Methods, Issues, and Results in Evaluation and Research

The Conceptualization and Measurement of Perceived Wellness: Integrating Balance Across and Within Dimensions

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Abstract

Purpose. The impact of individual perceptions on health is well-established. However, no valid and reliable measure of individual wellness perceptions exists. Therefore, the purpose was to introduce a measure called the Perceived Wellness Survey (PWS).

Design. Convenience sampling facilitated recruitment of a sample large enough to perform factor analysis with adequate power (.85). The appropriateness of factor analysis is supported by Bartlett's test ($\chi^2 = 7110$, p $\leq .01$) and the Kaiser-Meyer-Olkin measure of sampling adequacy (.91).

Setting. The sample (n = 558) was composed of 3M Inc. employees from multiple sites in Austin, Texas (n = 393); employees from MuRata Electronics, Inc., College Station, Pennsylvania (n = 53); and students enrolled at the University of Texas at Austin (n = 112).

Subjects. Racial, gender, and age distribution was, respectively, 6.3% African-American (n = 35), 8.2% Asian (n = 46), 73.3% Caucasian (n = 409), 9.5% Hispanic (n = 53), and 2.7% other (n = 15); 47.8% male (n = 267), and 52.2% female (n = 291); and 36.8 years.

Measures. Measures included the Perceived Wellness Survey, and two additional versions of the Perceived Wellness Survey designed to measure both discriminant and face validity. Perceived Wellness Survey subscales include physical, spiritual, intellectual, psychological, social, and emotional dimensions.

Results. All subscales were correlated ($p \le .05$) with the Perceived Wellness Survey composite and with each other. Evidence of internal consistency ($\alpha = .88$ to .93), and discriminant, face, and factorial validity was provided. Finally, the Perceived Wellness Survey appears to be a unidimensional scale.

Conclusion. The unidimensional nature of the Perceived Wellness Survey suggests that perceptions of wellness in various dimensions are intertwined by their affective nature. The Perceived Wellness Survey appears to be reasonably valid and reliable; however, further research is needed. (Am J Health Promot 1997;11[3]:208–218.)

Key Words: Wellness, Wellness Measurement, Wellness Theory, Wellness Models, Perceptions, Mind/Body

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-H.M. Tomlinson

INTRODUCTION

Unexplainable phenomena such as the placebo effect and diseases that spontaneously go into remission support the notion that many factors which influence health are simply unknown. And, it is increasingly evident that we do not yet possess all of the tools to fully describe and predict human health-in particular, positive health or wellness. Many models have been developed in an effort to better understand the naturally occurring variability in health. Most recently, Wilson and Cleary¹ integrated several components including biological and physiological variables, symptom status, functional status, and general health perceptions, among others. Regarding perceptions of health they stated, "They represent an integration of ... health concepts. They are among the best predictors of the use of general medical and mental health services" (62). Thus, how we "see the world" appears to powerfully impact our health and wellness.

The presumed power of perceptions raises a challenge for researchers and practitioners alike. How can we sanctimoniously apply absolute standards of wellness in a relative world? Dunn² constrained his original definition of wellness to the individual environment, suggesting that the experience of wellness is unique to each individual.^{3,4} The reality is that individuals process and interpret information from internal and external sources in highly variable ways. This variation can either be viewed as uncontrollable, residual error due to individual differences, or as a rich source of information about influences upon health and wellness which remain unexplained by other indicators. Thus, the study of how wellness perceptions fit into an overall model of health would be a positive contribution.

The study of perceptions is empirically well-supported by other bodies of research. Social support researchers have suggested that perceived support has a powerful influence upon health.⁵⁻⁹ Stress researchers have indicated that a tension-producing stimulus elicits the stress response only if it is perceived as threatening.¹⁰⁻¹³ Finally, epidemiological researchers have concluded that selfrated perceptions of health are among the most powerful predictors of subsequent health outcomes.14-19 In addition, health perceptions have been identified as one of the strongest predictors of physical and mental health care utilization.20 Thus, while the influence of standard risk factors cannot be ignored, individual perceptions are also important because they may actually precede overt manifestation of illness or wellness and may therefore be fertile ground for early intervention or enduring celebration, respectively.

The purpose of this paper is threefold. First, to construct a philosophical foundation which provides a context in which the conceptualization and measurement of perceived wellness can be discussed. Second, to integrate empirically supportable dimensions of wellness into a wellness framework. Third and primarily, to introduce a conceptually congruent, empirically sound wellness measure which rests upon the philosophical foundation and which is supported by the theoretical framework.

PHILOSOPHICAL FOUNDATION

Introduction

Since Dunn, many have conceptualized wellness.^{21–27} All of these conceptualizations contain convergent and repeated wellness themes that will be discussed later. In addition, much philosophical and theoretical support for the overall wellness construct has been derived from related theories.

