Development and Validation of the Multidimensional Health Profile, Part I: Psychosocial Functioning

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Abstract

This article describes the development and preliminary validation of the Multidimensional Health Profile, Part I: Psychosocial Functioning (MHP-P), a self-report screening instrument for use in mental health and primary care settings. The MHP-P assesses mental health, life stress, coping skills, and social resources. In Study 1, retest reliability, validity, social desirability response bias, and factor structure were examined in a national sample of men and women (*N* = 673). In Study 2, the effect of time frame on the retest reliability of the mental health scales was examined in a sample of male and female college students (*N* = 147). A national sample of men and women (*N* = 2,411) provided data for additional confirmatory factor analyses and norm development in Study 3.

Over the past 30 years, impressive evidence has accumulated documenting the role of psychosocial factors in physical health. In one of the earliest demonstrations (Cummings & Follette, 1968), 60% of health care visits were found to be made by the "worried well," persons for whom no diagnosable medical condition could be identified and in whose illness behavior psychosocial factors appeared to play a significant role. Subsequent research has suggested that 25–88% of health care visits are related to problems with psychosocial origins (e.g., Berkanovic, Telesky, & Reeder, 1981; Kroenke & Mangelsdorff, 1989; Sobel, 1995).

One of the most important psychosocial factors in physical health is preexisting psychological disturbance. It has been estimated that between 20% and 41% of patients seen in primary-care settings have a diagnosable psychiatric illness, of which mood and anxiety disorders are the most prevalent (e.g., Derogatis & Wise, 1989; Katon & Sullivan, 1990; Matthews, Eagles, & Matthews, 1993; Sartorius et al., 1993). Psychological disturbances may potentially influence patients' vulnerability to physical illness, perceptions of the nature and meaning of their symptoms, patterns of symptom reporting, compliance with medical interventions, and longevity (e.g., Frasure-Smith, Lesperance, & Talajic, 1995; Gatchel, Polatin, & Kinney, 1995; Leventhal, Hansell, Diefenbach, Leventhal, & Glass, 1996). Moreover, individuals with psychiatric disorders, especially depression and anxiety, tend to overutilize medical services (Fries et al., 1993; Spitzer et al., 1994) and may frequently find themselves embroiled in contentious doctor-patient interactions that may interfere with both diagnosis and treatment (Hahn, Thompson, Wills, Stern, & Budner, 1994).

A second important psychosocial category relevant to health outcomes incorporates factors that are typically considered within models of stress and illness (cf. Gatchel & Blanchard,

1993). These include major and minor stressful life events, coping, and social support. Stress has been implicated in the etiology of diverse physical illnesses and has been found to influence the course and outcome of illness as well (e.g., Adler & Hillhouse, 1996; Frasure-Smith, 1991; Kiecolt-Glaser & Glaser, 1991). Both coping and social support have been found to play an important protective role in illness onset, disease course, and prognosis (e.g., Cohen, 1988; Helgeson & Cohen, 1996; Shumaker & Czajkowski, 1994; Ukestad & Wittrock, 1996).

Increasingly, health care providers have recognized the importance of psychosocial interventions. Preventive and interventive efforts include educational programs such as stress-management workshops, relaxation training, support groups for individuals experiencing specific stressors, or training in effective support provision for those who care for patients with a chronic illness. In general, formal evaluations of psychosocial interventions indicate that they tend to improve functioning and reduce health care costs (e.g., Frasure-Smith, 1991; Kemper, Lorig, & Mettler, 1993).

A vital link to the effective provision of psychosocial services in primary health care settings is the assessment of patients' specific psychosocial strengths and weaknesses. Unfortunately, health care professionals have generally found it difficult to accurately identify patients with psychosocial problems (e.g., Andersen & Harthom, 1989; Gonzales, Magruder, & Keith, 1994; Spitzer et al., 1994; Swanson, 1994). Spitzer et al. reported, for example, that primary care physicians failed to diagnose and treat 50–75% of patients with common psychiatric disorders, noting that primary care physicians possess "inadequate knowledge of the diagnostic criteria, uncertainty about the best questions to ask to evaluate whether those criteria are met, and time limitations inherent in a busy office setting" (p. 1749). Health care professionals are perhaps even less likely to possess the expertise or the time to assess co-occurring factors, such as life stress, coping skills, social resources, or personality factors.

Health care providers' diagnostic accuracy has, however, been found to improve through the use of screening tools (e.g., Andersen & Harthorn, 1989). A number of assessment tools (e.g., the Brief Symptom Inventory [Derogatis & Melisaratos, 1983], the SCL-90 [Derogatis, 1977], the Primary Care Evaluation of Mental Disorders [PRIME-MD; Spitzer et al., 1994], the Cornell Medical Index [Brodman, Erdmann, Lorge, & Wolf, 1949]) designed to assess psychological disorders or symptoms, are currently available for use in health care settings (e.g., Brodman, Erdmann, Lorge, & Wolf, 1949; Derogatis, 1977; Derogatis & Melisaratos, 1983; Goldberg, 1978; Spitzer et al., 1994; Ware, Kosinski, & Keller, 1994). Despite their popularity, these frequently used tools possess a number of limitations. Most importantly, they tend to be restricted in their diagnostic scope; none provides a comprehensive psychosocial profile. Second, they tend to be pathology centered, providing the user little information about patient assets. Third, several of the existing instruments possess weaknesses in the area of psychometric development. Moreover, the existing instruments are not well suited to the task of screening. For example, a number of widely used and generally well-developed broad-gauge instruments exist to assess depression, anxiety, social supports and strains, life stress, and coping. Unfortunately, completion of a battery containing individual instruments to assess all of the above domains would be costly and labor intensive. In addition, a serious limitation of the use of any of these instruments individually as screening devices is that the clinicians have some a priori basis for their selection—an unlikely occurrence in view of the acknowledged time and training constraints already noted.

