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The Assessment of Adult Health Care Orientations: Development and Preliminary Validation of the Multidimensional Health Profile–Health Functioning Index (MHP-H) in a National Sample

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Abstract

This paper describes the development and preliminary validation of the Multidimensional Health Profile–Health Functioning Index (MHP-H), a 69-item self-report instrument designed to assess a variety of behaviors, perceptions, attitudes, and beliefs presumed to influence health status and the pursuit of lay and professional health care. The MHP-H briefly measures adult health history, health habits, health care utilization, health beliefs and attitudes, and response to illness (help-seeking behaviors). A national sample of adults ($N = 673$) was assessed, comprising 3 age groupings (18–32, 33–50, and 51–89) crossed with gender and then further subdivided into several subsamples for purposes of reliability and validity assessment. In addition, a group of spouse “key informants” was also recruited. Preliminary validation of single-item indicators as well as confirmatory factor analyses of multi-item scales was achieved. The present findings support the psychometric and practical utility of the MHP-H and warrant its use by health psychologists in a variety of research and applied settings.

Keywords

health behaviors; health attitudes; help seeking; national sampling; self-regulation

In the domain of contemporary managed health care, psychological assessment and screening for possible future health risks, for potential over- or underutilization of services, or for attitudinal problems that could presage patient noncompliance is a widely acknowledged need that is seldom systematically addressed (Institute of Medicine, 1997; USDHHS, 2000). Largely neglected also are patients’ pro-health psychological characteristics, such as attributions of self-efficacy for illness management, that are likely to contribute to responsible self-care (health self-regulation; cf., Anderson, 1979; Karoly, 1991; Levin, Katz, & Holst, 1976). Therefore, despite a growing recognition among health care providers of the benefits of early detection of health-compromising practices and self-defeating attitudes, many medical professionals continue to adopt a passive, problem-awaiting stance rather than taking advantage of relatively inexpensive paper-and-pencil or computer-based assessment devices that could enable them to anticipate and possibly prevent future threats to patient health and quality of life (cf., Curry, Ludman, Grothaus, Donovan, & Kim, 2003; Friedman, Sobel, Myers, Caudill, & Benson, 1995; Neumark-Sztainer, Wall, Story, & Perry, 2003). Fortunately, the unavailability of psychometrically sound and nationally normed instruments that assess patients’ proclivities toward health-protective and health-compromising actions and attitudes may be one obstacle to progress in health screening that can be effectively addressed. The

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purpose of the present research was the development of a comparatively brief self-report instrument to assist health care professionals in the cost-effective appraisal of clients' positive and negative health care orientations.

The instrument described in the present paper, the MHP-H (the Multidimensional Health Profile–Health Functioning Index) is a 69-item survey that covers five fundamental domains that are believed to possess strong links to adult physical health status. It is a companion instrument to the MHP-P, a brief (58-item) instrument that assesses psychosocial strengths and weaknesses in adults and developed for use in primary care settings (see Ruehlman, Lanyon, & Karoly, 1999). All of the MHP-H items (except one inquiring about the presence or absence of a chronic illness) are answered on 1- to 5-point response scales. The specific domains of the MHP-H and their rationales are briefly outlined next.

Adult Health History—An individual's perception of his or her health status, whether indexed over the life span or within a recent interval, such as the past 6 months, provides the assessor with a meaningful self-appraisal that can be examined in light of other data, including information from medical tests and physical examinations. Notable discrepancies between current medical assessments and the health status perceptions of the patient provide a useful starting point for professional consultation. Individuals with an overly optimistic view (i.e., those who see themselves as healthier than do their physicians) may require a dose of medical reality. Individuals with a negative view of their health that is unsupported by current medical data tend to report a variety of psychological and physical problems that nonetheless frequently demand professional attention (Barsky, Ettner, Horsky, & Bates, 2001; Olfson, Gibert, Weisman, Blackow, & Broadbent, 1995). The MHP-H assesses adult health history by inquiring into perceived health over the life span and over the last 6 months. In addition, respondents are asked to indicate whether they have a chronic illness (one lasting longer than 6 months) and how much the illness interferes with or limits their daily life. Taken together, these four health history questions assess essential background data that can be used to contextualize the findings from routine physical examinations.

Health Habits—Over the last quarter century, instrumental actions that either promote health or contribute to eventual illness have been the subject of considerable prospective and retrospective study in the fields of public health, epidemiology, and health psychology (e.g., Adler & Matthews, 1994; Benedetto, Kerns, Rosenberg, Burg, & Westgate, 1998; Breslow, 1983; Rosen & Solomon, 1985; Winett, King, & Altman, 1989). All preventive or early intervention efforts depend upon the representative cataloguing of health-engendering and health-endangering patterns of behavior. The MHP-H reflects respondents' self-reported health behaviors over the past year including eating habits, exercise patterns, automobile safety precautions, and the like. Not meant to be comprehensive, the 24 health habit items nonetheless gauge a variety of positive and negative health-relevant activities.

