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SELF-PERCEPTION OF HEALTH: A PROPOSED EXPLANATORY  
MODEL AND A TEST OF ITS CLINICAL SIGNIFICANCE

DISSERTATION

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A multivariate model of health self-perceptions was postulated based upon a comprehensive set of health related variables suggested by previous bivariate research. Components of the model included measures of health attitudes, health practices, health locus of control, a measure of stress/coping, and a physical health measure.

A stratified random sampling technique was used to select 108 subjects based upon the external measure of physical health which included categories ranging from disability-severe to symptom free-high energy level. All subjects completed a health questionnaire comprised of measures of the model components, two measures of health self-perceptions, and the Health Resource Task, an author designed instrument measuring a subject's ability to generate flexible health alternatives/resources.

Bivariate correlational analysis revealed that the physical health, stress/coping, health practices, and locus of control measures and certain of the health attitude subscales were significantly correlated to general health self-ratings. A multivariate model including these

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variables accounted for almost 50 percent of the variance in one of the general health self-ratings measures and approximately 38 percent of the variance in the Health Resource Task. Suggestions for refining the proposed model were made.

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SELF-PERCEPTION OF HEALTH: A PROPOSED EXPLANATORY  
MODEL AND A TEST OF ITS CLINICAL SIGNIFICANCE

Self-assessment of health has become an increasingly popular way of measuring health status, particularly in large population health surveys (Davies & Ware, 1981; Fillenbaum, 1979; Ware, 1976). As defined by a person's general rating of his or her personal health, health self-assessments or self-perceptions have proven to provide several advantages over traditional component health status measures. Health self-assessments have been typically more feasible to obtain in surveys than have personal health examinations (Fillenbaum, 1979). Aday, Sillers, and Anderson (1981) found them to be less costly to collect than traditional examination data. Additionally, Aday et al. suggested that health self-assessments provided a clearer picture of an individual's total health status profile as opposed to clinic or hospital record data in an area; they were likely to have fewer biases than did synthetic estimates constructed from other data sets for an area; and they provided more direct estimates of health in a community than many of the mortality-based measures of health status.

More importantly, Ware, Davies-Avery, and Donald (1978) have suggested that health self-perceptions reflect a more



comprehensive, integrated definition of health status than do the component health status measures, i.e., measures of physical or mental health. In essence, they appear to tap a presumed health construct that, "reflects an underlying perception of health status across specific components" (p. 91). Additionally, several researchers have strongly emphasized that self-perceptions of health provide an important dimension lacking in objective health status measures, that is, a subjective evaluation by the respondent of the objective information he/she has about his/her health status (Ferraro, 1980; Maddox & Douglass, 1973; Renne, 1974; Suchman, Philips & Streib, 1958; Tissue, 1972). Davies and Ware (1981) have emphasized that subjective evaluation allows the individual to emphasize or weigh differentially separate health components and to determine an optimal level of health for each of those components.

Consequently, health self-perceptions or self-assessments are believed to provide unique information in evaluations of medical care services, in studies designed to explain health and illness behavior, in studies of relationships among health constructs, and in population assessments of general health status (Ware, 1976). Specifically, Ware and Karmos (1976) have suggested that,

general health ratings will be more valid as predictors of use of health care services and of other health and illness behavior than any other kind of measures,

including physician assessments. This logic is based on the presumption that people seek care on the basis of a self-assessed need for it (p. 45).

Despite the growing consensus regarding their importance, few attempts have been made to develop an explanatory model to account for the variability in people's self-perceptions of their health. Further, beyond the actual meaning of these self-perceptions, little of a factual nature is known about their clinical significance (Ware, Davies-Avery, & Donald, 1978).

In an attempt to validate health self-perceptions, researchers have isolated a number of bivariate relationships between individual health-related variables and general health self-perceptions. With a few exceptions, these studies have primarily been based upon single-item measures of health self-perceptions (Ware, Davies-Avery, & Donald, 1978).

Ware and Karmos (1976) have indicated that health self-perceptions have been most frequently studied in relation to measures of physical health. DiCicco and Apple (1958) investigated several relationships among health constructs in a small sample of elderly persons, ages 65 and over, living in a low socioeconomic district. General health perceptions were measured through an Index of Health which provided four scales assessing number of days in bed during previous year, subjective ratings of current health, health compared to other people and to previous health, mobility,

and current health problems. There was a significant positive relationship between all subjective rating categories and Zeamon's Scale of Activity. Suchman, Philips, and Streib (1958) compared general health rating defined by self-ratings of very poor, poor, fair, good, or excellent combined with corresponding physician ratings in a multi-item scale to number of days spent in bed in the past year for illness. In their sample of people ages 65 and older, results revealed a negative relationship between increasing bed days and more favorably defined subjective health status. Measurements taken two years apart revealed that there was an improvement in "perceived" health by the group of respondents. However, there appeared to be little difference in the overall distribution of health self-ratings from one time period to the other. This latter finding has been confirmed by other researchers (Heyman & Jeffers, 1963; Seeman & Seeman, 1983).

Desroches, Kaiman, and Ballard (1967) assessed the relationship between personal health rating, age, and self-reported physical and psychological symptoms in elderly subjects with a mean age of 67.09. Utilizing a five-point scale, they noted a significant, negative relationship between those people who rated their past health as favorable and the number of reported symptoms. Additionally, there was a negative although nonsignificant relationship between current favorably assessed health and the number of health problems. Madow (1967) compared ratings of general health as excellent,

good, fair, or poor with objective, recorded medical data obtained on a stratified sample of members of an HMO, ages 17 and over. Findings revealed that people who rated their health as fair or poor reported a greater number of chronic conditions than did those who rated their health as excellent or good. These findings were confirmed in studies by Garrity (1973) and Osborn (1973). In a multinational survey of people aged 65 or older, Shanas, Townsend, and Weddarburn (1968) examined the relationship of self-assessed personal health and physical incapacity. Utilizing measures which asked respondents to rate their current health as good, fair, or poor, and then comparing differences in proportions of population at different levels, they found negative relationships between measures of functional incapacity and sensory impairment and favorable general health ratings.

Renne (1971) compared self-perceptions of health rated as excellent, good, fair, or poor to the presence of self-reported chronic conditions in adults 20 years and older. She found that people who reported chronic conditions or disability rated their health less positively than did those who reported minor or no such conditions. Renne (1974) later developed a multi-item general health rating scale which asked respondents to compare their health as better or worse than that of other people their age and to rate their own health as excellent, good, fair, or poor. Combining responses into a four-point health index and utilizing a

sample of adults 20 years and older, results indicated that ratings of positive general health were negatively related to increased bodily concern and unfavorable ratings of physical health. The relationship of bodily concern and general health ratings was a confirmation of the results provided by Maddox's (1964) study of elderly respondents.

Cole and Lejeune (1972) found that "the number of reported illnesses in the past year" were negatively related to self-assessed general health in a sample of welfare mothers and working class black women 50 years and younger. Tissue (1972) asked respondents to rate their general health as good, fair, or poor and compared ratings to responses to two physical health measures with a sample of aged welfare recipients with a median age of 68 years. Number of health problems was significantly, negatively related to more favorable general health ratings. Scores on his Functional Health Index, a six-point scale which assesses the respondents' ability to perform increasingly more difficult physical tasks, was significantly, positively related to more favorable general health ratings. This latter result was confirmed in a validation study of a similar Function Status Index (Reynolds, Rushing & Miles, 1974). Tornstam (1975) reported that a substantial proportion of the variance in subjective health ratings could be accounted for by the number of reported symptoms in a sample of persons in a Swedish town, between the ages of 45 and 75. Specifically, he found

significant relationships between certain symptom groups and general health ratings. The presence of aches, serious disease, visible impairment, general exhaustedness, and vascular disease were significantly, negatively related to general health ratings. He also found a significant positive relationship between mobility and favorably rated general health. A similar although nonsignificant result for mobility and general health rating was reported by Shanas et al. (1968). Finally, Fine (1978) examined a sample of urban elderly people, ages 65-89, and reported a significant positive relationship between ability to go outdoors without difficulty and ability to go up and down stairs and favorably assessed general health.

In summary, these results have suggested that favorably defined physical health status measures are positively and usually substantially related to favorably rated general health. These physical health status measures include bodily concern, presence of various symptoms, chronic conditions, functional status, mobility, number of illnesses, and actual bed days. The relationship of physical health measures to general health ratings have been found to be consistent over various samples of respondents and stable within the samples over time.

With the exception of Madow (1967), these studies have relied upon self-report data when measuring specific physical health status. The "objective" data provided by physician

assessments when included in studies of general health perceptions have evidenced the expected relationship, i.e., favorably defined physician assessments of patients' physical health are significantly related to favorably defined subjective general health ratings (Desroches et al., 1967; Friedsam & Martin, 1963; Heyman & Jeffers, 1963; LaRue, Bank, Jarvik & Hetland, 1979; Maddox, 1964; Nowlin, 1974; Renne, 1974). Suchman et al., (1958) arrived at similar results but noted that although statistically significant, there were some apparent discrepancies which the researchers considered quite large between observed subjective ratings and physician assessments. Suchman, et al. concluded that, "There can be little question, however, that self-ratings of health are based upon many other factors besides actual physical health" (p. 226).

