. Single Items						
Membership in voluntary groups	High rate of schizophrenia vs. low rate	-	34.13***	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
	High rate of manic depression vs. low rate	-	6.56*	χ^2		
Membership in lodge or fraternity	High rate of schizophrenia vs. low rate		58.11***	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
	High rate of manic depression vs. low rate	-	NS	χ^2		
Participation in community organizations	Chronic medical problems	-	NS	r	White, male myocardial infarction patients, ages 37-74; N=62	Garrity (1973)
	Severity of heart attack	-	.28*	r		
	Morale	+	NS	r		
	General health rating	+	.33*	r		
Active in organizations	Positive affect	+	.22	Y	General population; N=2787	Bradburn (1969)
	Negative affect	-	.08	Y		
Lack participation in community	Psychiatric subjects (vs. controls)	+	5.16*	t	Psychiatric patients and normals; N=80	Linn, Sculthorpe, Evje, et al. (1969)
Church membership	High rate of schizophrenia vs. low rate	-	44.23***	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
	High rate of manic depression vs. low rate	+	9.99**	χ^2		
	Many psychiatric symptoms (few life events)		NS (1967)	r	General population, adults; N=720	Myers, Lindenthal, and Pepper (1975)
			NS (1969)	r		
	Few psychiatric symptoms (many life events)		NS (1967)	r		
			NS (1969)	r		
Church activity	High schizophrenic vs. low schizophrenic	-	NS	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
Degree of interaction	General health rating	+	.19**	r	General population, ages 45-74; N=469	Tornstam (1975)
[illegible]						
A. Scales						
Employment[f]	Brevity of psychiatric hospital stay	+	.25**	r	Male schizophrenics; N=146	Ellsworth, Foster, Childers, et al. (1968)
	Nonreturn to psychiatric hospital	-	NS	r	N=46	
	General health rating	+	NS	r	N=148	
Productivity	Brevity of psychiatric hospital stay	+	NS	r	Male schizophrenics; N=146	Ellsworth, Foster, Childers, et al. (1968)
	Nonreturn to psychiatric hospital	-	NS	r	N=46	
	General health rating	+	NS	r	N=148	
[illegible]	Nonreturn to psychiatric hospital	+	[illegible]		[illegible]	[illegible]
[illegible]	[illegible]	+	[illegible]			

Table 7—continued

Social Health Measures	Health and Health Care Variables	Direction of Association	Measures of Association[a] Statistic	Method	Population Characteristics[b]	Investigator(s)
Usual Daily Work[g] (dysfunction)	Self-assessment of sickness	+	.34**	r	Medical patients, ages 18-75; N=272	Gilson, Bergner, Bobbitt, et al. (1974)
	Self-assessment of dysfunction	+	.43***	r	N=272	
	Activities of Daily Living Index (Rehabilitation Medicine Subsample) (high score = less activities)	+	NS	r	N=67	
	Assessment of speech pathology					
	Clinician I	+	NS	r	N=45	Gilson, Bergner, Bobbitt, et al. (1974)
	Clinician II	+	NS	r	N=41	
	Clinical assessment of dysfunction (Chronic Problems Subsample)	+	.28*	r	N=75	
	Restricted activity/ bed days					
	First administration	+	.38***	r	N=272	
	Second administration	+	.47***	r	N=272	
Security Activity[e] (work status)	Physical function rating	+	NG**	χ^2	Older people, ages 60-94; N=251	Jeffers and Nichols (1961)
Work Performance Impaired	Psychiatric patients (vs. community residents)	+[h]	2.77**	t	Patients, prisoners, general population; N=143	Dohrenwend, Dohrenwend, and Cook (1973)
B. Single Items						
Employment	Chronic medical problems	-	.31**	r	White, male myocardial infarction patients, ages 37-74; N=62	Garrity (1973)
	Severity of heart attack	-	NS	r		
	High rate of schizophrenia vs. low rate	-	259.16***	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
	High rate of manic depression vs. low rate	-	31.79***	χ^2		
	General health rating	+	.61**	r	White, male myocardial infarction patients, ages 37-74; N=62	Garrity (1973)
Lack work	Psychiatric patients (vs. controls)	+	3.30*	t	Psychiatric patients	Linn, Sculthorpe, Evje, et al. (1969)
High number of jobs held	High rate of schizophrenia vs. low rate	+	12.18***	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
	High rate of manic depression vs. low rate	+	NS			
Quit or fired from job	High rate of schizophrenia vs. low rate	+	NS	χ^2		
	High rate of manic depression vs. low rate	+	NS	χ^2		
Family Interrelationships						
A. Scales						
Family Adjustment	Nonreturn to hospital	+	NG	Comparison of average scores	Ex-psychiatric patients; N=65	Bockoven, Pandiscio, and Solomon (1956)
Interaction with Family Members[g] (dysfunction)	Self-assessment of sickness	+	.28***	r	Medical patients, ages 18-75; N=272	Gilson, Bergner, Bobbitt, et al. (1974)

Table 7—continued

Social Health Measures	Health and Health Care Variables	Measures of Association[a]: Direction of Association	Statistic	Method	Population Characteristics[b]	Investigator(s)
Interaction with Family Members[g] (dysfunction)	Self-assessment of dysfunction	+	.21**	r	Medical patients, ages 18-75; N=272	Gilson, Bergner, Bobbitt, et al. (1974)
	Activities of Daily Living Index (Rehabilitation Medicine Subsample) (high score = less activities)	+	.21†	r	N=67	
	Assessment of speech pathology (Speech Pathology Subsample)					
	Clinician I	+	NS	r	N=45	Gilson, Bergner, Bobbitt, et al. (1974)
	Clinician II	+	NS	r	N=41	
	Clinical assessment of dysfunction (Chronic Problems Subsample)	+	.26*	r	N=75	
	Restricted activity/ bed days					
	First administration	+	.29***	r	N=272	
	Second administration	+	.25***	r	N=272	
Marital Scale Impairment	Psychiatric patients (vs. community residents)	+[h]	3.28**	t	Patients, prisoners, general population; N=117	Dohrenwend, Dohrenwend, and Cook (1973)
Other Social Phenomena						
A. Scales						
Leisure Activities and Hobbies[e]	Physical function rating	+	NG**	χ^2	Older people, ages 60-94; N=251	Jeffers and Nichols (1961)
High Level of Free-Time Activities	Clinical judgment of adjustment	+	.67*	r_{pb}	Relatives of psychiatric patients; N=19	Katz and Lyerly (1963)
	Patient reporting	-	.32*	r_{pb}	Psychiatric patients, ages 25-57; N=30	
Leisure Pastimes and Recreation[g] (dysfunction)	Self-assessment of sickness	+	.51***	r	Medical patients, ages 18-75; N=272	Gilson, Bergner, Bobbitt, et al. (1974)
	Self-assessment of dysfunction	+	.51***	r	N=272	
	Activities of Daily Living Index (Rehabilitation Medicine Subsample) (high score = less activities)	+	.13†	r	N=67	
	Assessment of speech pathology (Speech Pathology Subsample)					
	Clinician I	+	NS	r	N=45	Gilson, Bergner, Bobbitt, et al. (1974)
	Clinician II	+	NS	r	N=41	
	Clinical assessment of dysfunction (Chronic Problems Subsample)	+	.36**	r	N=75	
	Restricted activity/ bed days					
	First administration	+	.49***	r	N=272	
	Second administration	+	.56***	r	N=272	
Non-Interpersonal Activity (activity that does not necessarily involve contact with others	Morale	+	NG†	χ^2	Elderly subjects, ages 60-94; N=182	Maddox (1963)
B. Single Items						
Leisure activities	Chronic medical problems	-	NS	r	White, male myocardial infarction patients, ages 37-74; N=62	Garrity (1973)