Health Care Utilization—Although not all segments of the U.S. population have equal access to medical services, the pursuit of ambulatory care remains central to the physical well-being of the nation. It has been estimated that approximately three-quarters of the civilian noninstitutionalized population had some expenses associated with office-based, hospital, or emergency-room care in 1996, with over \$180 billion spent for its receipt (Machlin, Valluzzi, Chevarley, & Thorpe, 2001). It would be extremely helpful, therefore, if self-reported patterns of health care utilization were readily available as an aid to clinical diagnosis (Is patient X an over- or underuser of physician care?) and as a means of tracking the effects of medical, pharmacologic, or mental health intervention over time. The MHP-H gauges health care utilization with four items covering frequency of doctor visits over the past year, frequency of

overnight hospital visits, frequency of emergency-room treatment, and the use of over-the-counter medication.

Response to Illness—Because individuals can respond to suspected or confirmed medical disorders in many ways other than seeking drugs or hospitalization, the MHP-H taps four aspects of illness response, three of which are often overlooked in routine medical assessments. The first aspect of illness responding is, of course, the most obvious: the pursuit of professional medical advice. However, the management of illness (and health) in western societies at the dawn of the twenty-first century is increasingly being described as a “collaborative effort,” with social support from family and friends and a reliance on spiritual resources assuming ever larger roles (cf., Bowling & Grundy, 1998; Cohen & Syme, 1985; Martin & Carlson, 1988; VanderVoort, 1999; Von Korff, Gruman, Schaefer, Curry, & Wagner, 1997). In addition, the role of self-initiated and self-guided illness management, particularly as aided by perceived self-efficacy, has been the subject of a great deal of basic and applied research (Bandura, 2004; Bellg, 2003; Karoly, 1998; Senecal, Nouwen, & White, 2000). Consequently, the MHP-H also inquires into the seeking of advice and counsel from friends, the seeking of spiritual help (e.g., from a minister, rabbi, priest, or other spiritual advisor), and the use of self-help resources.

Health Beliefs and Attitudes—The largest group of items on the MHP-H (24 in all) taps a set of health-relevant beliefs, attitudes, expectations, and attributions whose role in morbidity, mortality, and health maintenance is widely acknowledged and empirically supported (e.g., Bandura, 2004; Conner, Norman, & Bell, 2002; Fisher, Fisher, & Rye, 1995; Gochman, 1997; Taylor, 2003; Weinstein, 1987). As we could not incorporate all the varied attitudinal or attributional dimensions that have been explored to date, we elected to concentrate on those that are most strongly linked to health self-regulation and health care utilization.

First, because medical overutilization in primary care may be a function of illness preoccupation (Jyvasjarvi et al., 2001), the MHP-H includes four items dealing with *hypochondriacal beliefs*. Although the overall prevalence rate for hypochondriasis/somatization is relatively low (0.2%), its prevalence among medical outpatients ranges between 4 and 8% (Kirmayer & Robbins, 1991). Thus, the reduction of unnecessary health visits by the so-called “worried well” can yield a significant savings of health care dollars.

A second attitude-belief dimension included in the MHP-H deals with *trust in the health care system* (three items), as it is highly likely that individuals with minimal faith in their healers will tend to underutilize health facilities, to their eventual detriment (Institute of Medicine, 1997). A companion factor, *trust in health care personnel* (four items), is included to assist in the identification of individuals with person-centered rather than system-centered issues.

The remainder of the items on the MHP-H designed to gauge attitudes and beliefs were selected to provide information on respondents’ self-regulatory potential (see Bandura, 2004; Ford, 1987; Holroyd & Creer, 1986; Karoly, 1993). That is, within a broad-based social cognitive framework, the self-regulation of health is dependent upon the individual’s formulation of reference standards, goals, or *values* under the guidance of future-oriented directive functions (the strongest indicator of which is *self-efficacy*) along with the *vigilant* tracking or monitoring of progress toward the ultimate achievement of health-relevant outcomes. Consequently, the MHP-H contains scales that assess *health values*, *health self-efficacy*, and *health vigilance*. Preliminary research, not reported here, helped us to refine and streamline the scales of the MHP-H via exploratory analyses with various pilot samples. We have also collected data on a separate national sample of over 2,400 adults, also not detailed in this paper, in order to provide users with age- and gender-based norms.

METHODS

Participants and Procedure

Participants included (1) a large national sample, (2) four subsamples from the national sample who provided retest, validity, and response bias data, and (3) a spouse key-informant sample who provided validity information. Descriptive details on each sample are provided next.

National Sample—The national sample comprised 673 adults, ages 18–89 years, recruited from across the United States via random digit dialing. To reduce selection bias within a given household, the adult with the most recent birthday was targeted for recruitment. Approximately equal numbers of respondents were recruited within each of six cells comprising of three ages (18–32, 33–50, and 51–89) crossed with gender. Each of the six cells contained between 102 and 120 respondents. Demographic information is provided in Table I.