A potential solution to the challenge of psychosocial screening is the Multidimensional Health Profile (MHP; Ruehlman, Lanyon, & Karoly, 1998), a brief self-report screening instrument. The MHP has two components, which are the Multidimensional Health Profile, Part I: Psychosocial Functioning (MHP-P) and the Multidimensional Health Profile, Part II: Health

Functioning (MHP-H). The MHP-P assesses the following four areas: mental health, social resources, life stress, and coping skills. The MHP-H examines the following five areas: responses to illness, health promotion and risk reduction habits, adult health history, health-related beliefs and attitudes, and health care utilization. Because of the large volume of data associated with the development of the MHP-P and the MHP-H, information regarding the two instruments is presented in separate reports. The present article describes the development of the MHP-P.

Assessment Areas of the MHP-P

Mental Health

An examination of existing screening instruments for mental health status in health-related settings revealed no systematic framework or organized set of concepts that uniformly characterize this area. We, therefore, chose a symptomatic approach that addressed the following symptoms considered to be of the greatest use in the early stages of screening: anxiety, depression, history of mental disorder, and current global mental health. Because of the increasing recognition of the predictive importance of positive affective states, a fifth construct, life satisfaction, was included. To maintain brevity and in keeping with some of the literature, we conceptualized life satisfaction as a unidimensional construct to be assessed by direct questions about satisfaction and dissatisfaction (e.g., Diener, 1984).

A review of factor-analytic and other studies on anxiety indicates that although this construct is quite heterogeneous (e.g., Beck, Epstein, Brown, & Steer, 1988; Krug, Scheier, & Cattell, 1976; Tuthill, Overall, & Hollister, 1967), several major content components are consistently reported, including the subjective experience of anxiety, cognitive problems such as difficulties with concentration, and physical symptoms and complaints. On the basis of this work, we adopted a tripartite division of the anxiety construct into affective, cognitive, and somatic and motor components. The assessment literature in the field of depression also showed considerable heterogeneity (e.g., Beck, Steer, & Garbin, 1988; Schaefer et al., 1985). Nonetheless, a general consensus was found in these literatures with respect to the existence of a major factor representing depressed mood as well as factors representing guilt and self-blame, fatigue and psychomotor retardation, apathy, and somatic disturbance. Ultimately, three central components were retained: depressed affect, guilt and self-blame, and motor retardation. In addition, several questions were included concerning perceptions of global mental health.

Some variability in the assessment time frame was noted for existing instruments. The most frequently used instruments (e.g., the Beck Depression Inventory, the General Health Questionnaire, the Center for Epidemiological Studies Depression scale [CES-D]) use a 1- or 2-week time frame. Other less frequently used instruments (e.g., the Mental Health Inventory, the General Well-Being Schedule, the Affect Balance Scale) use time frames ranging from a few weeks to 1 month. Thus, we selected a time frame of the past week or 2 to be consistent with existing instruments.

Social Resources

Three basic forms of social support most often emerge in the support literature, including emotional support, informational support, and tangible support (e.g., House, 1981; Kahn & Antonucci, 1980; Thoits, 1985). As noted by Barrera (1986), the assessment of social support has generally focused on the following three types of indicators: (a) support availability, (b) support satisfaction, and (c) enacted support. The three basic forms of support (i.e., emotional, informational, and tangible) were assessed, using each of the three types of support indicators (i.e., availability, satisfaction, and enacted). For example, respondents were asked how much

emotional support was available, how satisfied they were with the emotional support they received, and how much emotional support they received.

Research has also begun to demonstrate that negative social interactions play a significant and independent role in psychological functioning (Lakey, Tardiff, & Drew, 1994; Ruehlman & Karoly, 1991; Ruehlman & Wolchik, 1988; Rook, 1984). Some investigators have even found the deleterious effects of negative social ties to be stronger than those of support (e.g., Davis & Swan, 1999; Lepore, 1992; Rook, 1984; Ruehlman & Wolchik, 1988). Therefore, negative social exchange was included as a fourth construct.

Life Stress

Because the MHP-P is a screening instrument, its main purpose is to detect ongoing environmental challenges and dispositional reaction tendencies rather than to fully elaborate the cognitive appraisal habits and motivational directives implied by modern transactional accounts. Thus, the MHP-P covers the following three major psychological aspects of stress: (a) the number of stressful events experienced over the previous year, (b) the subjective or perceived stressfulness of those experienced events, and (c) a single rating of the perceived impact of stress on one's life over the prior year (global stress).

In the development of the event list, existing life-event surveys were examined and representative events were selected in major life areas, including illness of self or significant others, death, employment difficulties, legal problems, interpersonal problems, financial problems, and changes in living arrangements. Variability with regard to time frame was noted across existing instruments. Most instruments were not found to assess the occurrence of prior stressful life events beyond a 1-year period (Miller, 1993). Thus, a 1-year time frame was selected for the assessment of MHP-P life stress.