Ware and Karmos (1976) have ranked mental health measures as the variable next most often studied in relation to general health ratings. Suchman, et al. (1958) compared self-rating of current health, defined as very poor, poor, fair, good, and excellent and self-rating of particular current physical health problems to responses to the question, "All in all, how much happiness would you say you find in life today?" (possible answers: "almost none," "some, but not very much," or "a good deal"). Both of the subjective health rating measures were significantly correlated with this measure of subjective "happiness." Friedsam and Martin (1963)

found a similar, significant, positive relationship between subjectively defined favorable general health and positive responses to the "happiness" scale contained in Cavan, Burgess, Havinhurst, and Goldhamer's (1949) Health Attitude Scale. They concurred with the suggestion made by Suchman, et al. (1958) that self-health ratings were much more sensitive than other objective health measures (i.e., physician assessments) to other aspects of self definition. They suggested, in fact, that "self-health rating may prove to be, particularly for older people, a rather simple and sensitive barometer of self image" (p. 183). Although reporting a similar, significant relationship of subjectively defined general health status to "happiness," Tissue (1972) concluded, to the contrary,

that self-ratings derive from a core of items which have an unambiguous relationship to health. Thus, a good, fair, or poor self-rating is not merely another measure of morale or self-image. Instead, it represents a summary statement about the way in which numerous aspects of health, both subjective and objective, are combined within the perceptual framework of the individual respondent (p. 100).

Research has suggested that life satisfaction and subjective general health rating have a less ambiguous relationship. Positive scores on variously defined life satisfaction measures have been found to be substantially



related to favorable general health ratings (Cutler, 1973; Henley & Davis, 1967; Spreitzer & Snyder, 1974). Edwards and Klemmack (1973) found that perceived health had a substantial positive relationship to life satisfaction after partialling out the effects of other health related variables in a multiple regression analysis. Palmore and Luikart (1972) suggested that general health ratings is the predominant variable accounting for life satisfaction. Thompson and Streib (1958) utilizing a multi-item general health rating scale and Tornstam (1975) relying on a single-item measure did, however, find nonsignificant positive relationships between self-ratings and satisfaction.

Several other mental health variables have been shown to be related to self-assessed general health. Thompson and Streib (1958) utilizing a multi-item self-rating scale that encompassed ratings of current health, health changes in the past year, current physical health problems, and doctor visits found that for males, ages 68-70, measures of dejection and hopelessness were negatively related to favorably rated subjective health responses. Gaitz and Scott (1962) utilizing a stratified sample of noninstitutionalized adults, ages 20 or over, found a negative correlation between general health rating and impaired life functioning due to psychiatric symptoms as determined by the 22-item Langner scale. They also found a significant positive relationship between ratings of satisfaction with self and general health

assessments. Less favorable general health ratings were found to be positively associated with morale as measured by the Havinghurst Scale (Maddox & Eistorfer, 1962). Negative health self-assessments were associated with increased feelings of loneliness (Shanas, et al., 1968). Increases in mental health risk, an eight-item index of psychological well-being, were associated with unfavorable health ratings (Berkman, 1971). Finally, satisfaction with marriage, increasing level of husband-wife companionship, the level of egalitarianism in the marital relationship, and increased role differentiation were significantly related to subjective general health rating.

Several social health status variables have been studied in relation to general health ratings. Cutler (1973) found for a random sample of adults aged 65 and older, with a median age of 74, that those who rated their general health positively achieved significantly higher scores on an index of voluntary participation in organizations. Renne (1974) found that certain variables within her Social Health Index were significantly related to general health rating. Specifically, favorable general health ratings were associated with positive assessments of one's marriage, relatively good qualifications for gainful employment, and/or a relatively high level of involvement with people outside the family. People lacking all or most of these variables tended to rate their health negatively. Subjective evaluations were related somewhat more strongly to the social health variables studied

than were the objective physical health measures. Renne concluded that,

although this subjective health measure is closely related to the relatively objective physical health spectrum, a fairly substantial number of persons with chronic conditions or disability considered their health "excellent." Perhaps the subjective health questions in fact reflect an overall state of mind, or general morale, which both affects and is effected by social health (p. 42).

Finally, using a path analysis model, Tornstam (1975) found that with other variables held constant, perceived social value increased with greater satisfaction with health status. Also, general health ratings were positively associated with increased social interaction and negatively associated with isolation.

Health and illness behavior is another area that has been frequently studied in relationship to health perceptions. Belloc and Breslow (1972) found that increases in the quality of health practices as defined by the level of consumption of alcoholic beverages, sleeping habits, physical activities, and nutrition, is significantly related to more favorable subjectively defined physical health measures. Pratt (1971) in a study of 401 young mothers with children aged 9-13 found that the higher the quality of personal health practices, as defined by her 76-item Personal Health Maintenance

Practices Scale, the higher the level of self-reported health and the fewer self-reported health problems. The scale provided an index of the overall quality of personal health practices and subscale scores in the areas of sleep, exercise, elimination, dental hygiene, smoking, alcohol consumption, and nutrition. Additionally, Pratt reported that the quality of utilization of professional medical services, including the use of preventive health services, specialized medical services, and services for illness, was also positively related to level of subjectively defined general health. In that study, no relationship was found between level of health knowledge and the level of health or the extent of health problems. In a study of health protective behavior, Harris and Guten (1979) did not confirm Pratt's findings. Health protective behavior capturing personal health and safety practices, preventive health care, environmental hazard avoidance, and harmful substance avoidance was found to vary little across groups of people who defined their health as good, moderate, or poor. They suggested that almost everyone performs at least some regular, routine behaviors aimed at protecting his or her health and that most people perform many, varied such behaviors. They did conclude, however, that "poor" health respondents were more likely than "good" or "moderate" respondents to perform sick-role behaviors and less likely to engage in behaviors incompatible with sick-role behavior.

Illness behavior was related to general health ratings in the expected direction. Fabrega and Roberts (1972) found a significant relationship between frequency of medical care and health self-perceptions with a sample of black urban residents, 18 years and older. Specifically, no contact with a doctor in the past year was positively related to favorably rated general health. Tissue (1972) found a similar significantly positive relationship for no contact with a doctor in the past six months or no admission to the hospital in five years and favorably rated general health. Leveson (1972) found that decreased participation in a health maintenance program was significantly, positively related to positive self-ratings of health. Finally, Friedsam and Martin (1963) found a significant, negative relationship between number of visits to a doctor and length of time confined to bed in the past year and favorably rated health self-perceptions.

It is interesting to note that Friedsam and Martin (1963) found both of these behavioral correlates to be significantly related to self-ratings of health but found only "length of time confined to bed in the past year" to be related to the "more objective" health ratings made by physicians. Further, they suggested that the relationship of the other behavioral correlate, "number of visits to a doctor in the past year" to self-ratings was considerably stronger than that to physicians' ratings. It may be reasonably

concluded from these findings that self-ratings of health may be more sensitive to health behavior and health practices than are the more objective physical ratings.

Finally, there may be a more complex relationship between health practices and health behavior and health self-ratings than has been previously assumed. Whereas measures of general health practices and appropriateness of use of services are significantly, positively related to health self-ratings as would be expected, regular check-ups were not related (Tissue, 1972). This is taken to suggest that health practices/behaviors are modified to some extent by health attitudes especially in relation to attitudes toward physicians and/or medical care.

A review of the literature suggests that health attitudes have been very infrequently studied in relationship to health self-perceptions. This is confounded by the lack of reliable, consistent operational definitions given to "health attitudes." Only one study was located which measured health attitudes in a consistent way. Heyman and Jeffers (1963) utilized the eight-item Activities and Attitudes Inventory (Cavan, Burgess, Havinghurst, & Goldhamer, 1949) and found that health attitudes as measured by this inventory were significantly related to self-ratings of health for subjects ranging in age from 60 to 94 years (median = 70). Maddox and Douglass (1964) have suggested that there is a stronger relationship between attitudinal scores and

self-health ratings than between these scores and physician ratings. Suchman, et al. (1958) concluded that, "It appears that a person's perceived state of health--whether it is healthy or ill--relates to one's attitudes, regardless of the objective health condition as judged by a physician" (p. 231).

Recently, health attribution variables have been studied in relation to general health status. Attribution of health derives from a reinforcement theory from social learning psychology commonly referred to as locus of control. It refers to the notion that control of reinforcement may be perceived to be of either internal or external origins. The degree to which individuals believe that contingencies are controlled by themselves (internal origin) and/or by chance, fate, or powerful others (external origin) has been found to determine numerous behaviors, including health related behaviors (Strickland, 1978). Most recently, research has suggested that locus of control or attribution is, in fact, not a dichotomous scale, and cannot be classified simply along an internal/external continuum (Kendall, Finch, Little, Cirico, & Ollendick, 1978; Lefcourt, 1973; Levinson, 1972, 1973; Reid & Ware, 1974). The external concept, particularly, has been hypothesized to have two separate factors, both of which have significant implications for health. Levinson (1972, 1973) has found a meaningful distinction between externals whose behavior is based on a belief in chance from

those whose external behavior derives from the perceived influence of "powerful others." The distinction between the single internal factor and dual external factor may well be related to issues of control combined with prediction over events (as in the internal dimension), or prediction of events only (as conceivably in instances when happenstances are attributed to Powerful Others), or when neither prediction nor control is perceived as possible (as when chance or fate are believed to be in control).