Systems Theory

According to systems theory, each part of a system is both an essential subelement of a larger system and an independent system with its own subelements.²⁸⁻³⁰ Elements are reciprocally interrelated such that disruption of homeostasis at any level requires adaptation of the entire system.^{28,30} Dunn stated that individual wellness involves "an integrated method of functioning" suggesting reciprocal integration.² At the individual level, this implies simultaneous function in multiple dimensions and at various levels within these dimensions including the physical, spiritual, psychological, social, emotional, and intellectual.^{3,4,29-31} The multidimensionality of wellness is supported by several authors.^{3,4,21,22,24,25,33–35}

To best describe and predict individual wellness, models should include several dimensions which are operationalized and interpreted consistent with the systems approach. Specifically, the wellness magnitude within each dimension and the balance among them should be simultaneously considered.³ In addition, a valid wellness model should either include cultural, organizational and environmental factors, or be connectable to models that include these factors.^{28,30}

Salutogenic Orientation

Antonovsky contributed to the widespread use of the term "salutogenic," which simply means "health causing."10,11 Salutogenesis is also suggested in the World Health Organization (WHO) definition of health as: "a complete physical, mental, and social well-being and not merely the absence of disease "36 (1, italics added) and Dunn's definition of wellness as being "oriented toward maximizing the potential of which the individual is capable"² (4-5, italics added). It is evident that wellness is widely recognized as the conceptual anchor of a salutogenic orientation.^{4,21,23,26} Yet a heavy emphasis is

placed on the detection, treatment, and prevention of disease in what is often called "wellness practice." This is probably attributable to the available selection of measurement tools (e.g., skinfold calipers, blood pressure equipment), which are only capable of detecting disease risk factors or the lack thereof. In addition, research that is limited to a pathogenic perspective due to the use of such measures is sometimes mislabeled health promotion instead of disease prevention research.

By measuring wellness perceptions which typically precede observable symptomology, practitioners and researchers could focus on the salutogenic pole of each dimension represented by the perimeter of Figure 1. This model is similar to those presented elsewhere^{4,21,23,26} except that it explicitly incorporates vertical and horizontal directions. Vertical movement occurs between the illness and wellness poles, whereas horizontal movement is the dynamic, balanceseeking force along each dimension of wellness. In summary, salutogenic practice should emphasize optimal health and balance. In addition, the focus of salutogenic research should be to determine what factors are associated with being well.

Framework Summary

Perceived wellness is a *multidimensional, salutogenic* construct, which should be conceptualized, measured, and interpreted consistent with an integrated *systems view*. What types of wellness indicators and measures are available and how well are they supported by this foundation?

Measurement of Wellness. Indicators of health and wellness have included clinical variables such as blood pressure and cholesterol; physiological variables such as VO_2 max and muscular strength; and behavioral variables such as smoking and dietary habits. Practitioners have relied heavily on clinical, physiological, and behavioral measures to plan individual and community interventions, and to predict various health outcomes.¹ Although these types of variables are valuable indicators of bodily wellness, they provide little information about



The top of the model represents wellness because it is expanded to the fullest possible extent, whereas the tightly constricted bottom represents illness. In between are innumerable combinations of wellness in several dimensions and the various states of balance among them. The lines which extend from the inner to the outer circle indicate the possibility of bidirectional movement along each continuum. Movement in every dimension influences and is influenced by movement in all other dimensions. For example, in extreme wellness conditions, one or more dimensions expand and place an "outward wellness force" on each of the other dimensions. In contrast, in extreme illness conditions, one or more dimensions contract cause either compensatory and or concomitant change in each of the other dimensions.

the wellness of the mind. Perceptual measures have been used to predict effectively a variety of health outcomes.^{16,18,20,37} Hence, valid perceptual measures could complement bodycentered indicators of wellness and provide both researchers and practitioners with important information about the persons whom they serve.¹

Wellness-related perceptual constructs include the following: psychological well-being,^{38–40} mental well-being,^{41,42} subjective well-being,^{43–45} general well-being,^{46,47} morale,^{48–49} happiness,^{50,51} life satisfaction,^{52–54} and hardiness.^{12,55} Many of these have been used as wellness measures in spite of the fact that none were originally designed as such. Moreover, extant wellness scales^{21,24,26} were primarily constructed as teaching tools and were not originally validated, although two^{24,26} have since demonstrated evidence of reasonable internal consistency.⁵⁶ In addition, all three^{21,24,26} contain a mixture of perceptual and behavioral items; thus, the unique contribution of perceptions to wellness cannot be determined from these scales.