Coping Skills

The term *coping* refers to a person's attempt to deal with the threat posed by environmental stressors, or, more specifically, with the perceived discrepancy between the demands of the encountered situation and the resources of the person. Coping behaviors have traditionally been conceptualized as being either *problem focused* (strategies aimed at problem solving or altering the source of the stress) or *emotion focused* (strategies designed to control or reduce a person's emotional responses to the stressful event; Folkman & Lazarus, 1988). Approximately half of the original items on the MHP-P Coping scale were problem-focused and half were emotion-focused, to reflect the basic distinction between emotion- and problem-focused coping. Further, the items were constructed to reflect theoretically adaptive, rather than maladaptive, coping strategies. This decision reflects the need for brevity as well as the fact that some maladaptive coping behaviors (e.g., drug and alcohol abuse) are assessed elsewhere in the MHP. Finally, it is worth noting that some authors (e.g., Carver, Scheier, & Weintraub, 1989) have conceptualized the mobilization of social support as a form of coping. Because social support is measured separately in the Social Resources section of the MHP-P (see above), no additional support items were included in the Coping Skills area.

Several preliminary investigations (not reported here; see Ruehlman et al., 1998) were conducted to assess the importance of the proposed assessment areas to practicing physicians and to examine the comprehensibility, retest reliability, social desirability response bias, and factor structure of an initial pool of 292 items for the full MHP. As a result of the aforementioned effort, a 69-item version of the MHP-P was developed. The Mental Health area contained 12 depression, 11 anxiety, 3 life satisfaction items, and 3 single-item indexes reflecting global perceptions of mental health. The Social Resources area consisted of 9 social-support items and 4 negative social exchange questions. Coping was assessed by 9 questions.

Life Stress was examined by asking respondents to indicate which of 17 stressful events had occurred over the previous year and to indicate the level of perceived stress of each experienced event. A single item assessed global perceived stress. Three subsequent studies conducted to examine the psychometrics of the MHP-P are reported next.

Study 1

Study 1 reports on the retest reliability, convergent and discriminant validity, social desirability response bias, and factor structure of the MHP in a representative, national sample of adults.

Method

Participants—Participants consisted of a national sample of 673 English-speaking adults aged 18 or older, stratified by age ($M = 42.96$, $SD = 16.28$, range = 18–89) and gender (51% women). The demographic composition of the sample was very similar to that of the general population. Approximately equal numbers of participants were interviewed within three age categories (18–32, 33–50, 51–89), constructed to reflect the proportions of different age groups in the general population. Each of the six age by gender cells contained between 102 and 120 participants.

All 673 participants completed the entire MHP in an initial telephone interview (see below). Approximately 3 weeks later, 497 of them took part in one of four possible follow-up interviews, designed to assess either reliability or the validity of a particular set of subscales. Respondents were randomly assigned to one of the four follow-up interviews with the constraint that the proportion of participants in the age by gender groupings be maintained.

One follow-up sample ($N = 125$) completed the mental health, social support, and negative social-exchange validity battery (see below for a description of all validity batteries); a second follow-up subsample ($N = 125$) completed the stress, coping, and social-desirability validity battery; a third follow-up subsample ($N = 122$) completed a battery of personality and temperament measures; and a fourth subsample ($N = 125$) completed the entire MHP a second time to assess its retest reliability. The demographic characteristics of each of the subsamples very closely approximated those of the total sample.

Materials

MPH-P: A 69-item version of the MHP-P, as described above, was administered.

Mental health, social support, and negative social-exchange validity battery: Instruments that served as concurrent validity indexes for MHP-P Mental Health scales included the CES-D (Radloff, 1977), the State and Trait Anxiety Scales (Spielberger, 1983), and the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). Instruments to assess the concurrent validity of MHP-P Social Resources included the Interpersonal Support Evaluation List (Cohen, Mermelstein, Kamarck, & Hoberman, 1985) and the Test of Negative Social Exchange (Ruehlman & Karoly, 1991).

Stress, coping, and social-desirability validity battery: The following two measures were used in the assessment of the concurrent validity of the MHP-P measures of Life Stress and Coping Skills: the 14-item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983) and six of the subscales of the COPE (Carver et al., 1989) that reflect adaptive coping. The Balanced Inventory of Desirable Responding (Paulhus, 1991) was used in the assessment of social desirability response bias.

Personality and temperament battery: The NEO-Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992) is a frequently used, 60-item measure of personality that includes the following scales: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness.

The EAS is a 20-item measure of temperament that has demonstrated satisfactory psychometric properties (Buss & Plomin, 1986). Its scales include Emotionality, Activity, and Sociability.

The personality and temperament measures were used to allow for a broad demonstration of both convergent and discriminant validity of the MHP-P. The specific hypothesized relations (i.e., convergent vs. discriminant) between scales of the MHP-P and the NEO-FFI and the EAS are discussed in the *Results* section.

The instruments included in the validity batteries are frequently used in the scientific literature, and they have demonstrated adequate psychometric properties, justifying their use in the present research. Space limitations preclude a detailed description of all of the instruments.

Procedure—Telephone interviews were conducted by Datastat, Inc., using a computer assisted sampling technique that dials geographically representative, randomly generated numbers. Respondents were paid $30 per interview. Further details of these methods, including recruitment procedures, acceptance and refusal rates, and methods of controlling biases are available in the MHP Professional Manual (Ruehlman et al., 1998) or from the corresponding author.