Subjective health status as defined by responses (6-point Likert scale, varying from "strongly agree" to "strongly disagree") to the statements "At the moment I am in excellent health" and "In general, I am an extremely healthy person" has been correlated with scores on the Multidimensional Health Locus of Control Scales (Wallston, Wallston & Devallis, 1978). Health status correlated positively with the MHLC "internality" scale and negatively with the MHLC "chance externality" scale. It was not correlated with the third scale, "powerful others."

Lau and Ware (1981) likewise found health status as defined by general health status, general susceptibility, and likelihood of specific diseases to be correlated to the "self-control over health" scale of their Health-Specific Locus of Control measure. They concluded that, "persons in poor health tend to perceive less personal control over their health" (p. 1154). Scale scores for measuring beliefs



about provider control over health, chance health outcomes, and general health threat were not correlated with health status.

Finally, Seeman and Seeman (1983) examined the responses of a random sample of Los Angeles County residents to initial and final face-to-face interviews as part of a year-long investigation of the relationship of certain health variables to Wallston, et al.'s (1978) Multidimensional Health Locus of Control scales. They found a pattern of significant association between high sense of control and superior health ratings. They concluded that,

There is thus not only a retrospective tie between internality and health ratings--with the 1976 health ratings correlating with and perhaps helping to determine the subsequently obtained sense of control scores, but also a prospective tie--with the I-E scores predicting the health ratings obtained some six to nine months later" (p. 149).

The latter result was confirmed through a series of regressions in which the effects of initial health status was partialled out and internality remained predictive of the respondents' final health rating.

Results from all three studies strongly support the importance of the personal control dimension in people's health self-perceptions. Inconsistency of findings with the chance dimension may reflect differences in questionnaire

items or in definitions of health status or both between different health locus of control scales. There is some suggestion that the "powerful others" dimension may be influenced by the values/attitudes held by people toward doctors/medical care and the influence of doctors/medical care on their health (Lau & Ware, 1981).

Finally, bivariate relationships have been found between self-rated general health and a number of socio-economic, age, and demographic variables. Gaitz and Scott (1972), Palmore and Luikart (1972) and Schnore and Cowhig (1959-60) have found age to be negatively related to favorably rated general health. Heyman and Jeffers (1963) and Desroches, Kaiman, and Ballard (1967) found no relationship between health self-ratings and age. It is notable that the latter two studies utilized narrow age ranges within a sample of older persons. Higher educational attainment has been found to be significantly positively related to favorably defined health status (Schnore & Cowhig, 1959-60; Osborn, 1973). Hochstim, Athanasopoulos and Larkness (1968), Schnore and Cowhig (1959-60) and Osborn (1973) reported significant positive relationships between reported income and self-reported health. Fine (1975) reported a nonsignificant relationship. Finally, Heyman and Jeffers (1963) and Schnore and Cowhig (1959-60) found no significant relationship between general health rating and sex. Shanas, et al. (1968) reported that men were more likely to rate their health favorably than were women.

All of the previously cited studies have described bivariate relationships among various health related variables and general health perceptions. Moreover, general health perceptions have, for the most part, been defined by single-item measures. Ware, Davies-Avery and Donald (1978) have contended that the inherent unreliability of these single-item measures has contributed to "validity coefficients (that are) probably lower-bound estimates of true relationships among these variables" (p. 29). Further, they have suggested that of the few available multi-item measures, most have confounded their content by combining measures of general health with measures of other variables such as use of services, physician ratings, occurrence of illness, and quality of life, thus calling into question "their validity as measures of perceived general health" (p. 29).

In response to their stated concerns regarding the measurement of general health self-perceptions, Ware and Karmos (1976) have constructed a comprehensive summary index, the Health Perceptions Questionnaire, that hypothesizes six general health perceptions constructs: current health, prior health, health outlook, resistance to illness, health worry/concern, and sickness orientation. Whereas the HPQ was constructed to avoid the confounding of content with constructs tapping perceptions other than those toward health in general, it does, in common with the other multi-item scales, strongly emphasize current health perception. Moreover, it stresses

the hypothesis that general health perceptions are oriented with respect to time (Ware, et al., 1979). Validity studies indicated that measures of physical and mental health, use of services, and life events were in the expected direction of association with all the general health perception measures of HPQ. The "current health" dimension and the General Health Ratings Index (a summary score that included all the constructs) had the most substantial relationships (Davies & Ware, 1981).

A comprehensive set of health related variables has infrequently been measured in general health studies (Davies & Ware, 1981). One of the initial attempts to propose a multivariate approach to predicting self-assessed health status was developed by Wan (1976). He dichotomized health self-perceptions into perceptions of health as either worse than that of others, or the same or better than that of others. Findings from his model emphasized the importance of sociodemographic variables in self-perceptions, i.e., employment status, residential location, marital status, educational level, age, and sex. He suggested further that sociomedical health indicators such as hospitalization, reported health conditions, severity of disability, and mobility limitations, proved to be better explanatory variables of perceived health status than did socioeconomic and psychological indicators of well-being. Wan concluded that multivariate analysis was a useful and valid procedure to

apply to the assessment of personal health status. Further, he suggested that emphasis in future explanatory models should be placed on measures of functional status and other sociomedical indicators of well-being.

Tessler and Mechanic (1978) examined the relationships of certain sociodemographic factors, measures of physical health status, and measures of psychological distress to self-perceptions of general health in four separate data sets: one sample drawn from two large industrial firms in the city of Milwaukee, a random sample of the student population of the University of Wisconsin in Madison, a sample of men at the Wisconsin State Prison in Waupun, and a sample of noninstitutionalized, ambulatory, white, middle- and upper-class residents of Durham, North Carolina. In the Milwaukee sample, poorer perceived health status was significantly affected by negative affect, more chronic problems, nonwhite status, lower education, and older age. Twenty-eight percent of the variance in perceived health status was accounted for by this set of variables. Self-rated health for the student sample was significantly affected by reported happiness (or conversely nervousness), marital status, and physical health status. The regression equation for this group accounted for 22 percent of the variance in self-rated general health. Prison data revealed that nervousness, physical health status, and race were significantly related to general health perceptions, accounting for

only five percent of the variance, however. Finally, in the Durham, North Carolina sample, multiple regression analysis revealed that 27 percent of the variance in perceived health could be accounted for by a set of variables including measures of psychological distress, physician's rating of the person's health, and the person's educational attainment. Tessler and Mechanic indicated that the measures of physical health status and the measures of psychological distress were the only variables to retain a statistically significant beta coefficient in all four data sets. They further indicated that with the exception of the Prison data, physical health status had a larger influence on perceived health status than did psychological distress. Based on their finding that physical health measures were less powerful in the cases where they were less contaminated by respondents' subjective perceptions and reports, they concluded that subjective reports of physical health symptoms already "reflect in some fashion the psychological state of the person providing the data" (p. 261). Finally, they concluded that the relatively small amount of variance that was accounted for when all predictors were used could not be sufficiently explained through measurement error and the crudeness of the specific measures. It is suggested, in fact, that further predictors needed to be explored and specified.

More recently, a preliminary multivariate model of health self-ratings was developed by Ware, Davies-Avery and

Brook (1980) utilizing measures previously incorporated in their 1978 Health Insurance Experiment: measures of physical, mental, and general health, social circumstances, life stress, and age in a nonaged general population. They found that self-reported physical and mental health status and age accounted for a significant portion of the variance in self-rating of health. The results were interpreted to suggest that models which attempted to account for other sources of variance should emphasize physical and mental health measures rather than measures that reflect social-interaction and participation. Finally, Davies and Ware (1981) have concluded that "despite the recent emphasis on multivariate analyses, a comprehensive set of health and health-related variables is infrequently measured in any one study" (P. 91).

The present study will attempt to develop a two-stage model of health self-perceptions utilizing those health-related variables which through past research have been clearly shown to be significantly associated with general health status and a variable, health attitudes, that has been theorized to have a significant positive relationship to health status. Components of the model include measures of health attitudes, health practices, health locus of control, a measure of stress/coping, a physical health measure, and a health resource task. The proposed relationships of the individual variables to general health self-perceptions are found in Figure 1.