Table 7—continued

Social Health Measures	Health and Health Care Variables	Direction of Association	Measures of Association[a] Statistic	Method	Population Characteristics[b]	Investigator(s)
	Severity of heart attack	+	NS	r	White, male myocardial infarction patients, ages 37-34; N=62	Garrity (1973)
	Morale	+	.28*	r		
	General health rating	+	NS	r		
Lack leisure activity	Psychiatric subjects (vs. normals)	+	2.44*	t	Psychiatric patients and normals; N=80	Linn, Sculthorpe, Evje, et al. (1969)
Lack interest in community	Psychiatric subjects (vs. controls)	+	4.36*	t		
Voting behavior (high = votes)	High rate of schizophrenia vs. low rate.	-	120.23***	χ^2	Communities with high and low rates of schizophrenia and manic depression	Jaco (1954)
	High rate of manic depression vs. low rate	-	29.80***	χ^2		
Chatted with friends on phone	Positive affect	+	.20	Y	General population; N=2787	Bradburn (1969)
	Negative affect	+	.08	Y		
Qualitative Ratings of Social Phenomena						
A. Scales						
High Level of Expectations for Performance of Social Activities	Clinical judgment of psychiatric adjustment Relative reporting	+	.51*	r_{pb}	Relatives of psychiatric patients; N=19	Katz and Lyerly (1963)
	Patient reporting	+	.53**	r_{pb}	Psychiatric patients, ages 22-57; N=30	
Social Isolation	Life satisfaction	-	.82†	r	General population, ages 45+; N=507	Klemmack, Carlson, and Edwards (1973)
	Willingness to live	-	.47†	r		
	Sexual dissatisfaction	+	.37***	r	Psychiatric patients; N=164	Gurland, Yorkston, Stone, et al. (1972)
Socialization[i]	Brevity of psychiatric hospital stay	+	NS	r	Male schizophrenics; N=146	Ellsworth, Foster, Childers, et al. (1968)
	Nonreturn to psychiatric hospital	+	.62**	r	N=46	
	General health rating	+	.33**	t	N=148	
Work Performance Impaired	Depressed patients (vs. normals)	+	10.16***	t	Female psychiatric patients and normals, ages 25-60; N=80	Paykel, Weissman, Prusoff, et al. (1971)
Job Morale Low	Psychiatric patients (vs. community residents)	+[h]	NS	t	Patients, prisoners, general population; N=154	Dohrenwend, Dohrenwend, and Cook (1973)
Work Inadequacy	Sexual dissatisfaction	+	.20†	r	Psychiatric patients; N=164	Gurland, Yorkston, Stone, et al. (1972)
Friction with Family	Sexual dissatisfaction	+	NS	r		
Dependence on Family	Sexual dissatisfaction	+	NS	r		
Family Interpersonal[i]	Brevity of psychiatric hospital stay	+	NS	r	Male schizophrenics; N=146	Ellsworth, Foster, Childers, et al. (1968)
	Nonreturn to psychiatric hospital	+	.47**	r		
	General health rating	+	.32**	r		

Table 7—continued

Social Health Measures	Health and Health Care Variables	Direction of Association	Measures of Association[a] Statistic	Method	Population Characteristics[b]	Investigator(s)
Impaired Communication	Depressed patients (vs. normals)	+	4.07**	t	Female psychiatric patients and normals, ages 25–60; N=80	Paykel, Weissman, Prusoff, et al. (1971)
Interpersonal Friction	Depressed patients (vs. normals)	+	5.74***	t		
Family Attachment	Depressed patients (vs. normals)	-	3.27**	t		
High Level of Satisfaction with Free-Time Activities	Clinical judgment of psychiatric adjustment					
	Relative reporting	+	.50*	r_{pb}	Relatives of psychiatric patients; N=19	Katz and Lyerly (1963)
	Patient reporting	+	NS	r_{pb}	Psychiatric patients, ages 22–57; N=30	
Anomia	Attitude toward minorities (high = prejudiced)	+	.43*	r	White, Christian, native-born transit riders, ages 16–69; N=401	Srole (1956)
B. Single Items						
Enjoyment of church activities is in the past	Physical impairment	+	2.8** (males)	t	White, married couples, men aged 60–64; N=197	Marden and Burnight (1969)
		+	NS (females)	t		
Enjoyment of activity with friends is in the past	Physical impairment	+	2.3* (males)	t		
		+	NS (females)	t		
Enjoyment of activity in clubs is in the past	Physical impairment	+	NG* (males)	t		
			NS (females)	t		
Perception of time of greatest activity with friends: Past	Physical impairment	+	NS (males and females)	t	White, married couples, men aged 60–64; N=197	Marden and Burnight (1969)
Perception of time of activity in church: Past	Physical impairment	+	NS (males and females)	t		
Perception of time of activity in clubs: Past	Physical impairment	+	NG* (men) NS (women)	t		
Lack satisfying work	Psychiatric (vs. nonpsychiatric)	+	2.04*	t	Psychiatric patients and normals; N=80	Linn, Sculthorpe, Evje, et al. (1969)
Lack family relations	Psychiatric (vs. nonpsychiatric)	+	5.02*	t		
Need friends	Psychiatric (vs. nonpsychiatric)	+	3.44*	t		
Need activity	Psychiatric (vs. nonpsychiatric)	+	NS	t		
Likes job	Many psychiatric symptoms (few life events)	-	.17* (1967)	β	General population, adults; N=720	Myers, Lindenthal, and Pepper (1975)
		NC	NS (1969)	β		
Satisfaction with social life	Positive affect	+	.18	Y	General population; N=2125	Bradburn (1969)

Table 7—continued

Social Health Measures	Health and Health Care Variables	Direction of Association	Measures of Association[a] Statistic	Method	Population Characteristics[b]	Investigator(s)
Likes housework	Many psychiatric symptoms (few life events)	-	.24*	β	General population, adults; N=720	Myers, Lindenthal, and Pepper (1975)
		-	.22*	β		
Likes job	Few psychiatric symptoms (many life events)	NG	NS	β		
		NG	NS	β		
Likes housework	Few psychiatric symptoms (many life events)	+	.31*	β		
		+	NS	β		

[a]Guide to abbreviations in these two columns:

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.
+Significance not reported.
NS = not significant.
NG = not given.
r_{pb} = point-biserial correlation coefficient.
χ^2 = chi-square value.
ϕ = phi correlation coefficient.
ridit = "relative to an identified population"; an average ridit for a given subgroup expresses the probability that a member of the subgroup is "worse off" than one in the identified population.
r = product-moment correlation coefficient.
F = F-test value.
R = multiple correlation coefficient.
ρ = rho, Spearman rank difference correlation.
t = t-test value.
η = eta correlation coefficient.
β = regression coefficient.
γ = gamma correlation coefficient.