Results

Exclusionary Criteria—In the context of the confirmatory factor analyses (discussed in greater detail below), items were deleted due to problems in fit (such as high standardized residuals or failure to load significantly on the primary factor). As noted below, eight items were excluded due to problems in fit. The criteria for the exclusion of scales and single-item indexes included retest reliability of $r < .70$ and all validity coefficients $r < .30$. Two single-item indexes were deleted due to poor reliability; one single-item index was deleted due to inadequate evidence of validity. No scales were deleted.

Confirmation of MHP-P Factor Structure—The Mental Health, Social Resources, and Coping Assessment areas were conceptualized as separate and distinct domains. Thus, items within each domain were factor analyzed separately, with the goal of developing separate scales for each domain. The Life Stress items were not factor analyzed because the items represent a heterogeneous set of events that is not assumed to cluster in any predictable manner.

To assess the overall fit of the models (described below), we used several indices (see Floyd & Widaman, 1995), including the Comparative Fit Index (Bentler, 1990), Normed Fit Index (Bentler & Bonett, 1980), and the Tucker-Lewis Index (Tucker & Lewis, 1973). A value of .90 or greater indicates adequate fit. When appropriate, the fit of predicted multifactor models was compared to a single-factor model using the chi-square change statistic, wherein a significant value indicates superior fit of the multifactor model. Because of space limitations, the factor loadings (all of which were significant at $p < .001$) for the confirmatory factor analyses in Studies 1 and 3 are not presented; they can, however, be obtained from the corresponding author.

Mental health: For the anxiety and depression scales, three measurement models were tested using maximum likelihood estimation procedures: (a) a one-factor model; (b) six first-order factors and one global, second-order factor; and (c) six first-order factors (see Table 1). The indices of fit for both the six-factor model and for the hierarchical model (i.e., the model

containing a global, higher order factor) reveal adequate fit. Further evidence of the superiority of the multifactor models over the single-factor model was provided by the significant changes in chi-square associated with a comparison of each multifactor model to the single-factor model.

The fit of the hierarchical model versus the six-factor model was compared through chi-square change. The six-factor model was found to provide better fit than the hierarchical model [chi-square change ($df = 9$) = 43.42; $p < .001$]. Thus, the results indicate that Psychological Distress may be best assessed through six individual depression and anxiety subscales (the six lower order factors). Because the hierarchical model also provided adequate fit to the data, the use of a single total Psychological Distress score (the sum of all anxiety and depression items) is not unreasonable.

A single-factor model of Life Satisfaction was also tested (see Table 1). The indices suggested excellent fit for the hypothesized model.

Overall, five mental health items were deleted due to problems in fit. The final scales included 18 Psychological Distress scale items (three for each of the six depression and anxiety scales) and 4 Life Satisfaction Scale items (one in common with the Depressed Affect scale).

Social resources: For the Social Support scale items, a one-factor model was compared to the predicted three-factor model (Emotional, Informational, and Tangible Support). Assessment of a hierarchical model consisting of three lower order factors and a global, higher order factor was not possible because the factors are just identified. As shown in Table 1, the single-factor model was inadequate. The predicted three-factor model provided satisfactory and significantly better fit than did the single-factor model. Because a hierarchical model is just-identified and therefore could not be tested, it is not known whether a global higher order factor exists. However, the three subscale scores are highly related, with correlations ranging from .76 to .94, suggesting the existence of an overarching global construct. No Social Support Scale items were excluded.

A single-factor model was tested for Negative Social Exchange (see Table 1). The indices of fit suggested excellent fit for the hypothesized model. No items were deleted.

Coping skills: The nine items that assess coping were designed to represent two hypothesized factors: Problem-Focused and Emotion-Focused Coping. The results of an initial confirmatory factor analysis indicated poor fit for this model (comparative fit index = .78). Examination of residuals suggested that three items were problematic. The remaining six items loaded highly on one factor, and a single-factor model using only these six items resulted in an excellent fit (see Table 1). Thus, Coping Skills was henceforth considered to be a unidimensional concept, insofar as the MHP-P is concerned.

Test-Retest Reliability—Test-retest reliabilities are presented in Table 2. Satisfactory reliabilities were achieved for Total Psychological Distress, Life Satisfaction, three of the four Social Support scores, and Negative Social Exchange. The lowest reliabilities were obtained for the two global mental health items and several of the Psychological Distress subscales.

MHP-P Correlations With Social Desirability—The Balanced Inventory of Desirable Responding consists of the following two scales: Self-Deception, assessing the unaware or unconscious aspects of social desirability, and Impression Management, representing conscious attempts to appear socially desirable. Correlations between Self-Deception and MHP-P subscales in adjustment-related areas (such as Mental Health and Life Stress) tended to be significant, whereas correlations of self-deception with measures such as Emotional

Support tended to be negligible (see Table 2). Correlations of the MHP-P scales with Impression Management were much lower, ranging from −.01 to −.26.

Convergent and Discriminant Validity

Mental health: All of the validity coefficients for the MHP-P Mental Health scales were significant beyond the .001 level. For the three MHP-P anxiety-related scales, the correlations with Trait Anxiety were .59 for Anxious Affect, .54 for Somatic Complaints, and .48 for Cognitive Disturbance. MHP-P correlations with State Anxiety were .52 for Anxious Affect, .53 for Somatic Complaints, and .44 for Cognitive Disturbance.