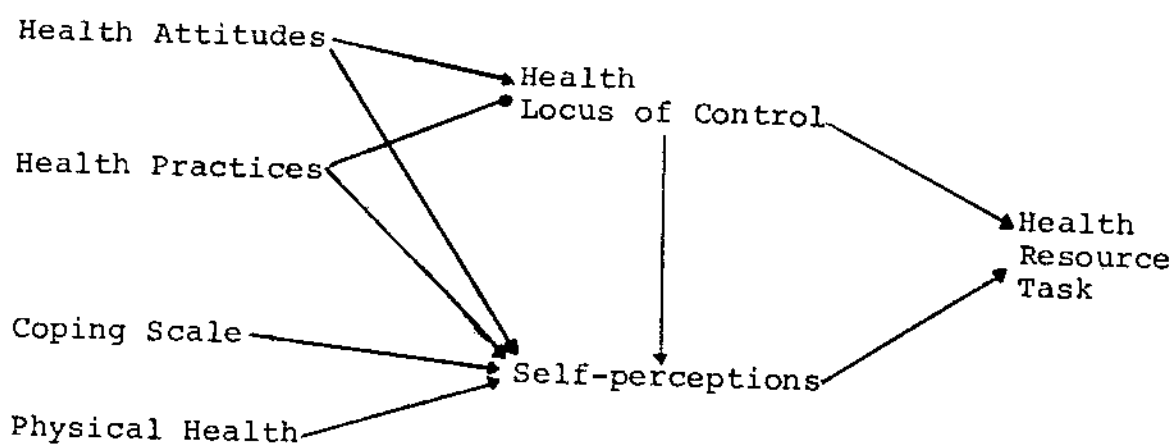


Fig. 1--Proposed Explanatory Model.

Four hypotheses will be tested with respect to the proposed model. First, measures of mental and physical health will account for a significant portion of the variance in subjects' health self-ratings. Second, measures of health locus of control, health practices, and health attitudes will have a significant substantial relationship to general health status after partialling out the effects of the mental and physical health measures. Moreover, health attitudes and practices will contribute both directly and indirectly through health locus of control. Third, there will be a significant linear relationship of health self-ratings to a proposed explanatory model that includes the physical and mental health measures and the set of three health-specific variables. This is to be contrasted with the suggestion by Stewart, Ware and Brook (1977) that, particularly when nonlinear relationships with health status variables are



examined, very low self-ratings are exclusively the product of poor health, chronic disease, and psychiatric impairment, and that very high self-ratings exclusively reflect states of positive well-being, i.e., vigor and happiness.

Finally, the fourth hypothesis is related to the assertion by Davies and Ware (1981) that general health self-perceptions particularly when measured through a nonconfounded, multi-item composite index, assess a health-related personality trait. Specifically, it is proposed that there is a cognitive health flexibility dimension which underlies the variance in health self-perceptions and which will be reflected in the set of health-specific variables. Moreover, this proposed cognitive-health flexibility factor will prove to be clinically significant. Specifically, the factor as represented by the proposed model of health self-perceptions will predict performance on a task which assesses the creativity, resourcefulness, and flexibility of people in coping with a hypothetical, future, potentially devastating health problem. This task is represented in the current model as the Health Resource Task.

## Method

### Subjects

A stratified random sampling technique was used to obtain a total of 108 subjects. Subjects were selected on an external measure of physical health, the Physical Health Spectrum. The Physical Health Spectrum assigned respondents

into one of seven physical health categories (a) disability-severe, (b) disability-less, (c) at least two chronic conditions, (d) at least one chronic condition, (e) symptomatic, (f) without complaints--low to medium energy level, and (g) high energy level. Ten subjects were assigned to category a (disability-severe). Seven subjects were assigned to category b (disability-less). Fifteen subjects were assigned to category c (at least two chronic conditions). Twenty-eight subjects were assigned to category d (at least one chronic condition). Twenty-seven subjects were assigned to category e (symptomatic). Ten subjects were assigned to category f (without complaints--low to medium energy level). Eleven subjects were assigned to category g (high energy level). The distribution of sample subjects reflected a proposed population normal distribution for the general physical health dimension (Belloc, Breslow & Hochstim, 1971).

Only subjects 35 years of age or older and who had had a minimum of one year of college were accepted into the study. Ages ranged from 35 to 78 years, with a mean age of 46.09 years. Years of education ranged from 13 to 20 with a mean of 15.87 years. Sixty-one women and 47 men participated in the study.

### Instruments

Physical Health Spectrum. The Physical Health Spectrum was developed by Belloc, Breslow and Hochstim (1971). Subjects

are assigned to one of seven categories (disability-severe; disability-less; at least two chronic conditions; at least one chronic condition; symptomatic, without complaints; low to medium energy level; and high energy level) based on their answers to a 12-item questionnaire. The ratings are scaled from one (disability-severe) to seven (high energy level).

The Hassles Scale. The Hassles Scale (Kanner, Schaefer & Lazarus, 1981) was used as a measure of stress/coping. This scale asks the respondent to select from a total of 117 possible "hassles" those that have happened to him or her in the past month. The respondent is also asked to rate each of these selected hassles in terms of its severity (somewhat, moderately, or extremely severe).

Two summary scores were generated from the scale: (a) frequency--the number of hassles selected (0-117), and (b) intensity--the sum of the three-point severity ratings divided by the total number of hassles selected.

General Health Rating Scale. One measure of health self-perception used was the General Health Rating Scale (see Appendix A). This scale as developed by the author asks subjects to rate themselves in terms of how healthy they feel they are. Each subject was asked to circle the number on a scale which ranges from 0 to 100 that corresponds to his/her level of perceived health. The scale contains two anchors: "very unhealthy" corresponding to "0" on the

scale and "very healthy" corresponding to "100" on the scale. Subjects were then asked to write out the number that they circled on the scale.

Health Perceptions Questionnaire. This questionnaire developed by Ware and Karmos (1976) was utilized as a second measure of health self-perceptions. This is a 32-item questionnaire that provides six subscales of health perceptions: (a) Prior Health, (b) Current Health, (c) Health Outlook, (d) Health Worry/Concern, (e) Sickness Orientation, and (f) Resistance-Susceptibility. The HPQ provides a single score for each of the subscales. Each subscale score is computed from a simple algebraic sum of scores (each questionnaire item has a score range from 1 to 5) for each of the questionnaire items underlying the particular subscale. Ware and Karmos reported test-retest reliabilities for all scales from .42 to .86, with the mean reliability for all scales of .69. Davies and Ware (1981) report internal consistency reliabilities in the range of .90 for the general health ratings index of the HPQ.

Wellness Inventory. The Wellness Inventory (Travis, 1977) was used to assess current health practices/behaviors. The inventory is comprised of a 103-item checklist assessing the areas of: (a) productivity, relaxation, sleep, (b) personal care and home safety, (c) nutritional awareness, (d) environmental awareness, (e) physical activity, (f) expression of emotions and feelings, (g) community involvement,

(h) creativity, self-expression, (i) automobile safety, and (j) parenting. The inventory provides a total score for number of items endorsed and scores for each of the subsections of items.

Health Inventory. The Health Inventory (Olsen, 1971) was used to assess health-related attitudes. This is a 110-item questionnaire to each item of which subjects respond on a five-point scale from strongly agree to strongly disagree. Olsen reported two week test-retest reliability scores ranging from .76 to .86.

Items can be interpreted by several different content areas: use of mood and behavior modifiers, homosexuality, sex education, birth control, premarital sexual relations, divorce, high school marriages, abortions, disease prevention, community health laws, effective living in the community, nutrition, environmental health, developing and maintaining health, self-medication, exercise, health education, mental illness, and mental adjustment (Jones, 1976).

Health Attribution Test. The Health Attribution Test (Lawlis & Lawlis, 1980) was used to assess health locus of control dimensions of internal, chance, and powerful others. Lawlis and Lawlis report one to three day test-retest reliabilities for the internal, powerful others, and chance scales of the HAT of .83, .75, and .85, respectively.

Health Resource Task. The Health Resource Task was developed by the author in order to measure the ability of

subjects to generate flexible, creative alternatives to a possible future, devastating health problem (see Appendix B). The subject is asked to generate all possible resources available to him/her given the hypothetical situation in which he/she has developed a disease which may prove to be incurable.

After the subject lists all resources available to him/her in dealing with the disease, he/she is then asked to rate each of these resources on a series of four scales each of which is scored from one to four: (1) How powerful is the resource in dealing with the condition? (1--not powerful, 4--very powerful), (2) How accessible is this resource? (1--not accessible, 4--very accessible), (3) How much will this resource interfere with your current lifestyle? (1--no interference, 4--will interfere greatly, and (4) How much support will you receive from close others for using this resource? (1--no support, 4--a great deal of support). The Health Resource Task is scored for the total number of resources/alternatives generated and for the degree (one to four) of powerfulness, accessibility, interference, and support.

#### Procedure

Each subject completed the General Health Rating Scale followed by the Health Perceptions Questionnaire. The Hassles Scale, the Health Inventory, the Wellness Inventory, the Health Attribution Test, and the Physical Health Spectrum

were presented in that order. Finally, all subjects were given the Health Resource Task.

Upon completion of the questionnaires, each subject was assigned to one of the seven categories of the Physical Health Spectrum based on his/her responses to the rating scale questions contained in the Spectrum. Subjects were placed into categories until a minimum of 100 subjects had been obtained and all of the seven categories had been filled.

All tasks were preceded by instructions sufficient to explain the particular task. Instructions at the end of each task directed the subject to turn the page and continue on to the next task. All instructions were written. Total time for completion of all tasks was approximately one hour and twenty minutes.

### Results

In scoring the Physical Health Spectrum, test-retest reliability was computed on a sample of 20 nonstudy participants with a one day test-retest interval. The reliability coefficient was .82. Split-half reliability, utilizing all study participants, was calculated for scores on the Wellness Inventory and for scores on the frequency and severity scores of the Hassles Scale. The obtained reliability coefficient for the Wellness Inventory was .81 and the Spearman-Brown reliability coefficient for the frequency scores on the Hassles Scale was .95 (actual obtained coefficient of .90)

and for the intensity scores was .80 (actual obtained coefficient of .66).