[b]Includes sample, sample size, age, and sex when given.

[c]Six subscales used as predictor variables for overall multiple R.

[d]Four subscales used as predictor variables for overall multiple R.

[e]Subset of Activity Scale.

[f]Subset of Community Adjustment Scale.

[g]Subset of SIP scale.

[h]Direction varies among subjects grouped by educational level.

[i]Subset of Social Work Scale.

constructs and other health-related variables were reported in 27 publications. Of 175 associations tested, 166 (95 percent) were in the hypothesized direction.[16] Of the 149 associations in the hypothesized direction that were tested for significance, 95 (63.7 percent) were significant ($p < 0.05$). Among the more often studied associations, substantial and direct relationships were reported between participation in activities with friends and both physical function and general health ratings. Participation in activities with friends was also consistently linked to life satisfaction and morale, and distinguished nonpsychiatric from psychiatric populations. Psychiatric populations also participated less in group activities and manifested poorer work and role performance. The large number of significant associations between social participation measures and general health ratings supports the validity of the latter as indicators of health and overall well-being.

[16] Only two of the six associations not in the hypothesized direction were significant; church membership was more characteristic of high manic depressive communities than of low manic depressive communities, and patients' reports of a high level of free-time activities were inversely related to a clinician's assessment of psychiatric adjustment.

Associations between qualitative ratings of social well-being and mental health scores tended to be significant. These trends indicate that social health constructs measured in terms of feeling states substantially reflect general psychological well-being and, therefore, are more confounded with mental health than measures of social participation and interpersonal interaction. For example, Klemmack, Carlson, and Edwards (1973) reported strong associations between items that appeared to measure life satisfaction (e.g., "I've gotten pretty much what I expected out of life") and subjective ratings of social participation (e.g., "I don't get invited out by friends as often as I'd really like"). Subjective social health items and mental health items also tended to correlate highly with the same factors in factor analytic studies (e.g., Klemmack, Carlson, and Edwards). In contrast, the magnitude of association between life satisfaction ratings and an objective measure of social participation (frequency of visits to people and places) was much lower (Fine, 1975).

Associations between mental health and both qualitative and quantitative measures of social participation and activities with friends support the notion of a general health factor underlying health status measures. There are, however, many gaps in the information presented in Table 7; for example, little information was found regarding associations between objectively defined social participation measures and mental health scores. Because of the virtual absence of longitudinal studies of social and other health constructs, little is known regarding the nature of cause and effect relationships. Longitudinal studies of social integration (e.g., employment status, satisfaction with job/housework), life events, and mental health reported by Myers and others (Myers, Lindenthal, Pepper, et al., 1972; Myers, Lindenthal, Pepper, 1975) are among the exceptions. These studies identified an interaction between social health and life events in relation to psychological well-being. In the absence of social integration, undesirable life events were more likely to be associated with poorer mental health.

Associations between global measures of social health and measures of physical and mental health (see Table 7) tended to be stronger than associations among social health constructs (see Table 5). These results suggest that specific social health constructs (e.g., number of friends, group membership) may have similar cause and effect relationships with physical and mental health constructs while measuring relatively less related social phenomena. For example, measures of social interaction, leisure pastimes, and recreation all related substantially to general health ratings. Yet, as seen in Table 5, the strength of the associations among these social health constructs was much weaker than their relationship to general health ratings. These validity findings lend further support to previous conclusions regarding the heterogeneity of social health constructs and leave very much in question the issues of a general social health construct and the additivity of social health constructs.

Relationship of Social Health Measures to Age

The construct validity of health measures has often been evaluated by studying their associations with age. As indicated in Vols. II and III, physical and mental health scores tend to be less favorable as age increases. Relationships between measures of social health and age reported in the literature were reviewed to determine whether social health and age are similarly related. Because the constructs hypothesized to measure social health are heterogeneous, this aspect of the review also identified those social health constructs most related to age.

Table 8 summarizes findings and relevant information from 11 studies of associations between social health and age, including the social health measures used by each investigator (grouped by indexes/scales, single-items, and qualitative measures), the age group on which relationships were based, the direction of association, and the measure of association. Although most associations between social health and age were either nonsignificant or not tested for significance, several trends are evident.

Renne (1974) and Greenblatt (1975) reported that socially healthy people tended to be older (45 to 65) or between 30 and 65, implying that those under 30 and those over 65 are less socially healthy (by their definition). Similarly, Adler (1955) reported a tendency for middle-aged persons (40 to 59) to have adjusted more favorably in the areas of occupation, social participation, and family life than both younger and older persons. Sample sizes were very small in the Adler study.

Foskett (1955) reported that community participation scores increased during the 20s and 30s and declined in the later years for one of the two communities he studied. For the other community, participation scores rose until the mid-50s and then started to decline. The communities differed in income and education levels. Holding education constant, the tendency for participation scores to drop off for older age groups was minimized. Similarly, when income groups were analyzed separately, high-income groups showed a steady increase in participation scores throughout all age groups while participation scores for low-income groups tended to decrease in later years.

Maddox (1963) studied people 60 years and older and reported decreases in mean activity scores (on a measure including physical mobility and social interaction items) with age. These decreases were linked to an age-related decrease in interpersonal activities; noninterpersonal activities tended to remain constant.

Other investigators' findings indicated that older persons tended to feel more alienated, powerless, and normless (Dean, 1961) and more anomic (Meier and Bell, 1959). Nonsignificant relationships were reported between social isolation and age (Dean), between orderly work history and age (Wilensky, 1961), and between types of participation (e.g., watching television versus seeing a friend) and age (Young and Mayo, 1959). Age interacted with income in one study; those over 60 years old with insufficient income tended to manifest greater isolation (Tornstam, 1975).

The evidence reviewed suggests that the relationship between social health and age may be a function of the social construct measured. When social health is defined in terms of role performance, its relationship with age is represented by a ∩-shaped curve: Social health tends to increase through the middle ages (i.e., 30 to 60 or 65) and then to decrease. Renne (1974) found that people over 45 had higher social health scores on the marital satisfaction, sociability, and community involvement subscales of the Social Health Index. She suggested that married people over 45 may have been "survivors" in the sense that the most unsatisfactory marriages in their cohort had already been dissolved, and these people were more likely to report numerous close contacts, frequent church attendance, and multiple organizational memberships. Similarly, Greenblatt (1975) suggested that middle-aged adults have more opportunity to participate in all social areas. For the most part, middle-aged adults are married, still working, and their children are older or grown, leaving time for them to see friends and relatives and engage in community activities.