For the three MHP-P depression-related scales, the correlations with the CES-D were .61 for Depressive Affect, .53 for Guilt, and .38 for Motor Retardation.

The MHP-P total Psychological Distress score correlated .69 with Trait Anxiety, .65 with State Anxiety, .66 with the CES-D, and .−39 with the SWLS.

The single item asking whether anyone had suggested to the participant that he or she seek psychological services over the previous year was found to be nonsignificantly correlated with State and Trait Anxiety, as well as with CES-D depression scores and SWLS scores. This item was therefore excluded from the final version of the MHP-P.

The MHP-P Life Satisfaction scale correlated .62 with the SWLS.

To allow for a broad assessment of convergent and discriminant validity, we computed correlations between scores on the MHP-P and the NEO-FFI and the EAS. It was expected that the MHP-P Mental Health scales would correlate significantly with the Neuroticism scale of the NEO-FFI and the Emotionality scale of the EAS, but not with the other scales (Friedman, 1990). These hypotheses were generally supported (Tables 3 and 4).

Social resources: Correlations of the MHP-P Social Support scales with the Interpersonal Support Evaluation List were as follows: Emotional Support, .30 ($p < .01$); Informational Support, .35 ($p < .01$); Tangible Support, .33 ($p < .01$), and Total Support, .37 ($p < .001$). The MHP-P Negative Social Exchange scale correlated .42 ($p < .001$) with the Test of Negative Social Exchange.

Weak to modest correlations have generally been observed between perceived social resources and personality factors such as locus of control, neuroticism, the sense of acceptance, and social competence (Lakey & Cassady, 1990; (B. R. Sarason, Pierce, & Sarason, 1990; I. G. Sarason, Sarason, & Pierce, 1990). Thus, it was expected that the MHP-P Social Resources measures would correlate nonsignificantly to modestly with measures of personality and temperament. As indicated in Tables 3 and 4, this hypothesis was generally supported. Agreeableness, Conscientiousness, and Emotionality were modestly related to several of the MHP-P Social Support scales, whereas Agreeableness, Activity, and Emotionality were moderately related to MHP-P Negative Social Exchange.

Life stress: The Perceived Stress scale correlated with the MHP-P measures of stress as follows: .43 ($p < .01$) with the Number of Stressful Events, .49 ($p < .01$) with Perceived Stress, and .48 ($p < .01$) with Global Stress. It was expected that neither the Number of Stressful Events nor Perceived Stress would correlate significantly with any of the measures of personality or temperament, and this hypothesis was generally supported (Tables 3 and 4). Global Stress was found to correlate modestly with Neuroticism, Activity, and Emotionality.

Coping skills: Six of the 13 subscales of the COPE reflect adaptive coping, including Active Coping, Planning, Suppression of Competing Activities, Acceptance, Restraint Coping, and Positive Reinterpretation. Carver et al. (1989) reported four second-order factors, two of which were formed from the six Adaptive Coping scales. For present purposes, two subscales were created to reflect the two adaptive coping factors revealed by Carver et al.'s (1989) second-order factor analyses. The first scale of the COPE, consisting of Active Coping, Planning, and Suppression of Competing Activities, was found to correlate .33 ($p < .01$) with the Coping scale of the MHP-P. The second scale of the COPE, consisting of Acceptance, Restraint, and Positive Reinterpretation, correlated .33 ($p < .01$) with the MHP-P Coping scale.

The simple correlations between the MHP-P Coping scale and the six scales of the COPE that measure adaptive coping were Active Coping, .33 ($p < .01$); Planning, .33 ($p < .01$); Suppression of Competing Activities, .14 ($p > .05$); Acceptance, .24 ($p < .01$); Restraint Coping, .13 ($p > .05$); and Positive Reinterpretation, .36 ($p < .01$).

The significance of personality factors to coping style has been demonstrated in numerous investigations (e.g., Carver et al., 1989; Feifel, Strack, & Nagy, 1987; Holahan & Moos, 1987). Given the focus on adaptive coping of the MHP-P, it was anticipated that MHP-P Coping would correlate with basic approach dimensions of personality and temperament that may tend to facilitate adaptive coping efforts, such as Extraversion, Sociability, Openness, Activity, and Conscientiousness. Modest correlations between these dimensions and MHP-P Coping were obtained (see Tables 3 and 4).

Prior research (e.g., Bolger, 1990; Costa & McCrae, 1990; Endler & Parker, 1990) has indicated that neuroticism tends to be associated with avoidance rather than with more adaptive approach coping (as is measured by MHP-P Coping). Consistent with these findings, MHP-P Coping was not found to relate significantly to either Neuroticism or Emotionality.

The Final Version of the MHP-P—As a result of Study 1, 11 items of the MHP-P were deleted, due either to poor fit (8 items), low reliability (2 of the single-item indexes) or poor validity (1 single-item index). The final version of the MHP-P consists of four areas comprising 58 items, including 21 items for Mental Health (18 for Psychological Distress and 4 for Life Satisfaction, one of which overlaps with the Depressed Affect Subscale). The Social Resources area contains 13 items, which are 9 for Social Support and 4 for Negative Social Exchange. Six items constitute the Coping Skills scale. The Life Stress Area is assessed with 17 items to be scored for both occurrence (Number of Stressful Events) and stressfulness of experienced events (Perceived Stress), and 1 item to reflect Global Stress.