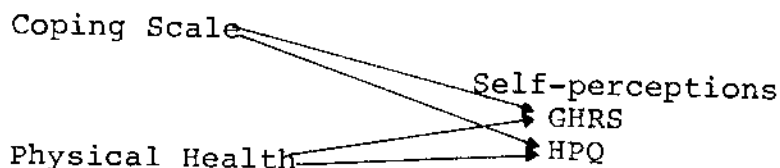
It was hypothesized that mental health measures (The Hassles Scale) and physical health measures (The Physical Health Spectrum) would be significantly correlated to subjects' health self-ratings (The Health Perceptions Questionnaire and the General Health Rating Scale) and would, in fact, account for a significant portion of the variance in subjects' health self-ratings. The findings for this hypothesis are displayed in Figure 2. Physical health as measured by the Physical Health Spectrum was significantly, positively related to the general index score of the Health Perceptions Questionnaire ( $r = .598, p < .0001$ ) and to the General Health Rating Scale ( $r = .560, p < .0001$ ) accounting for 36 percent and 31 percent of the variance in each, respectively.

Health Attitudes

Health  
Locus of Control  
I PO C

Health Practices

Health  
Resource  
Task



—— Significant  
----- Nonsignificant

Fig. 2--Hypothesis 1.



Number of hassles on The Hassles Scale was significantly, negatively correlated with the general index score of the Health Perceptions Questionnaire ( $\underline{r} = -.27$ ,  $\underline{p} = .0047$ ) and the General Health Rating Scale ( $\underline{r} = -.26$ ,  $\underline{p} = .0062$ ), accounting for seven percent of the variance in each of the variables. Severity scores on The Hassles Scale were not correlated with either of the health perceptions measures. These findings support Hypothesis 1 for the physical health measure, but only partially support the hypothesis for the mental health measure.

Hypothesis 2 suggested that measures of health locus of control (HAT--Internal, Chance, and Powerful Others Scales), health practices (Wellness Inventory), and health attitudes (The Health Inventory) would have a significant, substantial relationship to health self-ratings and that these three variables would have a significant, substantial relationship to health self-ratings after partialling out the effects of the mental and physical health measures. Additionally, hypothesis 2 suggested that health attitudes and practices would contribute both directly and indirectly through health locus of control to general health self-ratings.

The findings for the first part of Hypothesis 2 are displayed in Figure 3. Health practices, as measured by the Wellness Inventory, was significantly, positively related to the HPQ ( $\underline{r} = .307$ ,  $\underline{p} < .001$ ) and to the General Health Rating Scale ( $\underline{r} = .29$ ,  $\underline{p} < .002$ ), accounting for nine percent and

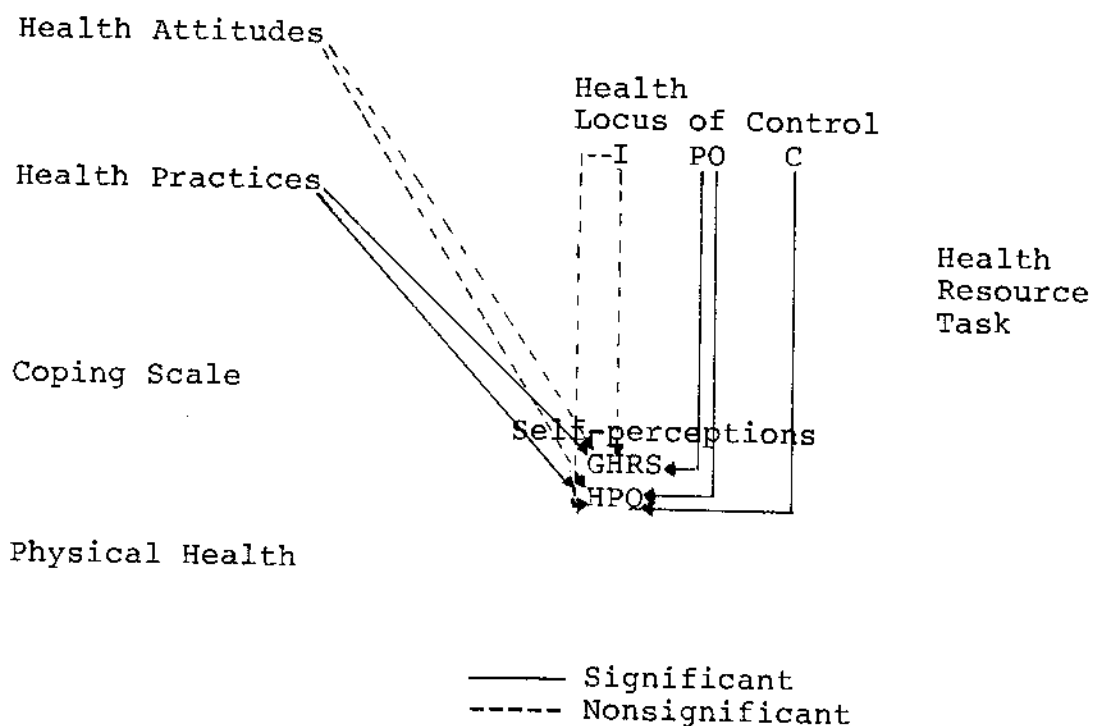


Fig. 3--Hypothesis 2A.

eight percent of the variance in the variables, respectively. Total score on The Health Inventory, a measure of health attitudes, was not correlated with either of the general health status measures. Several of the subscales on The Health Inventory were significantly correlated to the General Health Rating Scale and are represented in Table 1 (Appendix C). None of the subscales was significantly correlated with the HPQ.

The Powerful Others scale of the Health Attribution Test was significantly, negatively correlated with the HPQ ( $r = -.467$ ,  $p < .0001$ ) and the Genreal Health Rating Scale ( $r = -.417$ ,  $p < .0001$ ), accounting for 22 percent and 17 percent of the variance in each variable, respectively. The

Chance scale of the HAT was significantly, negatively related to the HPQ ( $r = -.257$ ,  $p < .007$ ), accounting for seven percent of the variance. The Chance scale was not related to the General Health Rating Scale. The Internal scale was not related to either of the two subjective health status scales (HPQ or the GHRS).

With the exception of the results for the measure of health attitudes, and the HAT-Internal Scale these results support the first part of hypothesis 2. It should be noted, however, that only with the HAT-Powerful Others scale, did variance accounted for exceed nine percent.

The findings for the second part of Hypothesis 2 are displayed in Figure 4. The Powerful Others scale of the HAT was significantly, negatively correlated to the measure of health practices (The Wellness Inventory;  $r = -.253$ ,  $p < .008$ ) and to total score on the measure of health attitudes (The Health Inventory;  $r = -.261$ ,  $p = .0064$ ), accounting for six percent and seven percent of the variance respectively. There was no relationship of the total score on The Health Inventory and The Wellness Inventory to either of the other HAT scales--Internal and Chance. Several of the subscales of the Health Inventory were significantly correlated with various of the dimensions on the HAT and these correlations are presented in Table 1 (Appendix C). Scores on The Wellness Inventory and on The Health Inventory were significantly, multiply correlated to the Powerful Others scale of

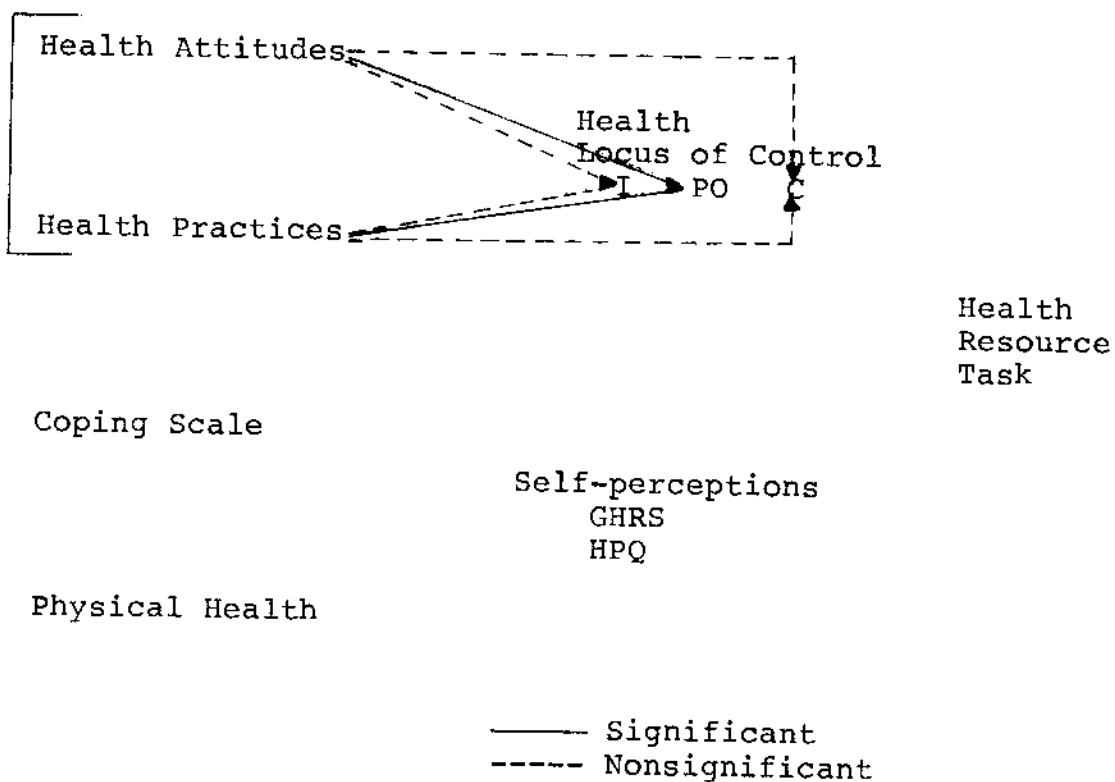


Fig. 4--Hypothesis 2B.