Anecdotal evidence supporting the validity of the perceptual approach to wellness assessment is abundant in the lay literature, ^{57–59} but has not received extensive empirical attention because a theoreticallybased, empirically sound measure of perceived wellness is lacking. The primary purpose is therefore to develop such a measure called the Perceived Wellness Survey.

REVIEW OF LITERATURE

Introduction

Many different wellness dimensions have been identified including the physical, spiritual, and intellectual;^{4,23–26,31,34} psychological;³¹ social and emotional;^{4,23–26,31} occupational,^{24,26} and community or environmental.^{23,24,31} Six dimensions were selected for inclusion in the Perceived Wellness Survey based on the strength of theoretical support and the quality of empirical evidence supporting each. All six dimensions are defined and supported below.

Physical Wellness

Physical wellness is defined as a positive perception and expectation of physical health. Stewart and others stated that measuring physical health perceptions is important because it integrates available health information by accounting for differences in health preferences, values, needs, and attitudes.20 Mossey and Shapiro further suggested that measurement of perceived health can be combined with objective ratings to provide a more accurate interpretation of patient conditions.18 In their seminal study, subjects with *poor* perceived health had a risk of mortality three

times greater than subjects with good perceived health. Furthermore, subjects with good/excellent objective health but *poor* perceived health had a greater risk of death than subjects with poor/fair objective health but excellent perceived health. These results have been supported elsewhere.^{16,17,19} Good perceived health has also been positively associated with higher levels of physical activity and negatively associated with musculoskeletal symptoms and diseases, and psychosocial problems.¹⁴

Spiritual Wellness

Spiritual wellness has been defined as a belief in a unifying force,⁴ an integrative force between the mind and body,⁶⁰ or as a positive perception of meaning and purpose in life.^{3,21,61} Of these, the latter is the most empirically supported and has been associated with positive health outcomes and well-being.^{62–64}

Paloutzian and Ellison developed a measure to tap the life purpose construct called the existential wellbeing scale.⁶⁵ In limited research since its development, the life purpose construct as measured by the existential well-being scale has demonstrated negative associations with loneliness⁶⁶ and depression⁶⁷ and positive associations with self-esteem; family togetherness; and social skills,⁶⁰ coping beliefs,⁶⁷ and connectedness.⁶⁸

Psychological Wellness

Psychological wellness is defined here as a general perception that one will experience positive outcomes to the events and circumstances of life. This definition refers to a psychic resource called dispositional optimism.69 An individual who is dispositionally optimistic believes that every situation and circumstance will ultimately produce positive outcomes. Optimism, as measured by the Life Orientation Test, has been positively correlated with hardiness, general well-being,⁷⁰ happiness,⁷¹ likelihood of completing a program for alcoholics,72 post-surgical recovery,73 and quality of life appraisal in survivors of coronary bypass surgery.74 In addition, optimism has been negatively associated with anxiety,75 escape

avoidant coping,⁷¹ and various measures of distress.⁷⁶

Social Wellness

Social wellness is defined as the perception of having support available from family or friends in times of need and the perception of being a valued support provider. Social support has been the dominant theme in social wellness research.^{6,8} In several prospective studies of the associations between social support and either morbidity or mortality, men with high levels of support had fewer risk factors and symptoms of cardiovascular disease and had lower mortality rates after other risk factors were held constant.77-81 Some have suggested that social support is also protective for women,^{82,83} but others have disagreed.78,84 Social support has been positively correlated with physical and psychological well-being⁸⁵ and overall life satisfaction⁸³ but negatively correlated with distress symptoms and psychopathology.⁷

Researchers have identified four key associations between social support and health. First, the *perception* of available support is the most important health protecting feature.^{5,6,9} Second, the quality of available support is more important than the quantity.^{6,86,87} Third, support from family and friends varies in importance depending on situational support needs.⁸ Fourth, the support relationship is healthiest when it is reciprocal.^{9,77}

Emotional Wellness

Emotional wellness is defined as possession of a secure self-identity and a positive sense of self-regard, both of which are facets of self-esteem. Self-esteem is a major component of emotional wellness⁴⁴ and is one of the strongest predictors of general well-being.88-90 Self-identity is conceptualized as one's internal image of self. The value placed on selfidentity is called self-regard and has been defined as "the extent to which one prizes, values, approves, or likes oneself"⁹¹ (115). An individual with a focused sense of self-identity tends to possess a higher self-regard⁴² and is more capable of meaningfully interpreting discrepant information.¹⁰

Likewise, a person with a high self-regard interprets situations and events in ways that preserve and reinforce self-identity. Researchers have indicated that self-esteem is positively associated with principle-centeredness, internal wellness orientation, physical self-esteem, and physical activity,⁹² and negatively related with body dissatisfaction and restrained eating.⁹³