Respondents completed the full MHP via telephone interview. The average duration of the interview was 49 min. Respondents were paid \$30 for their participation.

Retest, Validity, and Response Bias Subsamples—Four subamples were recruited for a second interview approximately 3 weeks after the initial interview for the purposes of (1) examining retest reliability ($n = 122$); (2) assessment of convergent validity ($n = 122$); (3) evaluating discriminant validity ($n = 122$); and (4) examining response bias ($n = 125$). These samples were recruited so as to maintain the approximate gender and age proportions that characterized the parent sample. Participants were paid an additional \$30 for taking part in the follow-up interviews whose duration averaged approximately 35 min.

Spouse Key-Informant Sample—With the permission of the respondents, a total of 100 spouses took part in an independent telephone interview to provide “key-informant” validity data on aspects of the MHP-H. To be eligible for participation, the respondent and spouse had to have been married for at least 1 year. Approximately 17 spouses were interviewed from each of the 6 age-by-gender cells in the primary sample. The mean duration of the interview was 27 min, for which spouses were paid \$20.

Materials

Multidimensional Health Profile—Respondents in the national sample completed the full MHP (both the MHP-P and the MHP-H). As noted above, the MHP-H, the subject of the present paper comprises 69 items.

Convergent Validity Battery—We set out to provide preliminary evidence of the convergent validity of the MHP-H. This task was made somewhat difficult, however, owing to a paucity of psychometrically sound instruments to measure constructs that match or substantially overlap those comprising the MHP-H. However, three instruments, described below, were identified that address related constructs: the Goal Systems Assessment Battery (GSAB; Karoly & Ruehlman, 1995), the Health Perceptions Questionnaire (HPQ; Davies & Ware, 1981), and the Whiteley Index (Pilowski, 1967). The GSAB was completed by all respondents in the national sample. The HPQ and the Whiteley Index were administered to the convergent validity sample.

Goal Systems Assessment Battery—The Goal Systems Assessment Battery (GSAB; Karoly & Ruehlman, 1995), administered to the national sample, was based upon Ford’s “living systems” model of human self-directedness (Ford, 1987). Ford’s model describes the coordinated interplay of various self-regulatory skills that are involved in successful goal pursuit. The GSAB requires respondents to generate a current goal, and to then provide self-

ratings about their goal-based, self-regulatory skills, making use of nine 4-item subscales that assess: goal value, self-efficacy, self-monitoring, social comparison, planning, self-criticism, self-reward, positive arousal, and negative arousal. The psychometrics of the GSAB, including the confirmation of its factor structure, low rates of response bias, and good reliability and validity, have been established (Karoly & Ruehlman, 1995). In the present study, respondents were instructed to list their current health goals and to rate their most important health goal in accord with the 36 items of the GSAB. Thus, the GSAB provided the number of current health goals and 9 sub-scale scores for each participant. GSAB data were generally expected to relate significantly to those aspects of the MHP-H that involve self-regulatory processes; namely positive health habits, self-efficacy, vigilance, and values scales.

The Health Perceptions Questionnaire—The HPQ (Davies & Ware, 1981) examines six general health perceptions: Current Health, Prior Health, Health Outlook, Resistance to Illness, Health Worry/Concern, and Sickness Orientation (acceptance of illness). The HPQ has been used in large-scale investigations (e.g., the Rand Corporation Health Insurance Experiment), and its internal consistency, retest reliability, and validity have been aptly demonstrated (Davies & Ware, 1981). We expected that scores on the HPQ would relate to current and prior health history and to scores on the MHP hypochondriasis scale.

The Whiteley Index—The Whiteley Index (Pilowski, 1967) is a frequently used instrument that assesses degree of hypochondriacal concern. The Whiteley has been employed in a wide range of studies, including such diverse investigations as an examination of the role of hypochondriacal symptoms in irritable bowel syndrome (Woodman et al., 1998), depression (Sayar, Kirmayer, & Taillefer, 2003), and an evaluation of the course of heart palpitations in medical outpatients (Barsky, Cleary, Coeytaus, & Ruskin, 1995). Scores on the Whiteley Index were expected to relate to scores on the MHP-H hypochondriasis and response to illness scales as well as to single-item indices of health history and health care utilization.

Discriminant Validity Battery—It was expected that the MHP-H scores would not be broadly or substantially related to personality and temperament factors. Consequently, the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992) and the Emotionality, Activity, and Sociability Scale (EAS; Buss & Plomin, 1986) were administered. Both scales are commonly employed measures of personality and temperament, respectively. Each has been shown to have excellent psychometric properties. In general, although the NEO-FFI and the EAS scales were not expected to relate significantly to scores on the MHP-H, we did anticipate that the NEO-FFI-assessed trait of conscientiousness would covary with perceptions of self-efficacy, vigilance, and values on the MHP-H.