the HAT ( $p = .0038$ ), accounting for 10 percent of the variance in the Powerful Others' scale. These findings, in addition to results reported earlier, partially support the second part of hypothesis 2. Health practices contributed directly to the explained variance in health self-ratings and indirectly through its significant relationship with scales on the health locus of control scales. Health attitudes did not demonstrate a direct effect on health self-ratings (for total score) but did contribute indirectly through its relationship to one of the scales on the health locus of control measure.

It was hypothesized that there would be a significant linear relationship of health self-ratings to a proposed explanatory model that includes the physical and mental health

measures and the set of three health-specific variables. The findings for this hypothesis are displayed in Figure 5.

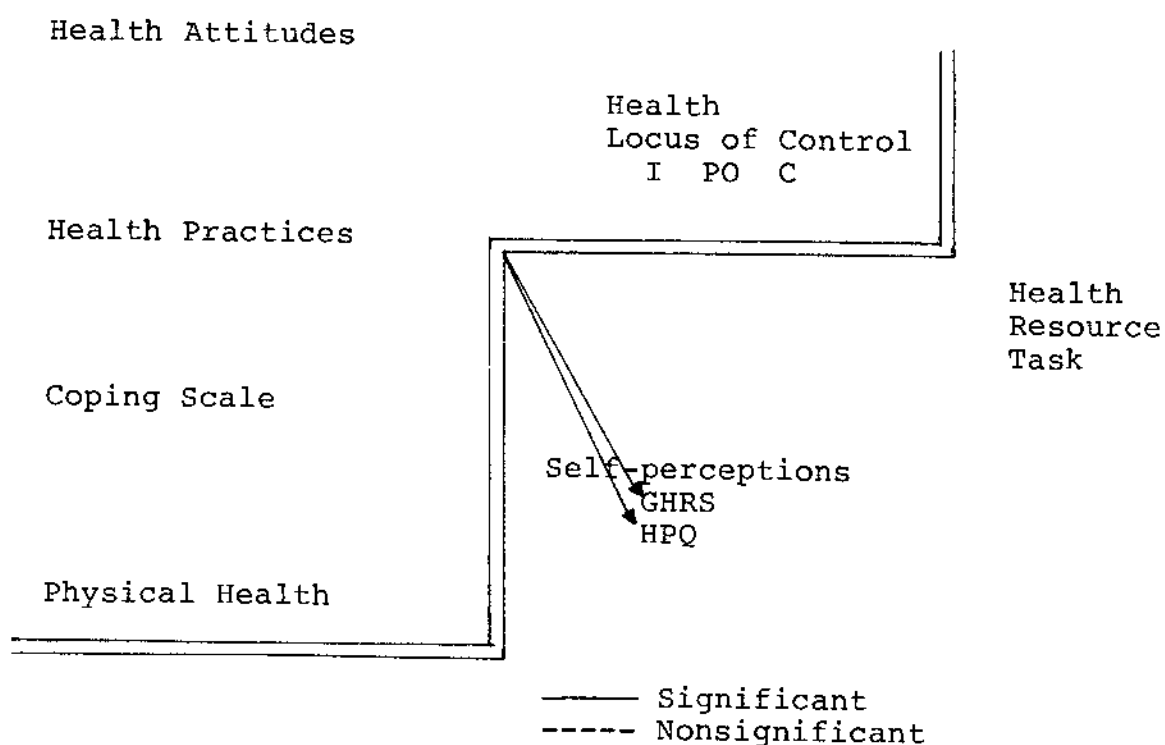


Fig. 5--Hypothesis 3

The proposed explanatory model of health self-perceptions including The Wellness Inventory (health practices), the total score from the Health Inventory (health attitudes), the three dimensions of the Health Attribution Test (health locus of control), the intensity and severity scores of the Hassles Scale (mental health measure) and the Physical Health Spectrum score (physical health) demonstrated a significant linear relationship to both measures of subjective health status. The model accounted for 49 percent of the variance in scores on the general index score of the Health Perceptions

Questionnaire ( $\underline{R} = .70$ ,  $\underline{p} < .0001$ ). Table 2 (Appendix C) shows the significance level for each of the variables in the model. The three significant contributors to  $R^2$  in the order of their contribution were: the Physical Health Spectrum ( $PR^2 = .358$ ,  $\underline{p} < .0001$ ), the Powerful Others scale of the HAT ( $PR^2 = .077$ ,  $\underline{p} < .0032$ ), and the Wellness Inventory ( $PR^2 = .026$ ,  $\underline{p} = .0182$ ).

The model accounted for 42 percent of the variance in scores on the General Health Rating Scale ( $\underline{R} = .65$ ,  $\underline{p} < .0001$ ). Table 3 (Appendix C) shows the significance level for each of the variables in the model. The two significant contributors to  $R^2$  in the order of their contribution were: the Physical Health Spectrum ( $PR^2 = .315$ ,  $\underline{p} < .0001$ ) and the Powerful Others scale of the HAT ( $PR^2 = .056$ ,  $\underline{p} = .0146$ ). These findings strongly support hypothesis 3.

A stepwise regression procedure was used to obtain a multiple regression equation for estimating the Health Perceptions Questionnaire general index score (HPQ-GI) and the General Health Rating Scale score (HGRS) from test variables that met a  $\underline{p} < .15$  significance level for entry into the model. The equation for a predicted score on the Health Perceptions Questionnaire is: Predicted value of HPQ-GI = 4.3326 (physical health score) - 2.3024 (HAT-Powerful others score) + .2597 (health practices score) - .0934 (health attitudes score) + 95.3651. The equation for a predicted score on the General Health Rating Scale is:

Predicted value of GHRS = 4.1497 (physical health score) - 1.7802 (HAT-Powerful Others score) + .2159 (health practices score) + 58.4174.

In scoring the Health Resource Task, test-retest reliability was computed for the number of resources generated and the average total intensity score for each resource. The coefficient was computed on a sample of 20 nonstudy participants with a one day test-retest interval. The reliability coefficient for the number of resources generated was .74. The reliability coefficient for the average total intensity score for each resource was .34.

It was hypothesized that the proposed explanatory model would predict performance on the Health Resource Test (see Figure 6). The model demonstrated a significant linear relationship to the number of resources generated on the Health Resource Task. The model accounted for 38 percent of the variance in scores on this portion of the Health Resource Task ( $R = .62$ ,  $p < .0001$ ). Table 4 (Appendix C) shows the significance level for each of the variables in the model. The four significant contributors to  $R^2$  in the order of their contribution were: The Wellness Inventory (health practices;  $PR^2 = .210$ ,  $p < .0001$ ), Health Attitudes ( $PR^2 = .064$ ,  $p = .0025$ ), the Health Attribution Test ( $PR^2 = .037$ ,  $p = .0038$ ), and the Physical Health Spectrum ( $PR^2 = .037$ ,  $p = .0116$ ).

The proposed explanatory model was not correlated with any of the ratings for the four intensity questions or for