Intellectual Wellness

Intellectual wellness is defined as the perception of being internally energized by an optimal amount of intellectually stimulating activity. Researchers have suggested that intellectual overload and underload can adversely affect health.^{10,94,95} Thus, moderate amounts of intellectually enriching activity are optimal.^{95–97}

In a related vein, Langer and Rodin conducted a study to assess the impact of involving nursing home residents in decisions regarding their own care.98 This simple intervention was reinforced by providing the experimental group with a plant to tend. Cross-sectionally, subjects in the experimental group felt more in control and were more alert and active.98 In a longitudinal follow-up, residents in the experimental group were "judged to be significantly more actively interested in their environment, more sociable and self-initiating, and more vigorous than residents in the control group"99 (899). In addition, experimental group residents were more active, healthier, and had a lower mortality rate. These findings are supported by three additional studies of elderly populations.¹⁰⁰⁻¹⁰²

Summary

Empirical support for each of the dimensions included in the wellness model (Figure 1) has been provided. Efforts to validate the internal structure of the wellness model and the corresponding scale, the Perceived Wellness Survey, are described below.

METHODS

Design

A convenience sampling method was used to recruit participants. This method facilitated recruitment of the sample size necessary to perform a factor analysis with adequate power. The computed power was .85. The appropriateness of factor analysis with this sample is highly indicated by Bartlett's test of sphericity ($\chi^2 =$ 7110, $p \leq .01$) and the Kaiser-Meyer-Olkin measure of sampling adequacy (.91).¹⁰³ The primary variable of interest was the Perceived Wellness Survey. Other measures included two additional versions of the Perceived Wellness Survey designed to assess, respectively, discriminant and face validity of the Perceived Wellness Survey. All three of these measures are described in greater detail in the Measures section.

Sample

Participants included employees of two 3M Inc. sites in Austin, Texas (n = 295, administrative center; n = 98manufacturing plant); employees from MuRata Electronics, Inc., College Station, Pennsylvania (n = 53);and students from a health education class at the University of Texas at Austin (n = 112). The racial mix of the sample was, for the combined 3M samples, 7.4% African-American (n = 29), 11.2% Asian (n = 44),68.4% Caucasian (n = 269), 10.7% Hispanic (n = 42), and 2.3% other (n = 9); and for the MuRata sample, 2% Asian (n = 1), 87% Caucasian (n = 46), and 11% other (n = 6). Race was not included as a variable in the student sample, but based on estimates from the course instructor, the mix for the student sample was approximately 5% African-American, 1% Asian, 84% Caucasian, and 10% Hispanic. The samples were divided with respect to gender as follows: 3M-61% male (n = 240), 39% female (n = 153); MuRata—11% male (n = 6), 89% female (n = 47); and students—19% male (n = 21), 81% female (n = 91). The mean ages for the samples were $3M-41.1 \pm 10.8$, MuRata -34.34 ± 10.36 , and students—23.15 \pm 5.4. All data were gathered between August 1994 and March 1995.

3M employees were provided the opportunity to participate in the study during an annual health screening. The overall health screening response rate in the 3M Austin

population (n = 1800) was 28%. Of those who attended the health screening (n = 503), 78% (n = 393)both agreed to participate in the study and provided useable data. Those included in the sample were not significantly different ($p \le .05$) from the health screening attendees omitted from the sample (n = 110)with respect to age or gender. Nonparticipating health screening attendees were more likely to be Asian and less likely to be Caucasian ($p \leq$.05). Demographic data were unavailable for employees who did not participate in the health screening.

Health screenings are available to MuRata employees throughout the year on a rotating schedule. Because the Perceived Wellness Survey was administered on a pilot basis, only those MuRata employees who completed a health screening in March of 1995 were given the opportunity to participate (n = 90). Thus, the response rate of the MuRata sample (n = 53) was 59%. The nonrespondents were not significantly different from respondents with respect to age, race, or gender. Demographics on the total MuRata population during the screening period were unavailable.

All but a few of the students chose to participate in the study. Nonparticipants were more likely to be male but were not significantly different in any other way.

Prior to participation, the 3M and student participants had the opportunity to read and sign an informed consent document approved by an institutional review board for research with human subjects. MuRata participants similarly provided individual informed consent according to the guidelines established by an internal review committee of the company responsible for data collection, LifeQuest, Inc., of Memphis, Tennessee. All participants were assured that their decision whether or not to participate would have no effect on future relations with the researchers nor with the respective organizations. Students were assured that their participation status would not influence their final grade in the class.

Measures

Completion of psychometric instruments, which included the Perceived Wellness Survey in all four samples, required 20 to 40 minutes and, in every case, took place in a quiet setting. Additionally, four health professionals employed by one of the companies completed a discriminant validity version of the Perceived Wellness Survey and students completed a form of the Perceived Wellness Survey designed to assess face validity.