Study 2

The results of Study 1 provided preliminary evidence of the reliability and validity of the MHP-P. However, several of the reliabilities for the mental health items were lower than expected. One possible explanation is that participants were instructed to rate their mental health over the previous week, whereas the retest interval was 3 weeks. Thus, at the Time 2 administration of the MHP, respondents rated the previous week, whereas their Time 1 ratings reflected their status 3 weeks prior. An additional study (Study 2) was therefore conducted to examine whether this discrepancy between the assessment time frame (previous week) and the retest interval (3 weeks) might have attenuated the reliabilities.

Method

Participants—Course credit was provided to 147 undergraduates (52% women) enrolled in an Introduction to Psychology class in exchange for their participation.

Materials and Procedure—Students completed the 18 items of the depression and anxiety subscales of the MHP-P and the two global mental health questions on two occasions, separated by 2 days. We sought to maximize the degree of overlap of the time frames for each of the testing periods while assuming that students would not readily recall their Time 1 responses at the second testing session.

Results

Reliability coefficients were calculated for each of the subscales of the mental health section of the MHP-P. As shown in Table 2, the reliabilities of the two global indexes of mental health were unacceptable; thus, these two items were deleted from the MHP-P. However, the reliabilities for the six substantive scales were in the acceptable range. We reasoned then, that the reliabilities observed for the 3-week interval in the national sample (see Study 1, Table 2) may well have been attenuated by the discrepancy between testing interval and time frame.

Study 3

In Study 3, the factor structure of the final 58-item version of the MHP-P was confirmed in a second representative, national sample. A second major goal of Study 3 was the development of national norms for the MHP-P for six age by gender groups.

Method

Participants—Participants consisted of a national sample of 2,411 English-speaking adults, stratified by age ($M = 43.4$, $SD = 16.17$, range = 18–90) and gender (51% women), who completed the full MHP by telephone interview. The demographic characteristics of the sample closely resembled those of the general population. Approximately equal numbers of participants were interviewed within three age categories (18–32, 33–50, and 51–90). Each of the six age by gender cells contained approximately 400 participants, with a range of 369–422 participants.

Materials and Procedure—The instrument for this study was the final (58-item) version of the MHP-P. Telephone interviews were conducted by DataStat, Inc., using the same sampling and interviewing techniques as described for Study 1. Completed interviews were obtained from 2,411 participants. Respondents were paid $30 for a completed interview.

Results

As in Study 1, separate confirmatory factor analyses were conducted on the items of the six Psychological Distress scales and the Life Satisfaction scale of the Mental Health area, on the Social Support and Negative Social Exchange items of the Social Resources area, and on the Coping Skills items. The results of each of these analyses, shown in Table 5, replicated the findings of Study 1. For Psychological Distress, both the hierarchical and the six-factor models provided a good fit. In addition, both models were superior to a single-factor model, as revealed by significant changes in the chi-squares associated with a comparison of the models. The six-factor model yielded a better fit than the hierarchical model. As in Study 1, the single-factor structure of the Life Satisfaction scale was confirmed.

Confirmatory factor analyses of the Social Support items revealed that the three-factor model provided good fit and was superior to a single-factor model, which did not provide a satisfactory fit. As indicated in Table 5, the single-factor models of both the Negative Social Exchange and Coping scales were also confirmed.

In addition to the aforementioned confirmatory factor analyses, a model was evaluated that included all Psychological Distress, Coping, and Social Resource items. The model consisted

of (a) a higher order Psychological Distress factor, (b) six lower order distress (depression and anxiety) factors, (c) a single Life Satisfaction factor, (d) a higher order Social Resources factor, (e) three lower order Support factors, (f) one lower order Negative Social Exchange factor, and (g) a single Coping Skills factor. In view of the large number of items and the complexity of the model, the fit was adequate. A comparative fit index of .87 was observed.

Norms—Separate norms and raw score to *T*-score conversions were developed for the six age by gender groups. In keeping with the nature of the MHP-P as a screening inventory, interpretation of the scores has been achieved by the use of cutting points at 1.0 *SD* (follow-up suggested) and 2.0 *SDs* (follow-up strongly recommended) from the mean (Ruehlman et al., 1998).

General Discussion

As noted by Clark and Watson (1995), establishment of a stable factor structure plays an important role in the test validation process. For the MHP-P, multiple development stages were required to achieve stable factor structure. Exploratory factor analyses were conducted in a preliminary study (see Ruehlman et al., 1998). Items were then revised, and the hypothesized factor structure was confirmed in Study 1, at which point inadequate items were deleted, but no new items were added. The final structure was confirmed in Study 3, using a large, representative national sample. The confirmatory factor analyses revealed a consistent structure for all scales across Studies 1 and 3. In regard to the MHP-P Mental Health area, our data suggest that psychological distress is best conceptualized in terms of six correlated factors. Although a hierarchical model reflecting one second-order factor was found to adequately fit the data, it was inferior to the simple, six-factor structure. These findings are consistent with those of Scheier and Newcomb (1993), whose confirmatory factor analyses of 27 measures of various aspects of psychological distress revealed that nine first-order factors fit the data better than more complex, higher order models.