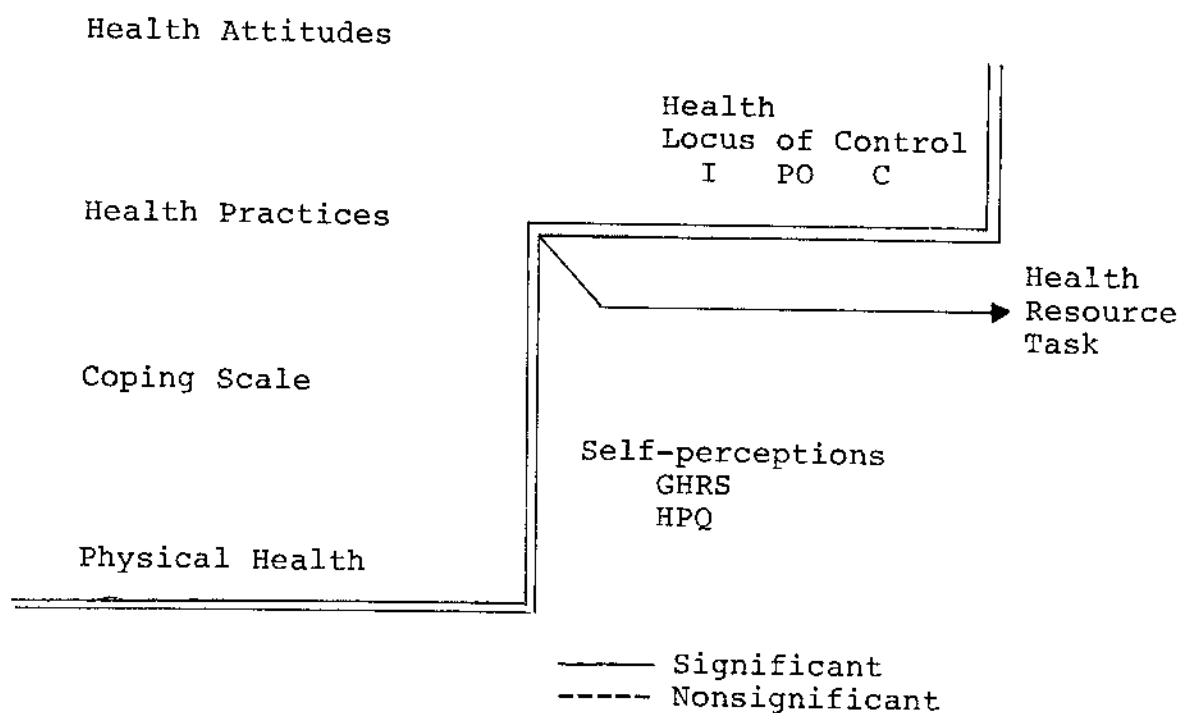


Fig. 6--Hypothesis 4A.

the total intensity score per resource listed on the Health Resource Task. When the Health Perceptions Questionnaire general index scores and the General Health Rating Scale scores were added to the model,  $R^2$  increased from .38 to .40. Table 5 (Appendix C) shows the significance level for each of the variables in the model. However, the order of the four significant contributors did change: The Wellness Inventory, the Powerful Others scale of the HAT, the Physical Health Spectrum, and the Health Inventory. The results strongly support hypothesis 4. Unexpectedly, the addition of General Health Rating Scale scores and HPQ-general index scores to the model did not contribute substantially to the explained variance in health self-ratings (see Figure 7).



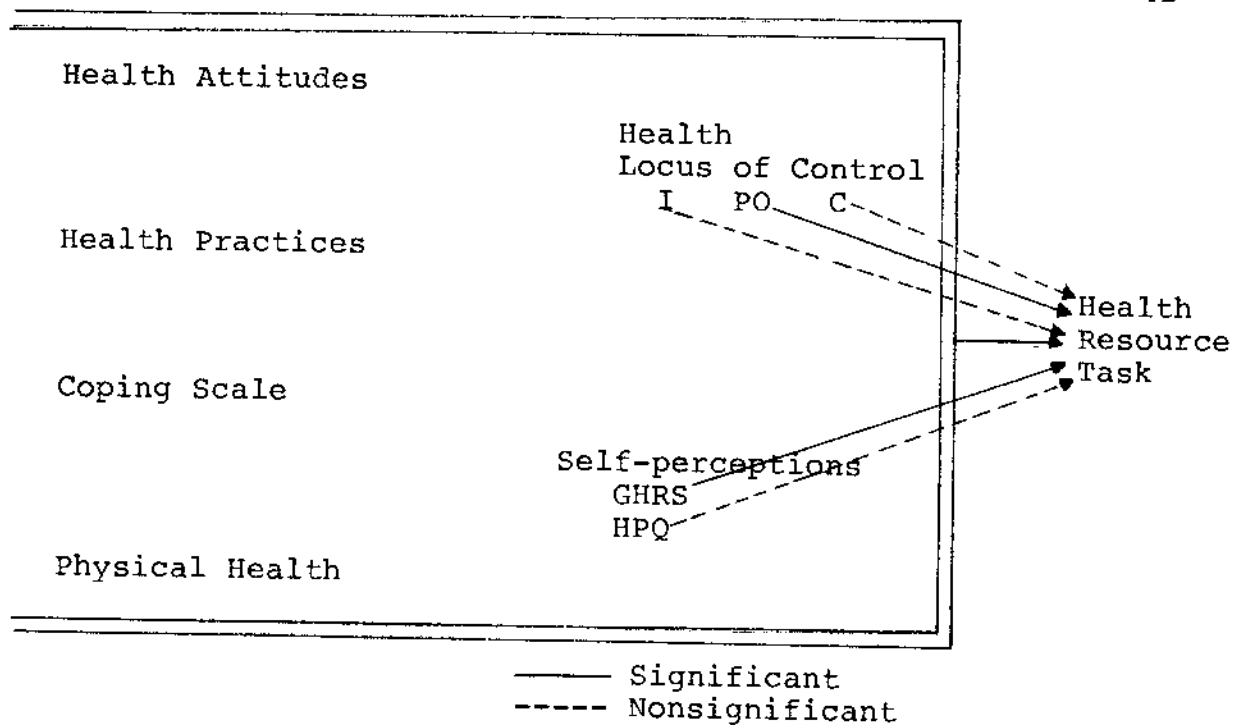


Fig. 7--Hypothesis 4B.

Figure 7 also includes the significant and nonsignificant relationships for the remaining variables in the model. As can be seen by examining Figure 7, the HPQ measure of health self-perceptions was not significantly correlated with scores on the Health Resource Task. The General Health Rating Scale was significantly related to scores on the HRT, but accounted for only four percent of the variance in HRT scores ( $r = .196$ ,  $p = .0423$ ). Consequently, neither of the health self-perception measures was included in the stepwise regression analyses.

The multiple regression equation for estimating a predicted score on the Health Resource Task-frequency score from test variables that met a  $p < .15$  significance level for entry into the model was: Predicted value of HRT-FS = .1160

(health practices score) + .0488 (health attitudes score) + .5493 (physical health score) + .4757 (HAT-Chance Scale score) + .2857 (HAT-Internal Scale score) + 1.2302 (Hassles Scale-Intensity score) - 28.440. Table 6 (Appendix C) reveals the changes in variance in the HPQ, the General Health Rating Scale, and the Health Resource Task accounted for by the model with the addition of the set of four demographic variables obtained in the study: age, sex, education level, and employment status. Finally, Table 7 (Appendix C) includes intercorrelations among the model variables.

#### Discussion

It was hypothesized that measures of mental and physical health would account for a significant portion of the variance in subjects' health self-ratings. The results of this study indicate that the physical health measure accounted for a substantial amount of the variance for scores in both the single index and the multi-index measures of health self-ratings. While it was expected that the physical health measure would prove to be the best predictor of health self-ratings, the actual  $r^2$  of as much as .36 (for the HPQ) was larger than the total variance accounted for by several of the multivariate models cited in the literature. This may be due in large part to the design of the physical health measure, which unlike previous instruments, encompasses a number of physical health variables, i.e., mobility, chronic conditions, symptoms, and self-assessed general energy level.

Moreover, the measure assesses health along the entire spectrum from chronic poor health and disability to physical vigor. Other instruments have been primarily concerned with the lower end of the spectrum. Despite the strength, breadth, and scope of the Spectrum, caution should be taken in interpreting the significance of the physical health rating as it remains subjective self-report data.

One of the mental health measures, the number of hassles on the Hassles Scale, was significantly related to both of the health self-ratings measures as expected but it accounted for only seven percent of the variance. One explanation for this would be that the Hassles Scale more narrowly defined mental health as "stress level" rather than assessing "coping ability" or global "psychological state" as other studies have. When measures of the Hassles Scale were included in the proposed explanatory model of health ratings, they did not account for a significant share of the common variance ( $R^2$ ). This appears to support in part the argument of Tessler and Mechanic (1978) that physical health symptoms already reflect in some fashion the psychological state of the respondent. Specifically for this study, increased physical health problems may actually increase or accentuate reported stressors. Whether coping ability and subjective assessment of mental health status changes with this increase in stressors cannot be determined from these study results.

It was hypothesized that measures of health locus of control, health practices, and health attitudes would have a significant substantial positive relationship to general health status after partialling out the effects of the mental and physical health measures. Moreover, health attitudes and practices would contribute both directly and indirectly through health locus of control. Results support the conclusion that increases in the number of good health practices are significantly related to more favorable subjectively defined general health measures. As the Wellness Inventory combines good health practices with what has been traditionally called "health protective behavior" it does not support the conclusions of Harris and Guten (1979) that most people perform many, varied health protective behaviors despite their self-assessed general health status. Moreover, the health practices measure contributed significantly to the variance in general health ratings accounted for by the proposed explanatory model.

Health attitudes as measured by the Health Inventory were not significantly related to either of the two general health status measures and did not contribute to the explanatory model. Some of the subscales of the Health Inventory were positively, significantly correlated with the single-index measure of general health status (the General Health Rating Scale). A comparison of the pool of questions on the Health Inventory to the specific subscales which showed a

significant, positive relationship to general health ratings is revealing (see Table 1, Appendix C). The comparison suggests that as the attitude statements became more narrowly focused around issues related to health practices, disease prevention, and effective living (with the exception of the questions related to sex education) they were more likely to be related to general health ratings, a finding congruent with the other results of this study.