Spouse Report MHP—Spouses served as key informants and completed the MHP-H as it applies to the participant. It was expected that spouse reports would correlate most strongly with behavioral measures, such as health habits, and more weakly with attitudinal variables, such as health values.

Social Desirability Response Tendencies—The Balanced Inventory of Desirable Responding (BIDR; Paulus, 1991), which consists of a scale that measures Impression Management and one that measures Self-Deception, was administered to permit us to evaluate the susceptibility of items of the MHP-H to both the conscious and unaware aspects of participants' attempts to appear socially desirable.

RESULTS

Confirmatory Factor Analyses

As an initial step, we sought to confirm, using the entire sample of 673 participants, the factor structure of the multi-item scales of the MHP-H. To that end, a series of five confirmatory factor analyses (CFAs) were conducted to assess the fit of hypothesized models in the domains of (1) response to illness (four-factor model); (2) self-efficacy (one-factor model); (3) values and vigilance (two-factor model); (4) trust (two-factor model); and (5) hypochondriasis (one-factor model).⁴ As reported in Table II, adequate fit was observed for all five CFAs.

Retest Reliability

Retest reliabilities were calculated for all scales and single-item indicators ($n = 122$). As shown in Table III, retest reliability is generally good to excellent. The lowest reliabilities were associated with ratings of health over the past 6 months, using self-help in response to illness, number of emergency-room visits, self-efficacy, and hypochondriasis, each with reliabilities of less than .60. The average retest reliabilities of the remaining scales and single-item indicators was .74.

Social Desirability Response Bias

Correlations were calculated between the scales and single-item indicators of the MHP-H and social desirability as assessed by the scales of the Balanced Inventory of Desirable Responding, Self-Deception and Impression Management, in a sample numbering 125.

As shown in Table III, the correlations with Impression Management were, with a few exceptions, nonsignificant. In general, the MHP-H seems relatively free of conscious self-presentational biases. However, unconscious self-deceptive or denial tendencies appear to be more pervasive, as indicated by the number of significant correlations between the MHP-H items and scales and the BIDR Self-Deception scale.

Validity Assessment

As noted above, our objective was to provide preliminary evidence of the convergent and discriminant validity of the MHP-H. To evaluate convergent validity, we hypothesized that certain scales from the convergent validity battery would correlate with specific scales/single-item indicators of the MHP-H. Generally, scores on the NEO-FFI and EAS were *not* expected to relate to scores on the MHP-H. The exception was the hypothesized correlation between that NEO-FFI Conscientiousness scale and MHP-H perceptions of self-efficacy, vigilance, and value. The convergent and discriminant validity coefficients for Health History, Health Habits, Health Care Utilization, Response to Illness, Health Attitudes and Beliefs, and Hypochondriasis are presented in Tables IV through IX. The contents of each table are summarized briefly below.

Validity of Health History Indicators

It was anticipated the scores on adult health history and health history over the prior 6 months would relate positively to spouse report, HPQ Current Health, Prior Health, Health Outlook, and Resistance to Illness. Health history scores were expected to relate inversely to scores on the Whiteley Index and the HPQ Health Worry and Sickness Orientation. These predictions

⁴CFAs were not conducted for the domains of Health History, Health Habits, or Health Care Utilization because Health History and Health Care Utilization are composed of single-item indicators and because The Health Habits items were not expected to cohere in a predictable manner. Self-efficacy was assessed separately from values and vigilance because of its unique role as a descriptive and predictive concept within social-cognitive theory (e.g., Bandura, 1997).

were generally supported, as shown in Table IV. Nonetheless, the inverse correlations were generally weak or nonsignificant.

With regard to discriminant validity, we expected that health history would not relate to personality or temperament, as measured by the NEO-FFI and the EAS. Although an absence of relationship was generally the case (see Table IV), EAS Emotionality was found to correlate negatively with both indices of health history.

Validity of Health Habit Items

As anticipated, spouse report was correlated positively with both positive and negative health habits (Table V). Positive health habits scores were expected to correlate modestly and positively with number of health goals and scores on the GSAB. As shown in Table V, this expectation was generally supported. Although we made no specific predictions about the links between negative health habits and goals, Table V reveals significant *inverse* relationships to several subscales of the GSAB.

Measures of personality and temperament were likewise not expected to relate significantly to positive and negative health habits. However, Table V reveals that, contrary to our expectations, positive habits were modestly correlated with neuroticism (−.21), extroversion (.20), openness (.19), and emotionality (−.22). Negative habits were inversely related to agreeableness (−.20).

Validity of Health Care Utilization Items

As expected, indices of health care utilization were positively correlated with spouse report and scores on the Whiteley Index and were generally unrelated to measures of personality and temperament (Table VI).

Validity of Response to Illness Scales

There are, to our knowledge, no psychometrically sound instruments that measure the same constructs as those of the MHP-H response to illness scales. However, we anticipated that individuals with high scores on the Whiteley Index would tend to be “help seekers”; and, in fact, modest correlations were found (Table VII). In addition, spouse reports correlated positively with participant reports of self-help, professional help, and spiritual help.