Table 8

Associations between Measures of Social Health and Age

Social Health Measure	Age Group	Direction of Association	Measure of Association: Statistic	Measure of Association: Method	Investigator(s)
INDEXES/SCALES					
Community participation	21-70+ (Community I)	CV[a]	NG[b,c]	Comparison of means	Foskett (1955)
	21-65+ (Community II)				
Formal social participation	Under 41-56+	CV	NS[d]	$\overline{C}$[e]	Young and Mayo (1959)
Social Health Index	20+ or 16-19 and ever married	CV	NG	¶[f]	Renne (1974)
Index of Social Well-Being	20+ or 16-19 and ever married	CV	NG	Comparison of means	Greenblatt (1975)
Adjustment scale	14+	CV	NG	¶	Adler (1955)
Activity inventory	60-94	-	NG	Comparison of means	Maddox (1963)
Orderly work history	21-55	NG	NS	¶	Wilensky (1961)
SINGLE-ITEM MEASURES					
Contact with friends/relatives	37-74	-	NS	r	Garrity (1973)
Participation in community organizations	37-74	+	NS	r	Garrity (1973)
Employment	37-74	-	NS	r	Garrity (1973)
Leisure activities	37-74	-	NS	r	Garrity (1973)
QUALITATIVE MEASURES[g]					
Social isolation	NG	-	NS	r	Dean (1961)
Degree of isolationism	45-75	+	.21	Path analysis	Tornstam (1975)
Alienation	NG	+	.12[h]	r	Dean (1961)
Anomia	21+	CV	NG	χ^2	Meier and Bell (1959)
Powerlessness	NG	+	.14[h]	r	Dean (1961)
Normlessness	NG	+	.13[h]	r	Dean (1961)

[a] CV = curvilinear.

[b] NG = not given.

[c] Significance test not reported.

[d] NS = not significant.

[e] $\overline{C}$ = corrected coefficients of contingency.

[f] ¶ = descriptive statistics.

[g] See footnotes in Table 5 for definitions of these measures.

[h] p = less than 0.01.

When social health measures are confounded with measures of mental or physical health, however, social health tends to decrease with advancing age. Maddox's Activity scale (1963) contained items pertaining to physical mobility as well as to social health. Decreases in physical health with age may therefore account for reported decreases in social health among older age groups. Similarly, when social health is measured subjectively (e.g., alienation, powerlessness, normlessness), decreases with age may reflect poorer mental (rather than social) health.

Most measures of social health have not been studied in general populations of broad age ranges. Such analyses need to be performed before any definitive statements can be made about the relationship between social health and age. Possible interactions between age and social class should also be considered in studies of social health.

EFFECTS OF MEDICAL CARE ON SOCIAL HEALTH

An important characteristic of health status constructs selected for measurement in the HIS is that delivery of personal medical care services has the potential to change the aspect of health being measured. Knowledge of the extent to which medical care can affect the social health of individuals is thus an important factor in the usefulness of social health measures to the HIS.

Very few published studies addressed the question of the effects of medical care on social health, and all but one of these focused on psychiatric patient populations. Thus, little is known about the effects of medical care on the social health of general populations. Furthermore, problems in study methods (e.g., lack of control groups or pretreatment measures) make it impossible to determine whether results were a function of medical care intervention or other factors not controlled for in the study design. Keeping these shortcomings in mind, the evidence identified is reviewed below.

To determine whether psychiatric hospitalization affected role performance, Ellsworth, Foster, Childers, et al. (1968) compared pre- and post-hospital treatment ratings of interpersonal, social, and work adjustment. Outside social activity scores (e.g., socialization, friendship skills, organizational participation) showed minimal but positive effects of hospitalization at both three-week and three-month follow-ups. Productivity measures (which included items dealing with employment) showed small decreases from pre-hospital functioning. This may have been caused by the disrupting effect of extended hospitalization on employment status rather than by actual decline in role performance. The investigators concluded that psychiatric treatment, although resulting in significant symptom reduction, may not result in significant changes in a patient's role performance.

Using scales of adjustment developed by Katz and Lyerly (1963), Schooler, Goldberg, Boothe, et al. (1967) evaluated outcomes of hospitalization for schizophrenic patients. Former patients tended to be employed or otherwise functioning (e.g., as a housewife), functioning socially as well as ever, and living up to self-expectations and relatives' expectations for social performance (these expectations, however, were low). Social workers rated only 11 percent of the patients as functioning at a level equal to the average person in the community. Specific characteristics of the environment (e.g., family type, contention in the family) to which the

patient was discharged were as, if not more, important than symptom remission in predicting performance after discharge.

Adler (1955) reported findings related to the outcome of hospitalization for mentally ill patients. In 1949 and 1950, interviews were conducted with relatives of patients who had been hospitalized sometime between 1930 and 1948. The adjustment of former patients was rated in the areas of work regularity, social participation, marriage, and family. Occupational adjustment of former patients was no better and was sometimes less adequate at the time of the interview than in the period just before hospitalization (as determined from hospital charts). Among the better adjusted were married persons living with spouses, those who received prompt treatment, those who had been out of the hospital longer, and those who were middle-aged. These trends may relate to the fact that married and middle-aged people appear to exhibit better social health regardless of the intervention of medical care. The natural course of improvement in social health, rather than medical care, may explain the finding that favorable outcomes became more common the longer the patient had been out of the hospital.

Using the Barrabee-Barrabee-Finesinger Social Adjustment Scale (1955), Bockoven, Pandiscio, and Solomon (1956) evaluated 106 former psychiatric patients who had lived in the community for three years following discharge from a psychiatric hospital. Results showed that, as a group, patients were achieving very nearly satisfactory occupational adjustment and less than barely adequate economic adjustment. Former patients who had not been rehospitalized during the three-year period scored highest in both areas. Rehospitalized patients had poorer ratings in all areas of social adjustment than those who had not been rehospitalized. Because rehospitalized patients scored lowest in community adjustment, the investigators concluded that factors underlying the need for rehospitalization were more likely found in the community relations of former patients than in their occupational or family relations. Disadvantages of this type of followup study include the fact that the effectiveness of treatment cannot be determined because pretreatment adjustment is unknown. It also seems unwarranted to classify patient outcomes as good or poor unless pretreatment performance and adjustment are known.

Spitzer, Sackett, Sibley, et al. (1974) compared the effectiveness of nurse practitioners and physicians in a primary care setting. Patients were randomly assigned to the care of either a nurse practitioner-physician team or a physician; a ten-item version of the Social Function Index developed by Chambers, Sackett, Goldsmith, et al. (1976) was administered at the end of the experimental period. Virtually identical distributions of Social Function Index scores were reported for the two groups of patients. They concluded that the nurse practitioner was a safe and effective provider of primary care. They noted, however, that measures of social function may have been insensitive to small but clinically significant changes in health status.