Perceived Wellness Survey. The Perceived Wellness Survey is a salutogenically-oriented, multidimensional measure of perceived wellness perceptions in the physical, spiritual, psychological, social, emotional, and intellectual dimensions. Sample items from each dimension are, respectively, "I expect to always be physically healthy," "I believe there is a real purpose for my life," "In the past, I have expected the best," "My friends will be there for me when I need help," "In general, I feel confident about my abilities," and "In the past, I have generally found intellectual challenges to be vital to my overall well-being." Each dimension is represented by six items which are scored from 1, "Very strongly disagree" to 6, "Very strongly agree." The dimensional scores are integrated by combining the magnitude or mean of each dimension with the balance or the standard deviation among dimensions into a wellness composite score. In mathematical terms, the wellness composite score equals the sum of the subscale means divided by the sum of the standard deviation among the subscale means and 1.25. The addition of 1.25 to the denominator prevents a rare but statistically possible deviation of "0" from nullifying the wellness composite score. Copies of the scale and detailed scoring procedures are included in the appendix. The Perceived Wellness Survey construction process is briefly discussed below.

Initially, a total of 69 content-related items from six separate scales (see Table 1) were combined to form the Perceived Wellness Survey, which was piloted several times. Included in this

pool were items which tapped perceptions of physical health, sense of meaning and purpose in life, positive expectancies, self-identity and self-regard, and social support both received and provided. The two social support scales were consolidated into one, reducing the number of original scales to five, but an additional scale created by the authors was later added; thus, the final number of subscales was six. Three item reductions schemes were employed. First, an item correlation matrix was examined to determine whether any sets of items were redundant $(r \ge .70)$. Redundant sets or pairs of items were reduced to the single best item. Second, the magnitude of the itemto-total-scale correlation was considered. Items with coefficients smaller than .40 on the total scale were excluded. Third, all items were reviewed to determine the degree of content match between the items and subscale definitions. After the six best items were selected to represent the physical, spiritual, psychological, emotional, and social dimensions, six items written by the authors were added to represent the intellectual dimension. In addition, a few of the items were revised to add clarity and consistency to the subscales. Ultimately, six items for each of the six dimensions were included, giving the Perceived Wellness Survey a total of 36 items.

In an attempt to minimize item order effects, the dimension order was randomly shuffled, creating six blocks. The items were then placed into each block so that each dimension was represented by every sixth item and so that the 21 positive and 15 negative items were spread evenly throughout.

To demonstrate the general psychometric soundness of the scales from which Perceived Wellness Survey items were derived, reliability and validity coefficients for each parent scale are reported in Table 1. Constructing a new scale by combining items from several existing scales is an acceptable practice;¹⁰⁴ however, by removing items from the original scale, the psychometric context is altered. Thus, pilot research was conducted to determine the psychomet

Table 1

Sources of Items for the Perceived Wellness Survey

Dimension	Scale	Internal Consistency, Reliability, Reference	Type of Validity/ Coefficient, Reference	Num- ber of Items Used/ Num- ber of Items in Scale	Emphasis
Physical	MOS-36	$\alpha = 0.89 - 0.91^{110}$	Convergent <i>r</i> = 0.96 ¹¹⁰	6/36	Positive physical health percep- tions and expec- tations
Spiritual	Existential well-being	$\alpha=0.78^{65}$	Convergent r = 0.31-0.6865	6/10	Sense of meaning and purpose in life
Psychological	Life Orienta- tion Test	$\alpha = 0.76^{69}$	Convergent r = 0.34-0.5569	6/12	Positve expectan- cies
Social	Perceived so- cial support friends and family	$\alpha = 0.84 - 0.91^{7.8}$	Convergent <i>r</i> = 0.25–0.72 ⁸	2/40	Perception of so- cial support available
Social	Perceived so- cial support	$\alpha = 0.85 - 0.91^{77}$	Divergent χ ² = 4.65, <i>p</i> < 0.05 ⁷⁷	4/12	Perception of being a valued support provider
Emotional	Sate self-es- teem scale	α = 0.72–0.88 ¹¹¹	Convergent <i>r</i> = 0.84 ¹¹¹	6/20	Secure self-identity and a sense of self-regard

The social scales were consolidated. Intellectual items written by the authors were added after the initial round of pilot testing.

ric properties of the new scale. In four pilot studies, the Perceived Wellness Survey demonstrated evidence of convergent validity (r = .37 to .56) and internal consistency ($\alpha = .89$ to .91). In the current study, the total scale internal consistency for the combined sample (n = 558) was α = .91. In the samples considered independently, total scale internal consistency ranged from $\alpha = .88$ to .93. The internal validity of the total scale is demonstrated by a high percentage of items (90%), with an item to total scale correlation greater than .30 in the four samples considered independently.