Generally, scores on the NEO-FFI and the EAS tended not to covary with scores on the Response to Illness scales (see Table VII).

Validity of Health Beliefs and Attitudes

Although it was anticipated that spouses would have, at best, indirect access to attitudinal and belief information, we nonetheless examined the correlations between spouse report and health attitudes and beliefs. As shown in Table VIII, positive correlations were observed between spouse reports and participants' scores on two of the five subscales, vigilance and trust in health care personnel. Secondly, because self-efficacy, vigilance, and value are key dimensions of health self-regulation, we anticipated positive correlations between those scales and scores on the GSAB. Our findings supported this expectation (see Table VIII). In addition, trust in health care personnel was weakly but significantly correlated with many of the scales on the GSAB; but we did not explicitly predict these associations.

As noted previously, we expected NEO-FFI Conscientiousness to correlate positively with self-efficacy, vigilance, and value. As shown in Table VIII, such correlations were, in fact, observed. Otherwise, we anticipated that personality and temperament would not relate significantly to MHP-H health beliefs and attitudes. This expectation was also generally

upheld, with the exception of a significant inverse correlation between self-efficacy and emotionality, positive correlations between extroversion and self-efficacy and vigilance, and an inverse correlation between a trait measure of openness to experience and trust in health care personnel.

DISCUSSION

The findings detailed in the present paper, expected to provide preliminary reliability and validity data for the MHP-H, lend support to the overall utility of the instrument, and justify its use as a broad-based measurement tool capable of providing clinical professionals a snapshot of several key health care orientations. In contrast to other assessment devices currently in use in primary care or in hospital settings that were developed in specialty clinics or with local samples of inpatients or outpatients, the MHP-H was validated with community-residing adults contacted randomly from across the United States. The MHP-H is, therefore, an assessment tool with a unique niche in contemporary health psychology, one that may be employed for the relatively rapid screening of a wide range of persons, 18 years or older, to ascertain health perceptions, patterns of service utilization and help seeking in response to illness, self-care habits, and specific attitudes and beliefs that reflect health self-regulatory processes.

First, we note that the hypothesized factor structures for the MHP-H multi-item scales were confirmed, with CFIs ranging from .91 to .99. Thus, we can place a moderate degree of confidence in the ability of these MHP-H scales to tell a coherent and consistent story about health-relevant perceptions, beliefs, and behaviors that have been tied, both conceptually and empirically, to the long-term health status of adult men and women.

Similarly, single-item indicators, when put to a series of psychometric tests, have proven, with a few exceptions, to be worthy of clinical application and continued empirical exploration. Most of the MHP-H items can be said to be relatively free of deliberate response bias in that they reveal very low correlations with the BIDR impression management scale. Some items, however, such as those involving the endorsement of positive health habits or risk behaviors reveal a tendency toward self-presentational bias. So too do the Self-Efficacy and Health Vigilance scales. We expect that a social desirability response set is quite common with scales such as these (although, in many cases, the tendency goes undetected). We would, nonetheless, recommend caution in interpreting the aforementioned MHP-H items and scales. Less troublesome, we feel, are the significant correlations reported in Table III between MHP-H items and scales and the BIDR Self-Deception scale, which assesses nonconscious aspects of self-presentation. Evidence has accrued that a tendency, supposedly tapped by the Self-Deception scale, toward denial, unrealistic optimism, or “positive illusions” covaries with well-being, creativity, and physical health status (Paulus & Reid, 1991; Taylor, 1989). Thus, it is not unreasonable to find Self-Deception correlating positively with Health Attitudes and Beliefs, but inversely with Hypochondriasis and all of the help-seeking (Response to Illness) scales.

Retest reliabilities were also generally in the good range. However, with some correlation coefficients hovering in the vicinity of .50–.60, users will need to exercise interpretive caution. For example, individuals’ perceptions of their self-efficacy for health care (e.g., “I am very good at taking care of my own health”) may tend to be especially sensitive to recent perceived and actual health status changes. The same may be true for participants’ ratings of hypochondriasis (e.g., “I am more likely to contract a serious illness than most people my age”).

We compared the MHP-H to a number of presumably related and unrelated constructs in an effort to establish both convergent and discriminant validity. With respect to the Health History

items, we found a pattern of correlations that indicate MHP-H reports of adult health history and of recent history are generally corroborated by spouses and are consistent with similar questions taken from the Rand Health Perception Questionnaire (HPQ). One seemingly disappointing finding is the nonsignificant .13 correlation between the HPQ measure of prior health and the MHP-H adult health history item. However, a closer inspection of the three HPQ prior health items reveals one extremely worded statement (“I was so sick once, I thought I might die”) that could well account for the lack of substantive overlap with the MHP-H adult history item. The HPQ scale called “Resistance to Illness” contains four items that tap perceptions of invulnerability to illness and, consequently, their modest positive correlations with our health history indicators also appears logical. Finally, the absence of relationships between the MHP-H health history indicators and personality (as measured by the five-factor inventory) provides strong discriminant validity evidence for these MHP-H items, as do their generally negligible associations with temperament. Moreover, if we interpret EAS emotionality to be a biologically based index of negative arousal tendencies, then its significant inverse correlations with the MHP-H health history items are readily interpretable, at least on a post hoc basis.