In summary, five studies included social health measures as outcomes of care. All but one tested their measures in psychiatric populations. Thus, findings cannot be generalized to general populations. None of these studies yielded evidence that any type of medical care has a positive effect on social health, and one study suggested some negative effects. In theory, medical care may favorably influence social health in many ways (Caplan, 1974), few of which have been studied.

SUMMARY AND CONCLUSIONS

A review of published literature clarified the meaning of social health and identified major issues involved in its measurement. The review covered 68 theoretical and empirical publications that dealt with the social health of individuals (as opposed to communities), measures that emphasized objective social health constructs (e.g., a count of the number of friends) rather than subjective constructs (e.g., satisfaction with the number of friends), and the effects of medical care on social health.

Conceptually, social health differs from physical and mental health constructs in that it extends the definition of health status beyond the physiologic, physical, and mental status of the organism to focus on the quantity and quality of interpersonal ties and the extent of community involvement. Social health has been treated both as a component of health status in evaluating medical care outcomes and as an intervening variable that cushions the effect of life stress events, poor physical or mental health, and other negative forces on the individual. Although evidence indicates that those with healthy social support systems cope more effectively with stressful events, there is no unequivocal evidence indicating that social health can be positively altered by the intervention of medical care services. Thus, it is not clear whether social health is best viewed as an intervening variable in order to understand the effects of medical care on physical and mental health or as a component of health status outcomes in analyses of the effects of differences in coinsurance and deductibles on use of services and health outcomes.

Several features characterize the published literature, including limited social health data from general populations, agreement regarding the definition of social health in terms of social participation and interaction and wide variety in the content of social health questionnaires, successful use of self-administered questionnaires and single-item measures, unresolved issues underlying the construction of multi-item social health measures and global indexes, and many unanswered questions regarding the reliability and validity of social health measures.

Populations Studied

Of 58 empirical studies identified, only 17 involved general populations. Thirteen surveys were administered to patient populations (chiefly psychiatric patients). The remainder involved narrowly defined groups (e.g., the elderly, white males). Information (particularly that relevant to methodological issues) about social health identified in the literature was thus of limited value to the HIS because its generalization to the entire population is open to question.

Content of Questionnaires

Measurement of the social health of individuals most often concentrated on their performance in four social role areas: family and home, social life and friendships, community, and work. Global indexes of social health often measured behaviors in all of these areas; although other investigators did not always term their measures "social health" measures, they often focused on specific aspects of social interaction or participation (e.g., number of contacts with friends). Measures of social participation and interaction, emphasizing activities and contacts with

family and friends and participation in community activities, constituted the more common operational definitions of social health.

Although specific items included in social health surveys varied considerably, they could be grouped meaningfully into the four role areas on the basis of similarity in manifest content: number of activities with family and/or friends, participation in group activities, and work performance. A fifth category, that of other social phenomena, included activities that did not necessarily involve interaction with others. Thus, there was considerable correspondence between the focus of social health indexes and other items and scales described in the published literature, although comprehensive batteries of social health items were the exception rather than the rule. The content validity of social health measures can therefore be evaluated in terms of their comprehensiveness with respect to the four major role areas (family, social, community, and work).

Social health batteries (including those explicitly designed as overall social health indexes) often included measures of both objective and subjective constructs. There are good arguments both for and against such practices. Differences in personal preferences regarding the nature and number of social ties and in the amount of support they provide argue in favor of the more subjective approach to definition and measurement. A subjective rating of social health (e.g., feeling cared for and involved with others) may be the only valid way to take these differences into account. The need to minimize the overlap between definitions of mental and social health constructs, however, argues for the more objective approach to social health measurement. Inclusion of subjective ratings in a social health index may accomplish nothing more than repetition of information about health status derived from measures of psychological well-being (e.g., life satisfaction). Differences in the validity of objective and subjective measures of social health cannot be determined from the meager evidence that has been published.

Data-Gathering Methods

Social health data have been collected by personal interview and self-administered questionnaires from several sources (subjects, family, professional staff). Results suggest that self-administered questionnaires provide reliable data and that ratings obtained from individuals tend to agree with those obtained from either their relatives or professional staff. Because it may not be feasible to obtain social health data from more than one source in studies of general populations (such as the HIS), evidence that data from self-administered questionnaires may adequately characterize the social health of respondents is encouraging.

Construction of Scales and Indexes

Several important issues must be resolved before constructing scales to measure specific aspects of social health (e.g., frequency of activities with friends) and social health indexes that involve aggregation of measures from two or more major social role areas. Three of these issues are

- What should be included in the scale or index?
- What should be the direction and nature of scoring (e.g., to what extent are more friends indicative of better social health)?
- Should equal weights be assigned to items that make up the score, or, if not, how should weights be determined?

These issues were addressed in several of the studies reviewed. With few exceptions, decisions regarding aggregation were based on plausible arguments derived from conceptual frameworks. Although considering these issues is preferable to ignoring them, empirical tests of conceptual schemes would contribute substantially to a greater understanding of the many tradeoffs involved in aggregation of measures. For example, strategies for defining and measuring social health usually acknowledged the distinction between social, mental, and physical components of health status. Empirical tests of whether presumed measures of social components could be distinguished from measures of physical and mental components, however, were rarely offered to support such conceptual distinctions. Lack of such studies may account, at least in part, for inclusion of what appear to be measures of mental health constructs (e.g., anxiety, life satisfaction) in several social health scales and indexes. Because of this apparent confounding, some of the indexes in question may be better viewed as overall health status indexes rather than social health indexes.

Three strategies have been used to weight parts of a social health scale or index score before aggregation. First, unstandardized item or scale scores have been summed, thus by default giving greater weight to scores associated with greater variability. Second, weights have been combined with either raw or standardized scores. The distinction between raw and standardized scores is important because a weighting scheme may achieve a desired change in the relative contribution of the parts of a score only if raw scores are standardized before weighting. Third, a priori weights have been based on the opinions and values of investigators, or obtained from judges, or based on normative definitions of social well-being. No studies of the validity of these weighting schemes have been published. Thus, there is no evidence that weights achieved their intended purpose, namely, to reflect differences in value.

Some investigators advocated and demonstrated the feasibility of combining social health data without explicit weights, for example, by constructing cumulative scales at the ordinal level of measurement (i.e., Guttman scales). To the extent that cumulative scales can be defined so that one and only one pattern of responses is associated with each scale type, cumulative scales may solve the problem of aggregating social health data. Because social health constructs are much more heterogeneous than mental or physical health constructs, simple summated rating scales, which are based on the assumptions that all parts of the score share a common factor and that categories of social health are additive, will probably not be successful unless many items are included.