The hypothesized factor structures for the MHP-P areas of Life Satisfaction, Social Support, and Negative Social Exchange were all confirmed in a like manner. However, the proposed two-factor model of Coping Skills failed, whereas a single-factor model yielded a satisfactory fit. As noted by Carver, Scheier, and Weintraub (1989), coping encompasses an extremely broad range of responses. As such, a large number of items may be necessary to adequately tap the two basic dimensions of problem- and emotion-focused coping. The difficulty associated with tapping a complex construct with few items may explain the somewhat low validity coefficients for the Coping scale observed in Study 1. Further research is needed to examine the utility of the MHP-P Coping Skills scale.

With the exception of several of the scale reliabilities in the Mental Health area, the retest reliabilities were satisfactory. To examine whether time frame may have contributed to an attenuation of the stability coefficients for scales in the Mental Health area, we used a briefer interval in Study 2. In this study, all of the scale reliability coefficients were found to be satisfactory, providing some support for the contention that the lower reliabilities found in Study 1 may have been influenced by the time-frame discrepancy. Notwithstanding this finding, additional studies are needed, particularly with adults in primary-care settings, to bolster confidence in the temporal stability of the MHP-P mental health scales. One concern is the possibility that the instrument may be too sensitive to minor or temporary fluctuations in mental health status.

In general, social-desirability response bias does not appear to exert undue influence on scores on the MHP-P. However, it is noteworthy that correlations between scores on the MHP-P and Self-Deception were stronger than those between MHP-P scores and Impression Management.

This is consistent with evidence suggesting that denial or self-deception plays a positive role in the promotion of psychological health (e.g., Gotlib & Cane, 1989; Paulhus & Reid, 1991; Taylor, 1989). Taylor (1989) has argued, in fact, that "positive illusions" and unrealistic optimism foster healthy attitudes towards the self and the world, promoting creativity and feelings of well-being. Increasing evidence indicates that nondepressed individuals tend to be unrealistically optimistic and to downplay information that might contradict their positive world view (e.g., Alloy, Albright, Abramson, & Dykman, 1990).

The national norms for the MHP are a strength (see Ruehlman et al., 1998). The norms (for both genders and three age groups) were derived from a large ($N = 2,411$), representative national sample obtained through random digit-dialing procedures. These data should allow for enhanced screening accuracy. Future efforts will be directed toward the collection of ethnic-group norms as well as *local* (group and/or setting specific) *norms* (e.g., individuals with a chronic illness, students, specific employment settings, etc.).

Validity assessment is recognized to be an extended process, involving multiple methods, sources, and procedures (cf. Clark & Watson, 1995; Foster & Cone, 1995; Haynes, Richard, & Kubany, 1995). Preliminary evidence of convergent and discriminant validity was observed in Study 1, in which correlations were examined among MHP-P scales and widely used indexes of personality, temperament, mental health status, social support, life satisfaction, negative social exchange, and coping. These data represent a broad assessment of validity. Further research involving multiple methods of validity assessment is needed to more fully evaluate the utility of each of the scales of the MHP-P. For example, the ability of the MHP-P to predict the adjustive status of various criterion or high-risk groups identified in primary-care settings could be examined. Testing the usefulness of the MHP-P as a screen will require careful comparisons between the long-term outcomes of screened and unscreened populations broken down by age, gender, and ethnicity. The findings herein reported provide a preliminary empirical foundation for such an extended research enterprise.

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Table 1

Results of Confirmatory Factor Analyses for the Multidimensional Health Profile, Part I: Psychosocial Functioning for Study 1

Scale	Model	χ^2	df	CFI	NFI	TLI	Chi-square change[a]
Psychological Distress	Null	4,257.30	153				
	1 Factor	1,112.56	135	.76	.74	.73	
	6 First-order, 1 second-order	475.35	129	.92	.89	.90	637.21[***]
	6 Factor	431.93	120	.92	.90	.90	680.63[***]
Life Satisfaction	Null	695.83	6				
	1 Factor	8.48	2	.99	.99	.97	
Social Support	Null	3,560.40	36				
	1 Factor	565.98	27	.85	.84	.80	
	3 Factor	323.84	24	.92	.91	.87	242.14[***]
Negative Social Exchange	Null	826.17	6				
	1 Factor	23.58	2	.97	.97	.92	
Coping Skills	Null	827.29	15				
	1 Factor	41.86	9	.96	.95	.93	

Note. $N = 673$. CFI = comparative fit index; NFI = normed fit index; TLI = Tucker-Lewis Index.

[a] Chi-square change was based on a comparison of the one-factor to the multifactor models.

[***] $p < .001$.