It is difficult to validate lists of positive and negative health habits except by relating them to other health-habit listings. To validate the MHP-H statements denoting health habits, we elected to employ several content indicators and constructs that were expected to show either a modest relationship (health goals and participant ratings of self-regulatory mechanisms) or no relationship (personality and temperament). Our expectations were generally confirmed. Perhaps the most direct validation was provided by the spouse-completed MHP-H, which tended to match participants’ ratings for both positive and negative habits. Number of health goals also provided a supportive framework for health habit assessment in that it varied positively with positive habits and inversely with negative habits. Interestingly, health habits seemed to map onto people’s health goal evaluations as assessed by the Goal Systems Assessment Battery (GSAB; Karoly & Ruehlman, 1995). Positive habits, not surprisingly, tended to show stronger and more consistent correlations with goal-based self-regulatory mechanisms than did negative habits. In addition, negative habits were all inversely related to aspects of goal regulation, with the exception of negative arousal, with which it was (appropriately) positively correlated. However, the obtained significant relations between health habits and personality/temperament were not envisioned a priori. Nonetheless, the finding that being extroverted, open to experience, and low in neuroticism and temperamental emotionality appear to correlate somewhat with the reporting of positive health habits suggests that a general “positivity” factor has been detected (and one that, as our data show, is not attributable to the operation of a social desirability reporting bias).

That the items in the MHP-H domain of health care utilization received confirmation from spouse reports is gratifying because we assumed that spouses would normally be expected to be cognizant of such activity. That the correlations were not higher than those we obtained was somewhat surprising. However, the utilization items called for precise numerical designations of the frequency of activities such as office and emergency room visits; and both the participant and the spouse may have provided fairly skewed “best estimates.” Similarly, the fact that our measure of hypochondriacal thinking, the Whiteley index, correlated modestly with office visits, with self-reported hospitalizations, and emergency-room visits but *not* with over-the-counter medication use lends credence to the MHP-H health care utilization items. The discriminant validity data provided by the absence of connections between personality/temperament and health care utilization are likewise compelling.

Perhaps the most theoretically salient findings are those that relate to the conceptually based, multi-item Response to Illness and Health Beliefs and Attitudes scales and subscales. With regard to the former, spouse key informants provided support for three of the four subscales,

with only Help from Friends failing to yield a meaningful correlation. And once again, personality and temperament data provided good discriminant validity for the MHP-H. By contrast, spouse reports provided convergence for only two of the Health Beliefs and Attitudes subscales (Vigilance and Trust in Health Care Personnel), perhaps because husbands and wives are more prone to sharing their thoughts about these two dimensions relative to the others. With respect to convergent validity, scores on the GSAB tended to coincide with their MHP-H counterparts (MHP-based self-efficacy correlating with GSAB-assessed self-efficacy, value converging with value, and vigilance correlating most highly with self-monitoring). Thus, self-regulatory thinking appears to be captured on both instruments.

Also, as expected, personality and temperament were typically (except for the Conscientiousness and Extroversion scales) unrelated to Health Beliefs and Attitudes scores. Although the link to conscientiousness was forecast, the role of extroversion was not. More research is needed to cross-validate these findings, and to explore other possible connections between trait ratings and health beliefs and attitudes. Finally, the MHP-H Hypochondriasis scale fared quite well, correlating inversely with indices of health, health outlook, and perceptions of invulnerability, and positively with indices of worry, sickness orientation, neuroticism, and emotionality. It would thus appear to be a useful brief measure of illness concern.

Despite the generally supportive findings in terms of scale structure and content, the MHP-H has yet to demonstrate its potential as a prognostic instrument, capable of providing researchers and clinicians with a full and dependable battery of information that can presage important aspects of self-care or illness prevention. As the process of scale validation is always ongoing, we hope and expect that the future will see such empirical work undertaken that seeks to demonstrate the value of the MHP-H for screening and pre- to posttreatment assessment across different medical populations and diverse settings.

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Table I**Demographic Information**

Variable	% Sample
Race/Ethnicity	
Caucasian, not of Hispanic origin	85
African-American, not of Hispanic origin	9
Hispanic	4
Other	2
Marital status	
Married	58
Never married	18
Separated	2
Divorced	12
Widowed	6
Other	4
Years of education	
Less than high school	10
Completed high school	29
Trade school	5
Some college	29
Completed college	17
Advanced degree	10
Employment status	
Full-time	59
Part-time	13
Homemaker	8
Retired	14
Unemployed	6

Table II
Results of Confirmatory Factor Analyses of Five of the MHP-H Domains

	Model	Chi-square	df	CFI ^a
Response to illness	four-factor	219.11	48	.91
Self-efficacy	one-factor	15.57	2	.98
Values & vigilance	two-factor	134.91	26	.93
Trust	two-factor	78.03	13	.94
Hypochondriasis	one-factor	2.10	2	.99

^aCFI = Comparative Fit Index.