The scale was designed so that each of the subscale scores could also be used independently to assess wellness in each dimension. Practitioners may find that using the Perceived Wellness Survey in this man-

ner is an effective way of gaining additional perceptual data to more thoroughly diagnose before prescribing. The internal consistency estimates for each of the subscales in this sample were, physical ($\alpha = .81$), spiritual ($\alpha = .77$), psychological, (α = .71), social (α = .64), emotional $(\alpha = .74)$, and intellectual $(\alpha = .64)$. Nunnally¹⁰⁵ has suggested that an alpha coefficient of .70 is the minimum acceptable value for internal consistency reliability. However, the internal consistency coefficient is directly dependent on the number of items in a given scale. Thus, to assess the degree to which the coefficients were a function of subscale length, the split-half reliability of each subscale was assessed. Correspondingly, the split-half correlation coefficients were, physical (r = .71), spiritual (r= .68), psychological, (r = .62), social (r = .52), emotional (r = .61), and intellectual (r = .53). Implications of these findings are outlined in the discussion.

Perceived Wellness Survey for Discriminant Validity. The Perceived Wellness Survey discriminant validity version consists of two sets of six statements derived from the Perceived Wellness Survey subscale definitions. One set of statements describes a well person and the other set describes an unwell person. Sample statements describing a well person are, "Identify five employees who seem to always be physically healthy," and "Identify five employees who seem to expect that positive things will result no matter what the circumstances." Sample statements describing an unwell person are, "Identify five employees who seem to always be physically unhealthy," and "Identify five employees who seem to be insecure with who they are." Five out of five experts familiar with the theoretical foundations of the Perceived Wellness Survey agreed that the Perceived Wellness Survey discriminant validity version statements accurately represented the content of the Perceived Wellness Survey subscales. Discriminant validity was assessed by asking four nursing/wellness/EAP professionals at one of the companies to identify, from a list of employees who had completed the Perceived Wellness Survey, the five employees who best exemplified the set of statements describing a well person and the set of statements describing an unwell person. The method of estimating discriminant validity is described in the Analysis section.

Perceived Wellness Survey for Face Valid-

ity. Face validity is the "extent to which an instrument looks like it measures what it is intended to measure"¹⁰⁵ (345). Face validity was assessed by administering a modified version of the Perceived Wellness Survey to the student sample. The Perceived Wellness Survey face validity version and Perceived Wellness Survey items were identical, but the item order of the Perceived Wellness Survey face validity version was completely randomized. In addition, the

Perceived Wellness Survey face validity version contained a description of each dimension of wellness. Face validity was estimated by the degree to which students were able to identify correctly which dimension of wellness was reflected by each Perceived Wellness Survey item.

Analysis

The Perceived Wellness Survey model has six dimensions, all of which have proven to be significantly and positively correlated ($p \le .05$) with the Perceived Wellness Survey composite score and with each other in pilot research. In the current study, the data were first analyzed by estimating the extent of partial intercorrelations between the Perceived Wellness Survey and subscales after controlling for age and gender. Positive relationships were expected.

Next, discriminant validity was estimated. Four health-related professionals at one of the companies were each asked to identify five employees who best exemplified the set of statements describing both a well and an unwell person. The discriminant validity of the Perceived Wellness Survey was assessed by a *t*-test comparison of the Perceived Wellness Survey wellness composite score means between the well and unwell groups.

Face validity was estimated by students (n = 36) who were asked to match each of the items from the Perceived Wellness Survey face validity version to the appropriate dimension. The criterion for face validity was set *a priori* at $r \ge .80$ between the student matches and the correct matches.

Finally, the Perceived Wellness Survey items were factor analyzed using principal axis factoring with various solutions ranging from one to seven. The subject-to-variable ratio easily exceeded the minimum of 5 to 1 recommended by Gorsuch.¹⁰⁶ Two criteria were used to determine which solution best explained the data. First, the factor loadings were examined to see if the items clustered into intuitively meaningful groups. Second, a scree plot was examined to determine the most appropriate number of factors.

Because moderate intercorrela-

Table 2

Partial Correlation Coefficients of the Perceived Wellness Survey Composite with the Perceived Wellness Survey Subscales Controlling for Age and Gender (n = 537)*

Variable		1	2	3	4	5	6
1.	Wellness composite				÷		÷
2.	Physical wellness	0.58					
3.	Spiritual wellness	0.66	0.45				
4.	Psychological wellness	0.69	0.44	0.69			
5.	Social wellness	0.57	0.30	0.50	0.51		
6.	Emotional wellness	0.66	0.45	0.70	0.65	0.46	
7.	Intellectual wellness	0.67	0.40	0.59	0.55	0.40	0.54

* The sample size is smaller than the overall sample size due to missing data. All values are significant at $p \le 0.01$.