Table 2

Retest Reliabilities and Correlations With Social Desirability for the Scales of the Multidimensional Health Profile, Part I: Psychosocial Functioning (MHP-P)

MHP-P scale	No. of items	Possible score range	Retest reliability		r (Self-Deception)	r (Impression Management)
			Study 1	Study 2[a]		
Mental Health	18	18–90	.75***	.88***	−.30**	−.21**
Total Psychological Distress						
Depressed Affect	3	3–15	.44***	.79***	−.25**	−.24**
Guilt	3	3–15	.52***	.71***	−.30***	−.12
Motor Retardation	3	3–15	.56***	.78***	−.07	−.02
Anxious Affect	3	3–15	.66***	.75***	−.19*	−.23**
Somatic Complaints	3	3–15	.65***	.76***	−.13	−.08
Cognitive Disturbance	3	3–15	.49***	.72***	−.42***	−.26**
Life Satisfaction	4[b]	4–20	.74***	—	.26**	.20*
Global Mental Health (past week)	1	1–5	.51***	.49***	.30***	.09
Global Mental Health (past year)	1	1–5	.55***	.52***	.36***	.12
Anyone suggested you seek mental health services?	1	0–1	.70***	—	−.05	.04
Social Resources						
Total Social Support	9	9–45	.82***	—	.00	.14
Emotional Support	3	3–15	.79***	—	.04	.19*
Informational Support	3	3–15	.62***	—	.04	.13
Tangible Support	3	3–15	.75***	—	−.08	.01
Negative Social Exchange	4	4–20	.77***	—	.00	−.19
Coping Skills	6	6–30	.65***	—	.34***	.11
Stress						
No. of Stressful Events	17	0–17	.86***	—	−.20*	.11
Perceived Stress	17	17–90	.86***	—	−.24**	−.19*
Global Stress	1	1–5	.68***	—	−.15*	−.15*

Note. $N = 125$ for each of two samples. Dash indicates that information is not available.

[a] In Study 2, retest reliability was examined only for the Mental Health subscales.

[b] One item appears on both the Life Satisfaction Scale and the Depressed Affect Scale.

*
$p < .05$.

**
$p < .01$.

***
$p < .001$.

Table 3

Correlations Between the Scales of the Multidimensional Health Profile, Part I: Psychosocial Functioning (MHP-P) and the NEO-Five-Factor Inventory (NEO-FFI)

MHP-P scale	NEO-FFI scales				
	Neuroticism	**Extraversion**	**Openness**	**Agreeableness**	**Conscientiousness**
Total Psychological Distress	.46**	−.14	.03	.09	−.13
Depressed Affect	.37**	−.18	−.11	.04	−.18
Guilt	.31**	−.02	.11	.07	−.09
Motor Retardation	.37**	−.20*	−.12	.02	−.10
Anxious Affect	.38**	−.04	.19*	.07	.04
Somatic Complaints	.27**	−.16	−.06	.03	−.05
Cognitive Disturbance	.33**	−.06	.06	.16	−.21*
Life Satisfaction	−.29**	.22*	−.01	.13	.13
Total Social Support	.02	.07	.11	.18*	.25**
Emotional Support	−.00	.08	.15	.15	.29**
Informational Support	.04	.08	.06	.10	.24**
Tangible Support	.01	.02	.09	.23*	.12
Negative Social Exchange	.06	.14	.15	−.27**	−.01
Coping Skills	−.13	.25**	.26**	.08	.25**
Number of Stressful Events	.06	.16	.13	−.16	.05
Perceived Stress	.15	.17	.15	−.09	.06
Global Stress	.34***	−.01	.16	.08	.04

Note. N = 125.

*
p < .05.

**
p<.01.

**
p<.001.

Table 4

Correlations Between Scales of the Multidimensional Health Profile, Part 1: Psychosocial Functioning (MHP-P) and the EAS

MHP-P scale	EAS scales		
	Sociability	Activity	Emotionality
Total Psychological Distress	−.04	.06	.53[**]
Depressed Affect	−.07	−.08	.48[**]
Guilt	−.07	.18	.34[**]
Motor Retardation	−.02	−.04	.30[**]
Anxious Affect	−.00	.10	.45[**]
Somatic Complaints	−.02	.05	.44[**]
Cognitive Disturbance	.02	.05	.38[**]
Life Satisfaction	.23[*]	.06	−.41[**]
Total Social Support	.03	.05	−.20[*]
Emotional Support	.04	.01	−.29[**]
Informational Support	−.03	.07	−.13
Tangible Support	.06	.06	−.11
Negative Social Exchange	−.04	.24[**]	.23[*]
Coping Skills	.20[*]	.18	−.11
Number of Stressful Events	.11	.10	.10
Perceived Stress	.11	.12	.13
Global Stress	.11	.23[*]	.30[**]

Note. N < 125.

[*]
 p < .05.

[**]
 p < .01.

Table 5

Results of Confirmatory Factor Analyses for the Multidimensional Health Profile, Part I: Psychosocial Functioning

Scale	Model	χ^2	df	CFI	NFI	TLI	Chi-square change
Psychological Distress	Null	12,383.00	153				
	1 Factor	3,117.84	135	.76	.75	.72	
	6 First-order, 1 second-order[a]	1,223.07	129	.91	.90	.89	1,894.77***
	6 Factor	1,068.86	120	.92	.91	.91	2,048.98***
Life Satisfaction	Null	2,017.58	6				
	1 Factor	24.27	2	.99	.99	.97	
Social Support	Null	11,067.44	36				
	1 Factor	2,094.74	27	.81	.81	.75	
	3 Factor[a]	1,170.12	24	.90	.89	.84	924.62***
Negative Social Exchange	Null	2,481.57	6				
	1 Factor	23.82	2	.99	.99	.97	
Coping	Null	2,700.41	15				
	1 Factor	110.29	9	.96	.96	.94	

Note. N = 2,411. CFI = comparative fit index; NFI = normed fit index; TLI = Tucker-Lewis Index.

[a] Predicted model.

*** $p < .001$.