The direction of scoring measures of social health constructs does not appear to be at issue. Theoretical models of social health and results of empirical tests indicate that, for example, having friends is better than not having friends, participating in community activities is better than not participating, and so on. Qualitative differences in specific measures, however, have not been demonstrated. For example, the point at which an increase in the number of friends is of no marginal value to social health has not been determined. Instead, investigators have assumed that more continues to be better or have imposed arbitrary schemes for categorizing scores at the extreme (e.g., having 10 or 15 friends has the same value). Published scoring algorithms do not appear incorrect or illogical; most have been offered along with plausible arguments. Tests of the assumptions underlying

published scoring algorithms, however, were rarely reported and some assumptions appear never to have been tested.

Variability

Lack of published score distributions for social health measures and noncomparability of definitions made it difficult to document the variability that can be expected in social health scores and to obtain information that can be used to develop norms for social health measures. Only three studies published data on the prevalence of different levels of social health that were (1) based on measures similar to those included in the HIS social health battery, (2) administered to noninstitutionalized populations, and (3) based on similar operational definitions of constructs measured. Respondents were more likely to report visiting relatives than friends, neighbors, or coworkers. Associations with neighbors had a bimodal distribution, indicating that respondents either saw neighbors frequently or very rarely. Most respondents associated with coworkers infrequently. Estimates of voluntary group membership varied across studies; the majority of respondents reported at least one membership.

Reliability

Of the 58 empirical studies reviewed, only 10 reported information relevant to the reliability of social health measures. In all types of reliability tests performed, coefficients tended to be high. Single-item measures of social health (as well as short and long scales) achieved high reliability. When both internal-consistency and test-retest coefficients were reported for the same measure, test-retest coefficients were often substantially higher. Thus, social health items are apparently reliable, but they may not have as much in common as items within physical or mental health batteries.

Validity

None of the empirical studies explicitly addressed criterion validity, for example, whether a self-report of number of meetings attended reflected the true number. Agreements among subjects, family, and professional staff suggest that raters have the same criterion in mind; however, this is not satisfactory evidence of criterion validity (see Vol. I, Sec. II).

Data pertinent to other types of validity were found in published reports, although they were rarely discussed in terms of validity issues, and accounts were therefore often incomplete. Some reports of interrelationships among social health measures clearly indicated weak but positive associations among measures. Because parametric methods of modeling relationships were often relied on, nonlinearity in associations and markedly skewed score distributions may have contributed to the apparent weakness of the reported associations. Such statistical artifacts do not completely explain the weakness of the associations. Instead, the social health constructs that have been measured are apparently heterogeneous and much less interrelated than either physical or mental health constructs.

Empirical studies of associations among social, physical, and mental health measures supported the distinction of social health from other components of

health status. This distinction tended, however, to be much less clear when subjective ratings of social health (e.g., satisfaction with friends) were included. Associations between social health measures and measures of both physical and mental health were consistently positive and significant across investigations. Among the associations frequently replicated were those between measures of participation in activities with friends and physical function, general health ratings, life satisfaction, and morale. Evidence supporting the distinction between measures of subjective and objective social health constructs was also found in the published literature. Significant associations between subjective ratings of social health and mental health scores supported the hypothesis that such measures of social health overlap substantially with mental health scores. Whether subjective and objective measures of social health differ substantially in validity is an unanswered question, with implications for both the conceptualization and measurement of social health.

Because there were few longitudinal studies of social health and other health constructs, little is known about the nature of the causes and effects underlying associations among these constructs. Social health measures tended to be more closely associated with physical and mental health measures than with other social health measures, supporting the notion that social health constructs are heterogeneous. There may be different ways to achieve the level or kind of social support necessary to deal with life stress, and a certain amount of "substitutability" may be possible with respect to social supports. For example, either close ties with friends, or involvement with work, or active community involvement, or ties with relatives may provide the support necessary to deal with the stresses of life.

Physical and mental health decline with age. This does not appear to be so for all social health constructs. For some, social health may increase from youth into adulthood and decrease thereafter. This trend is tenuous because of lack of data and the weak relationships exhibited between social health and age. Other social health constructs, particularly those confounded with physical or mental health, relate negatively to age, as do measures of physical or mental health.

Effects of Medical Care on Social Health

Published evidence regarding the effect of medical care intervention on social health is sparse. Problems in study methods, including lack of control groups and sampling bias, make interpretation of findings and conclusions difficult.

III. SOCIAL HEALTH MEASURES IN THE HIS

Questionnaire items explicitly constructed to measure social health were not included in the Dayton Medical History Questionnaire (MHQ), which was the first HIS health survey. It has become apparent, after the fact, that some batteries included in that questionnaire did tap social health. Certainly, items in the role functioning battery (see Vol. II) reflect social well-being as currently defined. Items included to validate the mental health battery such as those focusing on interpersonal interaction at work and with family members (see Vol. III) also reflect social health to some extent. Because HIS measurement strategy called for fielding a comprehensive social health battery before undertaking scaling studies, such studies were not performed on data from the Dayton MHQ. Measures of social health could be constructed from these items, however, and App. A lists those that may be used to measure social health from the Dayton MHQ. Several of these items were used in HIS studies of interrelationships among physical, mental, and social health constructs (see Vol. VI).

The literature on social health measures reviewed after fielding the first HIS health survey aided in selection of the smallest number of items necessary to adequately represent social health for HIS purposes. Questionnaire items were selected and constructed with the following criteria in mind:

- Measures must be comprehensive with respect to the four major social role areas identified in the literature—family, social, community, and work activities.
- Measures must focus on social health of individuals rather than the community.
- Questionnaire items should represent state-of-the-art measurement strategies.
- The battery should include at least one subjective social health rating to further test the overlap between such measures and those of mental health constructs.
- Measures in each area should contribute unique information about some aspect of social health.
- Measures should not be excessively confounded with other health status components (e.g., physical and mental) or nonhealth influences.[1]
- Measures should be sensitive to the effects of medical care and useful in studying interactions between social support systems and physical and mental health in the face of life stress.
- Measures must be applicable to general populations and, because of practical constraints, must require data from only the respondents in question (as opposed to family, friends, and providers of care).

[1] This is not an all-or-none proposition. In a randomized groups experiment such as the HIS, confounding does not necessarily constitute a threat to the internal validity of the design. Hence, as long as a substantial amount of social health "true score" variance is represented, some degree of confounding with other health constructs and/or nonhealth influences may be acceptable (assuming no interaction with independent variables).

DESCRIPTION OF SOCIAL HEALTH MEASURES

Consistent with the relatively lower priority placed on the measurement of social health in the HIS, only 11 social health items were added to the HIS health questionnaires fielded after Dayton enrollment (see App. B). These items defined social health in terms of participation and interpersonal interaction, following the more common definitions in the published literature, and focused on the number or frequency of several kinds of participation and interaction. The items were based most directly on measures used by Myers, Lindenthal, Pepper, et al. (1972) and Myers, Lindenthal, and Pepper (1975) in their studies of social activity, life events, and mental status, and by Dohrenwend, Dohrenwend, and Cook (1973) in their studies of role functioning of psychiatric patients.