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tions among the subscales existed in preliminary research, an oblique rotation was used for all of these analyses except for the one factor solution which could not be rotated.¹⁰⁷ The intercorrelations among the subscales also indicated that the underlying content was more alike than different. Thus, although the Perceived Wellness Survey model incorporates six dimensions of wellness, the results of the factor analysis were not expected to yield six separate factors. In fact, this finding would be unusual given the perceptual nature of the items.

RESULTS

As expected, each subscale was significantly correlated ($p \le .05$) with the composite and with each other (Table 2). The positive partial correlation between the composite and each of the subscales was not surprising since the subscale scores were used to compute the composite. However, it was important to examine the intercorrelation matrix to determine whether the subscales were positively or negatively correlated with the wellness composite. The pattern of positive correlations provides preliminary support for the model. Perceived Wellness Survey means and standard deviations for all four groups are displayed in Table 3.

Health professionals who were familiar with the participants in one of the corporate samples were able to identify from a list of health screen-

Table 3

Perceived Wellness Survey Sample Means and Standard Deviations

Group	Mean	SD	
3M 1	16.51	3.54	
3M 2	15.31	3.34	
MuRata	15.35	4.04	
Students	16.49	3.12	

3M 1 = Administrative center (n = 295);3M 2 = manufacturing plant (n = 98); Mu-Rata (n = 53); Students (n = 112).

ing participants, respectively, those with high and low perceived wellness $(t = 5.46, p \le .05, df = 38)$. Thus, the Perceived Wellness Survey demonstrated preliminary evidence of discriminant validity. In addition, students were able to match accurately the Perceived Wellness Survey items and dimensions. The correlation between student matches of item-to-dimension and the intended match was very high $(r = .98, p \le .05)$, indicating that when provided with wellness definitions, lay individuals were successful in discerning the content of Perceived Wellness Survey items.

Because all items clustered on one factor and because the first and second factors were widely separated on the scree plot, a one-factor solution accounting for 24% of the common variance seemed to be the most parsimonious interpretation of the data. However, some have suggested that factor analysis of agree-disagree scales such as the Perceived Wellness Survey sometimes reveal unwanted popularity factors which have no relevance in terms of scale content.¹⁰⁸ To check whether the one-factor solution was indeed the best explanation of the data, two methods were used. First, a matrix of intra-item correlation coefficients was principal axis factored with a one-, two-, and three-factor solution. Of these, a one-factor solution was clearly the most meaningful and parsimonious. Second, in order to determine whether there were any latent factors, a matrix of subscale intercorrelations was principal axis factored with a one-, two-, and three-factor solution. Again, a one-factor solution provided the best explanation of the data.

In summary, all of the items loaded on a single factor which was labeled perceived wellness (Table 4). All but two items loaded above .30, indicating that the Perceived Wellness Survey possesses reasonable factorial validity.

DISCUSSION

Health professionals were able to discriminate between those with high and low levels of perceived wellness, and students were able to match Perceived Wellness Survey items and subscale definitions. The high alpha coefficient for the total sample ($\alpha =$.91) and for the samples considered independently ($\alpha =$.88 to .93) provides strong support for the internal consistency of the overall scale. Collectively, these findings provide firm support for the content validity and reliability of the Perceived Wellness Survey.

As expected, the results of the factor analysis suggest that the Perceived Wellness Survey is a unidimensional scale. Because the content of the items is so related and because all of the items are perceptual, this is not surprising. This does not suggest that wellness is a unidimensional phenomenon, only that perceptions of wellness in hypothetical dimensions are more related by their perceptual nature than they are differentiated by their content. Interestingly, the strongest loading items (\geq .50), share only three common

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Table 4

Factor Loadings for the Perceived Wellness Survey (n = 556)

Items	Factor I Perceived Wellness
Emotional 1	0.38
Emotional 2	0.71
Emotional 3	0.56
Emotional 4	0.45
Emotional 5	0.64
Emotional 6	0.50
Spiritual 1	0.60
Spiritual 2	0.55
Spiritual 3	0.48
Spiritual 4	0.62
Spiritual 5	0.58
Spiritual 6	0.70
Social 1	0.36
Social 2	0.27*
Social 3	0.42
Social 4	0.37
Social 5	0.35
Social 6	0.49
Psychological 1	0.55
Psychological 2	0.45
Psychological 3	0.63
Psychological 4	0.55
Psychological 5	0.48
Psychological 6	0.44
Intellectual 1	0.54
Intellectual 2	0.25*
Intellectual 3	0.58
Intellectual 4	0.41
Intellectual 5	0.44
Intellectual 6	0.38
Physical 1	0.38
Physical 2	0.44
Physical 3	0.53
Physical 4	0.51
Physical 5	0.52
Physical 6	0.42