The Powerful Others scale of the Health Attribution Test was significantly, negatively related to both measures of subjective health ratings accounting for as much as 22 percent of the variance in the general index score of the Health Perceptions Questionnaire. Moreover, the Powerful Others scale contributed significantly to the variance in general health ratings accounted for by the proposed model. These results suggest that people with lower health self-ratings are more likely to attribute their behavior to the influence of "powerful others" than are people who rate their general health more favorably. It may be reasonably concluded that lower self-ratings are indicative of increased reliance/dependence on physicians and/or other medical care for maintenance of physical health.

The Chance scale of the HAT was significantly, negatively related to the HPQ but not to the single-item General Health Rating Scale. Chance scores did not contribute significantly to the explanatory model.

The findings from the Chance and Powerful Others scale strongly suggest that people who rate their health unfavorably believe that changes in their physical health are out of their realm of control, based on fate or chance happenings, and can be remedied only through reliance on people and/or forces external to themselves, most often physicians and/or other medical care alternatives.

Unexpectedly the Internal scale of the HAT was not significantly related to either of the subjective health rating scales and did not contribute to the explanatory model. It would seem that decreased dependence/reliance on medical care alternatives and decreased attribution of physical health changes to fate or chance associated with more favorable subjective health ratings is not necessarily followed by an active belief that physical health changes can be controlled by the individual.

Positive health attitudes and number of health practices were significantly, negatively related to increased attribution of health behavior to "powerful others." It would appear that health practices contribute both directly and indirectly through health locus of control to variance in health self-ratings. Health attitudes, on the other hand, appear to have a relatively small, indirect effect on subjective health ratings through their influence on the health locus of control measures.

It was hypothesized that a proposed explanatory model including measures of physical and mental health, health

practices, health attitudes, and health locus of control would be significantly, linearly related to health self-ratings. These results confirm those of other multivariate studies of the importance placed on physical health measures in predictive models of health self-ratings.

The lack of contribution made by the mental health measure (The Hassles Scale) to the explanatory model is certainly not conclusive. As previously noted, the Hassles Scale may have too narrowly defined the concept of "psychological well-being." It does appear from an examination of this model that the physical health measure accounted for the variance previously noted between health self-ratings and the Hassles Scale.

The inclusion of measures of health locus of control and health practices clearly substantially increases the power of the explanatory model. Previous multivariate models, where reported, had accounted for no more than 27 percent of the variance in health self-perceptions. The current model accounted for nearly twice that amount. This finding argues quite strongly against the suggestion made by Stewart, Ware, and Brook (1977) that the significance and meaning of self-ratings can be found only at the ends of the distribution, i.e., very low self-ratings result from functional limitations and psychiatric impairment and very high self-ratings reflect exclusively vigor and happiness. The model suggests, in fact, that self-ratings of health throughout the distribution reflect the influence of physical health status, health

locus of control, and health practices. It is quite conceivable that a model which included a more comprehensive measure of mental health and a more narrowly conceived measure of health attitudes would account for an even more substantial amount of the variance in health self-ratings.

Finally, it was hypothesized that the proposed explanatory model would predict performance on the Health Resource Task, a measure designed to assess the creativity, resourcefulness, and flexibility of people in coping with possible future health problems. The model accounted for a substantial proportion of the variance in the number of resources generated on the Health Resource Task. As can be seen in a comparison of Table 2 (Appendix C) to Table 4 (Appendix C), the actual set of significantly contributing predictors changed somewhat from that observed in relation to health self-ratings. Moreover, there was a change in the relative contribution of predictors in the model common to both self-ratings and the Health Resource Task. As can be seen, a larger number of predictors accounted for smaller percentage of the variance in the Health Resource Task. It is interesting to note that the inclusion of both self-ratings measures in the model only very minimally increased the total variance for which the model accounted.

The proposed explanatory model does, indeed, appear to be a flexible and powerful predictor of health self-perceptions. Moreover, at this early stage in its formation, it does suggest itself as a potentially powerful clinical

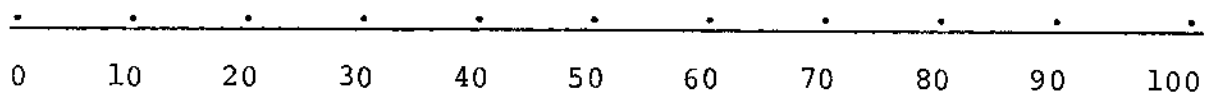


tool. Much research is yet to be done, however, to clarify the specific contributions of the current predictors, to test for other potentially useful predictors, and to conceptualize the theoretical basis for the model.

## Appendix A

General Health Rating Scale

Please circle a number (from 0 to 100) on the following line which represents how healthy you feel you are. To help you to understand the scale, remember that "0" represents someone who feels he/she is very unhealthy, and "100" would represent someone who feels very healthy.



Now, please write out the number that you circled on the line in the following blank: \_\_\_\_\_



Appendix C  
Descriptive Tables

Table 1  
 Subscales of the Health Inventory Significantly  
 Correlated to the General Health Rating Scale  
 and to the Health Attribution Test

Correlates	<u>r</u>	<u>p</u>
Sex Education - GHRS	.198	.040
Disease Prevention - GHRS	.198	.039
Effective Living - GHRS	.219	.023
Environmental Health - GHRS	.228	.020
Developing/maintaining Health - GHRS	.221	.021
Exercise - Internal	.233	.015
Health Education - Internal	.209	.030
Premarital Sex - Powerful Others	-.226	.019
Disease Prevention Factor I - Powerful Others	~.202	.036
Effective Living - Powerful Others	-.236	.014
Environmental Health - Powerful Others	-.244	.011
Self-Medication - Powerful Others	-.215	.026
Effective Living - Chance	-.195	.043
Nutrition - Chance	-.189	.050
Health Education - Chance	-.191	.047

Table 2

Probabilities of Proposed Explanatory Model to the Health Perceptions Questionnaire (General Index Score)

Variable	B Value	PR <sup>2</sup>	P
Physical Health	4.3326	.358	.0001
HAT - Powerful Others	-2.3024	.077	.0032
Health Practices	.2597	.026	.0182
Health Attitudes	- .0934	.014	.0927
Hassles Scale (Frequency)	-----	----	.1433
HAT - Internal	-----	----	.2374
HAT - Chance	-----	----	.7364
Hassles Scale (Intensity)	-----	----	.8576

Table 3

Probabilities of Proposed Explanatory Model to the General Health Rating Scale

Variable	B Value	PR <sup>2</sup>	P
Physical Health	4.1497	.315	.0001
HAT - Powerful Others	1.7802	.056	.0146
Health Practices	.2159	.026	.0629
Hassles Scale (Frequency)	-----	----	.1008
HAT-Chance	-----	----	.2445
HAT - Internal	-----	----	.4644
Hassles Scale (Intensity)	-----	----	.7849
Health Attitudes	-----	----	.9921

Table 4  
 Probabilities of Proposed Explanatory Model to  
 the Health Resource Task

Variable	B Value	PR <sup>2</sup>	p
Health Practices	.1160	.210	.0001
Health Attitudes	.0488	.064	.0025
HAT - Chance	.4757	.037	.0038
Physical Health	.5493	.037	.0116
HAT - Internal	.2857	.017	.0939
Hassles Scale (Intensity)	1.2302	.013	.0992
HAT - Powerful Others	-----	-----	.3645
Hassles Scale (Frequency)	-----	-----	.5823

Table 5  
 Probabilities of Proposed Explanatory Model (Including  
 the GHRS and HPQ Variables) to the Health Resource Task

Variable	p
Health Practices	.0001
HAT - Chance	.0035
Physical Health	.0041
Health Attitudes	.0056
HAT - Internal	.0704
Hassles Scale (Intensity)	.1099
HAT - Powerful Others	.1932
HPQ - General Index Score	.3223
Hassles Scale (Frequency)	.4312
General Health Rating Scale	.7536

Table 6

$R^2$  for the Health Perceptions Questionnaire, the General Health Rating Scale, and the Health Resource Task with the Addition of the Four Demographic Variables

Correlates	$R^2$
General Health Rating Scale - Model + Demographic Variables	.444
Health Perceptions Questionnaire - Model + Demographic Variables	.525
Health Resource Task - Model + Demographic Variables	.409
Health Resource Task - Model + Demographic Variables + General Health Rating Scale + Health Perceptions Questionnaire	.422



Table 7  
Intercorrelations Among the Model Variables

Variables	Physical Health Rating	General Health Rating	Health Perceptions Questionnaire	Health Practice I	HAT PO	HAT C	Hassles Scale	Health Attitudes	Health Resource Task
Physical Health Rating	1.00	0.56	0.60	0.15	0.12	-0.35	-0.23	0.13	0.28
General Health Rating		1.00	0.76	0.29	0.09	-0.42	-0.17	0.16	0.20
Health Perceptions Questionnaire			1.00	0.31	0.15	-0.47	-0.26	0.07	0.15
Health Practices				1.00	0.10	-0.25	-0.10	0.31	0.46
HAT - Internal					1.00	-0.05	-0.38	0.10	0.13
HAT - Powerful Others						1.00	0.47	-0.26	-0.18
HAT - Chance							1.00	-0.17	0.06
Hassles Scale								1.00	-0.05
Health Attitudes									1.00
Health Resource Task									

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