Table 9 summarizes the content of HIS items in terms of major social health constructs identified in the published literature. HIS items include three each in the community and social role areas, and four pertaining to activities and contacts with family members and close friends; one item elicits a subjective rating of how well the respondent is getting along with others, and does not specify a particular role area. The HIS social health battery does not include items from the "Other Social Phenomena" category, in which some of the single-item measures found in the literature were classified, or items related to the work area of social performance. The more objective aspects of work and major role activities are measured by items currently included in the HIS Functional Limitations and Physical Abilities batter-

Table 9

FOCUS OF HIS SOCIAL HEALTH ITEMS IN TERMS OF MAJOR CONSTRUCTS IDENTIFIED IN THE LITERATURE

Focus[a]	Recall Period	Abbreviated Item Content
Community	Present	Level of activity in group or club affairs
	Past month	Frequency of attendance at religious services
	Present	Voluntary group memberships
Family/Social	Present	Number of close friends and relatives
	Past year	Frequency of visits with close friends and relatives
	Past month	Telephone contacts with close friends and relatives
	Past month	Letters written to friends and relatives
Social	Present	Number of neighborhood acquaintances
	Past month	Frequency of home visits by friends
	Past month	Frequency of visits to homes of friends
Subjective	Present	How well getting along with others

[a]Hypothesized from manifest content of items.

ies (see Vol. II). Data related to the work/role area will be obtained from these batteries as well as from HIS reporting forms other than the MHQ or Health Questionnaires. The social health battery also does not include items relating to feelings and perceptions (e.g., feeling cared for, extent of involvement with others) that would assess the range of subjective social health constructs.

Thus, the HIS measures social health constructs with a relatively small number of items that emphasize primarily the objective aspects of social health in the community, family, and social role areas and that include one subjective evaluation of social interactions (presumably across major role areas). These 11 items, as well as data from other sections of the MHQ, will be used to construct a comprehensive social health index (see App. C). These other data will include information about naturally occurring sources of social support (e.g., marriage), and about social role functioning measured in the HIS Functional Limitations and Physical Abilities batteries. Other information about individual characteristics relevant to social health gathered from HIS reporting forms other than the MHQ will also be considered in the development of a comprehensive social health index, including job status and employment history, home environment and number of house occupants, and permanent income.

PLAN OF ANALYSIS

Analyses of responses to social health items will be conducted in several stages. First, frequency distributions of responses will be inspected to assess variability. Second, associations among items will be computed using both parametric and nonparametric statistics; cross-tabulations of pairs of item scores will be inspected to determine whether cumulative scales are possible. Although cumulative scales were rarely constructed from similar items described in the published literature, such scales may be possible (see Adler, 1955). For example, the level of activity in groups and clubs will, at least in part, be determined by the number of memberships. Those reporting no memberships may also report the lowest level of community activity and those reporting highest activity levels may report more memberships than those with low activity levels. Such relationships are ideally suited to the definition of a cumulative scale. Because there is no basis for hypothesizing exact scale levels, they must be identified empirically. A holdout sample within each site will be used for purposes of cross-validation of ad hoc cumulative scales, and scaling studies will be replicated across sites.

HIS social health items have also been constructed to permit aggregation of social health constructs across role areas with respect to a specified time frame (during the past year, during the past month, and at present). Six of the 11 items in the social health battery and two items included in the role functioning battery (see Vol. II) can be scored and scaled to measure social health during the month before the interview. Items representing all major role areas and the subjective rating of social health have been constructed to measure present role performance; the scalability of items focusing on present social health across role areas will also be tested.

Aggregation schemes such as those described by Renne (1974) and by Greenblatt (1975) will also be evaluated empirically to test underlying assumptions and

the sensitivity of index scores to violations of these assumptions. Other information routinely gathered during the HIS (e.g., family composition, job changes, employment status) will be examined to determine the appropriateness of its inclusion in a social health index.

Reliability of measurement is not necessarily at issue for the HIS social health battery. Although published evidence regarding reliability was limited, findings were very favorable even for single-item measures such as those used in the HIS. If cumulative or summated rating scales can be constructed from HIS items, reliability can be estimated from reproducibility coefficients or from the strength of associations among items in the same scale. If such scales cannot be constructed, reliability for single-item measures cannot be estimated with confidence except from repeated administrations of items within relatively short time periods. Such test-retest studies are not planned; they will be fielded if the reliability of measurement becomes suspect and reliability cannot be estimated using other methods.

Criterion validity of the social health items will be accepted on the strength of the correspondence between manifest item content and the intended construct of measurement, that is, on the strength of face validity. In other words, the mean score based on an item pertaining to number of contacts with friends will be taken to accurately reflect the number of contacts for persons in that group. Threats to validity at this level include the tendency to give socially desirable responses. This threat will be tested directly by correlating item scores with an eight-item measure of social desirability response set included in HIS health questionnaires for that purpose.

Construct evidence of validity will be obtained by studying associations among social health items and scales and between those measures and measures of physical and mental health. An important issue in this regard is the strength of associations among measures of objective social health constructs, mental health measures, and the subjective rating of how well the respondent is getting along with others. Subjective rating measures are hypothesized to overlap substantially both with the items tapping objective social health constructs and with mental health measures. The validity of the objective and subjective social health measures will also be examined in relation to hypotheses derived from theory, for example, hypotheses regarding the role of social networks in cushioning the effect of life stress events. One test of the construct validity of HIS social health measures will be performed by examining interactions between social health and life stress events over time in relation to physical and mental health as well as use of health care services. The hypothesis states that life stress events will not have as much effect on those who are socially healthy as on those with poor social health; effect will be measured in terms of mental health and use of health care services. Information regarding the relative importance of each social health construct in these analyses may be useful in achieving valid weights for purposes of constructing a social health index (e.g., see Pearlin and Schooler, 1978).

Admittedly, theory regarding social health is not well developed. For example, whether different sources of social support (e.g., friends, family, work) are equally valuable in preserving health at time of stress and for all kinds of stress is unknown. Social class and other group differences in the therapeutic value of social supports also warrant investigation. Because of the large number of unanswered questions and lack of well-developed theory, results that do not conform to predictions may

indicate poor validity of measurement or unsound theory. Results of HIS analyses may contribute as much to the formulation of social health theory as to increased understanding of the validity of these measures.

Appendix A

POTENTIAL ADULT SOCIAL HEALTH MEASURES, DAYTON MEDICAL HISTORY QUESTIONNAIRE

	Item Content
Form A, Part 1	Have you ever been married?
	How many times have you been married?
	Have you had a paid job in the past 12 months?
	How often have you enjoyed your work (in the past 12 months)?
	How often have you had trouble getting along with others at work (in the past 12 months)?
	How often have you received good pay (in the past 12 months)?
	How often have you had poor working conditions (in the past 12 months)?
	How often have you liked the people you work with (in the past 12 months)?
	How many different jobs (with different employers) have you had in the past *5 years*?
	How many years ago did you take your first job?
	How often have you been under stress or tension on your job (in the past 12 months)?
	How often have you been under stress or tension at home (in the past 12 months)?
Form A, Part 2	Were you working at all during the last *6 months*?
	Did you have trouble with your boss at work (during the last 6 months)?
	Were you married at least part of the time during *the last 6 months*?
	Did you have a major change in the number of arguments with your husband or wife (for example, either a lot more or a lot less than usual) (during the last 6 months)?