Table III
Retest Reliabilities and Correlations With Social Desirability

MHP-H scale or single-item indicator	No. of items	Retest reliability ^a	Correlation with BIDR ^b Self-Deception ^c	Correlation with Impression BIDR Management ^c
Adult Health History				
Adult life	1	.62***	.23**	.08
Past 6 months	1	.57***	.21**	.08
Presence of a chronic illness	1	.75***	.13	.11
Impairment due to chronic illness	1	.71***	-.11	.08
Health Habits				
Positive habits	14	.89***	.11	.19*
Negative habits	10	.86***	-.04	-.33**
Health Care Utilization				
Office visits	1	.86***	-.04	-.09
Hospitalizations	1	.75***	-.17*	-.07
Emergency-room visits	1	.58***	-.14	-.11
Over-the-counter Medications	1	.68***	.11	-.03
Response to Illness				
Professional help	3	.67***	-.24*	-.11
Self-help	3	.54***	-.23*	-.10
Help from friends	3	.61***	-.24*	-.13
Spiritual help	3	.72***	-.14*	.08
Health Attitudes and Beliefs				
Self-efficacy	4	.57***	.30**	.17*
Health vigilance	5	.73***	.32**	.22*
Health values	4	.70***	.15*	.04
Trust in health care	4	.70***	-.07	-.01
Personnel				
Trust in health care system	3	.78***	-.12	.05
Hypochondriasis	4	.59***	-.19*	.14

^a $n = 122$.

^b BIDR = Balanced Inventory of Desirable Responding.

^c $n = 125$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table IV
Convergent and Discriminant Validity Coefficients for Health History Indicators

Validity Measures	Health history indicators	
	Adult health history	Health history past 6 months
<i>Convergent validity measures</i>		
Whiteley Index ($n = 122$)	-.19 [*]	-.35 ^{**}
HPQ ^a ($n = 122$)		
Current Health	.29 ^{**}	.53 ^{**}
Prior Health	.13	.36 ^{**}
Health Outlook	.20 [*]	.21 [*]
Resistance to Illness	.40 ^{**}	.38 ^{**}
Health Worry	-.13	-.12
Sickness Orientation	-.18	-.09
Spouse report ($N = 100$)	.49 ^{**}	.38 ^{**}
<i>Discriminant validity measures</i>		
NEO-FFI ^b ($n = 122$)		
Neuroticism	-.14	-.07
Extroversion	.13	-.06
Openness	.00	-.04
Agreeableness	-.06	-.05
Conscientiousness	.15	-.01
EAS ^c ($n = 122$)		
Sociability	-.06	-.10
Activity	.14	.00
Emotionality	-.30 ^{**}	-.18 [*]

Note. Only 20 respondents (out of 122 in the validity subsample) reported a chronic illness. Thus, due to insufficient power, validity coefficients are not reported for the single-item indicators of presence of a chronic illness and impairment due to a chronic illness.

^a HPQ = Health Perceptions Questionnaire.

^b NEO-FFI = NEO Five-Factor Inventory.

^c EAS = Emotionality, Activity, and Sociability Scale.

* $p < .05$.

** $p < .01$.

Table V
Convergent and Discriminant Validity Coefficients for Health Habits

Validity measure	Health habits	
	Positive habits	Negative habits
<i>Convergent validity measures</i>		
Spouse report ($N = 100$)	.56**	.55**
Number of health goals ($N = 673$)	.38***	-.10**
GSAB scales ^a ($N = 673$)		
Value	.32***	-.01
Self-efficacy	.26***	-.10
Social comparison	.07	-.05
Self-monitoring	.30***	-.13**
Planning	.28***	-.19***
Self-reward	.21***	-.07
Self-criticism	.08*	-.01
Positive arousal	.22***	-.11**
Negative arousal	-.06	.05
<i>Discriminant validity measures</i>		
NEO-FFI ^b ($n = 122$)		
Neuroticism	-.21*	-.13
Extroversion	.20*	.12
Openness	.19*	.16
Agreeableness	.13	-.20*
Conscientiousness	.17	-.08
EAS ^c ($n = 122$)		
Sociability	.11	.01
Activity	.07	.11
Emotionality	-.22*	.05

^aGSAB = Goal Systems Assessment Battery.

^bNEO-FFI = NEO Five-Factor Inventory.

^cEAS = Emotionality, Activity, and Sociability Scale.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.