	Item Content
	Did you have a major change in the number of arguments with your boyfriend or girlfriend (for example, either a lot more or a lot less than usual) (during the last 6 months)?
	Did you have trouble with your parents or in-laws (during the last 6 months)?
Form B	Have you felt loved and wanted (during the past month)?
	Has anyone (such as in your family, close friend, at work, in your neighborhood, etc.) been a source or cause of disturbance or distress to you during the past *year*?

Appendix B

HIS SOCIAL HEALTH BATTERY

SOCIAL ACTIVITIES

DO NOT WRITE IN THIS SPACE

CARD 05

99. ABOUT HOW MANY FAMILIES IN YOUR NEIGHBORHOOD ARE YOU WELL ENOUGH ACQUAINTED WITH, THAT YOU VISIT EACH OTHER IN YOUR HOMES?

_____ families 13-14/

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100. ABOUT HOW MANY CLOSE FRIENDS DO YOU HAVE—PEOPLE YOU FEEL AT EASE WITH AND CAN TALK WITH ABOUT WHAT IS ON YOUR MIND? (YOU MAY INCLUDE RELATIVES.) (Enter number on line)

_____ close friends 15-16/

---

101. OVER A YEAR'S TIME, ABOUT HOW OFTEN DO YOU GET TOGETHER WITH FRIENDS OR RELATIVES, LIKE GOING OUT TOGETHER OR VISITING IN EACH OTHER'S HOMES? (Circle one)

17/

Every day	1
Several days a week	2
About once a week	3
2 or 3 times a month	4
About once a month	5
5 to 10 times a year	6
Less than 5 times a year	7

---

102. DURING THE PAST MONTH, ABOUT HOW OFTEN HAVE YOU HAD FRIENDS OVER TO YOUR HOME? (DO NOT COUNT RELATIVES.) (Circle one)

18/

Every day	1
Several days a week	2
About once a week	3
2 or 3 times in past month	4
Once in past month	5
Not at all in past month	6

---

103. ABOUT HOW OFTEN HAVE YOU VISITED WITH FRIENDS AT THEIR HOMES DURING THE PAST MONTH? (DO NOT COUNT RELATIVES.)

(Circle one)

Every day	1	19/
Several days a week	2	
About once a week	3	
2 or 3 times in past month	4	
Once in past month	5	
Not at all in past month	6	

CARD 05

DO NOT WRITE IN THIS SPACE

104. ABOUT HOW OFTEN WERE YOU ON THE TELEPHONE WITH CLOSE FRIENDS OR RELATIVES DURING THE PAST MONTH?

(Circle one)

Every day	1	20/
Several times a week	2	
About once a week	3	
2 or 3 times	4	
Once	5	
Not at all	6	

105. ABOUT HOW OFTEN DID YOU WRITE A LETTER TO A FRIEND OR RELATIVE DURING THE PAST MONTH?

(Circle one)

Every day	1	21/
Several times a week	2	
About once a week	3	
2 or 3 times in past month	4	
Once in past month	5	
Not at all in past month	6	

106. IN GENERAL, HOW WELL ARE YOU GETTING ALONG WITH OTHER PEOPLE THESE DAYS—WOULD YOU SAY BETTER THAN USUAL, ABOUT THE SAME, OR NOT AS WELL AS USUAL?

(Circle one)

Better than usual	1	22/
About the same	2	
Not as well as usual	3	

107. HOW OFTEN HAVE YOU ATTENDED A RELIGIOUS SERVICE DURING THE PAST MONTH?

(Circle one)

Every day	1	23/
More than once a week	2	
Once a week	3	
2 or 3 times in past month	4	
Once in past month	5	
Not at all in past month	6	

108. ABOUT HOW MANY VOLUNTARY GROUPS OR ORGANIZATIONS DO YOU BELONG TO—LIKE CHURCH GROUPS, CLUBS OR LODGES, PARENT GROUPS, ETC. ("Voluntary" means because you want to.)

_____ groups or organizations (Write in number. If none, enter "0") 24-25/

CARD 05

DO NOT WRITE IN THIS SPACE

109. HOW ACTIVE ARE YOU IN THE AFFAIRS OF THESE GROUPS OR CLUBS YOU BELONG TO? (If you belong to a great many, just count those you feel closest to. If you don't belong to any, circle 4.)

(Circle one)

Very active, attend most meetings	1	26/
Fairly active, attend fairly often	2	
Not active, belong but hardly ever go	3	
Do not belong to any groups or clubs	4	

Appendix C

POTENTIAL SOCIAL HEALTH ITEMS FROM MEDICAL HISTORY QUESTIONNAIRES (POST-DAYTON), FORM A, AGE 14 AND OVER

Construct	*Item Content*
Work	Are you unable to do certain kinds or amounts of work, housework, or schoolwork because of your health?
	Does your health keep you from working at a job, doing work around the house, or going to school?
	During the *past 5 years*, have you worked at any job for pay, either full-time or part-time?
	During the *past 5 years*, how many different jobs have you had (jobs with different employers)? (If self-employed, count that as 1.)
	During the *past 6 months*, have you worked at any job for pay, either full-time or part-time?
	At any time in the *past 6 months*, were you attending school as a full-time student?
Family	During the past month, how much of the time have you felt loved and wanted?
	During the past month, how much of the time did you feel that your love relationships, loving and being loved, were full and complete?
	Have you ever been married? If yes, how many times?
	Are you currently married?
	During the *past 6 months*, would you say that you and your spouse have been arguing with each other more than usual, or less than usual?
	How about your in-laws—During the *past 6 months*, would you say you have been arguing with your in-laws more than usual, or less than usual?
	During the *past 6 months*, have you had any special girlfriend or boyfriend?

Item Content

During the *past 6 months,* would you say that you and your girlfriend/boyfriend have been arguing with each other more than usual or less than usual?

During the *past 6 months,* have you been arguing with your parents more than usual or less than usual?

Other Social Phenomena

In their *recreation* or *leisure* activities, some people spend a lot of time in *strenuous* activity—like jogging or running, playing handball or tennis, vigorous swimming, climbing, hiking, or doing heavy work around the house. Other people don't engage in this kind of strenuous activity at all.

About *how many hours* do you spend, *in an average week,* in *strenuous* leisure time activities like these?

Then there are leisure activities that require a *medium* or *moderate* amount of physical activity—like dancing, playing golf, gardening, or working with home tools.

About *how many hours* do you spend, *in an average week,* in *medium* or *moderate* leisure time activities like these?

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