Table VI
Convergent and Discriminant Validity Coefficients for Health Care Utilization

Validity scale	Health care utilization			
	Office visits	Hospitalizations	Emergency-room visits	Over-the-counter medication
<i>Convergent validity measures</i>				
Whiteley Index ($n = 122$)	.31**	.20*	.29**	.01
Spouse report ($N = 100$)	.43**	.24**	.34**	.33**
<i>Discriminant validity measures</i>				
NEO-FFI ^a ($n = 122$)				
Neuroticism	.03	-.12	.11	.18
Extroversion	-.15	.02	-.05	-.17
Openness	-.02	-.12	-.03	-.20*
Agreeableness	-.11	.08	-.01	-.01
Conscientiousness	.02	.02	-.18	.02
EAS ^b ($n = 122$)				
Sociability	-.13	.10	-.07	-.13
Activity	-.18	-.19*	-.01	-.12
Emotionality	.16	-.07	.22*	.14

^aNEO-FFI = NEO Five-Factor Inventory.

^bEAS = Emotionality, Activity, and Sociability Scale.

*
 $p < .05$.

**
 $p < .01$.

Table VII
Convergent and Discriminant Validity Coefficients for the Response to Illness Scales

Validity scale/Item	Response to illness scales			
	Self-help	Professional help	Help from friends	Spiritual help
<i>Convergent validity measures</i>				
Whiteley Index ($n = 122$)	.27**	.21*	.24**	.12
Spouse report ($N = 100$)	.24**	.32**	.18	.41**
<i>Discriminant validity measures</i>				
NEO-FFI ^a ($n = 122$)				
Neuroticism	.03	-.12	.11	.18
Extroversion	-.15	.02	-.05	-.17
Openness	-.02	-.12	-.03	-.20*
Agreeableness	-.11	.08	-.01	-.01
Conscientiousness	.02	.02	-.18	.02
EAS ^b ($n = 122$)				
Sociability	-.13	.10	-.07	-.13
Activity	-.18	-.19*	-.01	-.12
Emotionality	.16	-.07	.22*	.14

^aNEO-FFI = NEO Five-Factor Inventory.

^bEAS = Emotionality, Activity, and Sociability Scale.

*
 $p < .05$.

**
 $p < .01$.

Table VIII
Convergent and Discriminant Validity Coefficients for the Health Beliefs and Attitudes Scales

Validity Measures	Health Beliefs and Attitude Scales				
	Self-efficacy	Vigilance	Value	Trust in the health care system	Trust in health care personnel
<i>Convergent validity measures</i>					
Spouse Report (<i>N</i> = 100)	.17	.41**	.17	-.11	.32**
GSAB Scales ^a (<i>N</i> = 673)					
Value	.29***	.34***	.24***	-.07	.12**
Self-efficacy	.43***	.35***	.18***	-.03	.15***
Social	.09*	.25***	.15***	.12**	.17***
Comparison					
Self-monitoring	.35***	.51***	.19***	-.05	.15***
Planning	.28***	.48***	.19***	-.03	.15***
Self-reward	.18***	.39***	.19***	.02	.14**
Self-criticism	.05	.23***	.17***	-.03	.12**
Positive arousal	.27***	.46***	.19***	.04	.18***
Negative arousal	-.06	.08*	.05	.00	.06
<i>Discriminant Validity Measures</i>					
NEO-FFI ^b (<i>n</i> = 122)					
Neuroticism	-.15	-.12*	.03	.03	-.05
Extroversion	.23**	.22*	.07	.07	.07
Openness	.14	.22*	.04	-.11	-.22*
Agreeableness	.07	.00	-.03	-.14	.00
Conscientiousness ^c	.29**	.30**	.28**	.11	.09
EAS ^d (<i>n</i> = 122)					
Sociability	.11	.15	.14	.00	.09
Activity	.16	.14	.14	.13	-.03
Emotionality	-.33**	-.15	-.12	-.05	-.12

^aGSAB = Goal Systems Assessment Battery.

^bNEO-FFI = NEO Five Factor Inventory.

^cConscientiousness was expected to related positively to self-efficacy, vigilance, and value.

^dEAS = Emotionality, Activity, and Sociability Scale.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table IX
Convergent and Discriminant Validity Coefficients for the Hypochondriasis Scale

Validity measures	Hypochondriasis
<i>Convergent validity measures</i>	
Spouse report ($N = 100$)	.34**
Whiteley Index ($n = 122$)	.35**
HPQ ^a ($n = 122$)	
Current Health	-.33**
Prior Health	-.18*
Health Outlook	-.35**
Resistance to Illness	-.54**
Health Worry	.26**
Sickness Orientation	.22**
<i>Discriminant validity measures</i>	
NEO-FFI ^b ($n = 122$)	
Neuroticism	.26**
Extroversion	-.14
Openness	-.09
Agreeableness	-.07
Conscientiousness	-.08
EAS ^c ($n = 122$)	
Sociability	-.03
Activity	-.13
Emotionality	.25**

^aHPQ = Health Perceptions Questionnaire.

^bNEO-FFI = NEO Five Factor Inventory.

^cEAS = Emotionality, Activity, and Sociability Scale.

* $p < .05$.

** $p < .01$.