* Indicated loadings did not meet the minimum criteria of 0.30.

themes: (1) purpose in life, (2) optimism, and (3) self-esteem, strongly suggesting that the Perceived Wellness Survey is an affective construct. This may also explain why the social dimension was not any stronger than it was. Despite strong associations between social support measures and health in other studies,^{5–9} the social subscale is unique because it assesses perceptions of available *external* resources, whereas the other Perceived Wellness Survey subscales assess perceptions of available *internal* resources.

Each hypothetical wellness dimension is supported by a separate body of empirical inquiry and the content of each is conceptually robust. In addition, intervention programs based on each dimension may have a slightly different look and feel, and may appeal to different population segments even though the intervention outcomes may be highly similar. In this light, the wellness model and definitions remain useful as conceptual guidelines. In addition, practitioners may choose to use the subscale scores to assess perceived wellness in each dimension. In this regard, four of the six Perceived Wellness Survey subscales possessed acceptable estimates of alpha internal consistency. Based on the split-half correlations, the remaining two (social and intellectual) are also adequately consistent. Finally, the Perceived Wellness Survey as currently operationalized possesses evidence of discriminant and face validity.

This study has a few potential limitations. First, these data are subject to limitations commonly associated with self-report measures.¹⁰⁵ Typically, the error associated with self-report measures is viewed as a random error which must be controlled. However, this "error" may be valuable client information that has been previously ignored. As suggested earlier, health perceptions, which are truly unique to each individual, have demonstrated value as a source of predictive information.^{16,18,20}

Second, a self-selection bias may have existed because participants from both of the corporate samples were recruited during general health appraisal programs. Employees who voluntarily participate in health screenings have been shown to be healthier than the normal population.¹⁰⁹ The health-related variables in all four samples were indeed skewed in a healthful direction supporting this assertion. Random sample selection will improve the population distribution and may enhance the generalizability of future results. Interestingly, because the data were skewed toward positive health, the ability of the factor analyses to describe the structure of perceived wellness was limited. In spite of this, the results of the factor analysis supported the underlying perceptual nature of the Perceived Wellness Survey as previously suggested.

Further, wellness is probably best explained when accounting for cultural and environmental factors.^{23,28} Hence, researchers interested in applying the model or using the Perceived Wellness Survey are encouraged to consider wellness perceptions within a broader systems framework.^{28,30}

Overall, the findings were promising. Practitioners may find the Perceived Wellness Survey subscale and composite scores to be an additional source of useful information for individual level programming. For example, based on typical health assessment measures, an obese man would probably receive a recommendation that he modify his diet and commence a cardiovascular exercise program. If the Perceived Wellness Survey were used in addition to the common health assessment measures, it might become evident that the man's spiritual health is very low. His health prescription might then include a referral to an EAP counselor or to a course based on principles of spiritual health in addition to the previous recommendations.

Researchers may find the wellness composite score to be a parsimonious index of perceived wellness in several dimensions and a balance among dimensions. Additionally, use of the subscales as research tools may also be fruitful. The physical, spiritual, and intellectual subscales may be particularly useful given the lack of quality perceptual scales in these dimensions. The emotional, psychological, or social subscales may also be useful for brief assessments; however, an abundance of longer, more specific scales exist in these three dimensions.

Given the potential impact of the Perceived Wellness Survey for both practitioners and researchers, further research is warranted. Research efforts should be focused on establishing the construct and concurrent validity of the Perceived Wellness Survey. In addition, psychometric properties such as test-retest reliability need to be addressed. Finally, the value of the Perceived Wellness Survey as a perceptual measure of wellness could best be established by employing it concurrently with widely-used clinical, physiological, and behavioral measures of health to determine whether it indeed would provide additional information.

SO WHAT? Implications for Health Promotion Researchers and Practitioners

This study seems to provide support for the use of the Perceived Wellness Survey as a valid measure of wellness perceptions. Based on these preliminary results, health promotion practitioners may find wellness perceptions to be a fruitful addition to client profiles, which have been typically limited to clinical, physiological, and/or behavioral data. For example, the Perceived Wellness Survey subscale scores may assist practitioners in their efforts to more acutely focus programs on individual needs.

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Appendix

Psychological Items

- 1. I am always optimistic about my future.
- 7. I rarely count on good things happening to me.*
- 13. I always look on the bright side of things.
- 19. In the past, I have expected the best.
- 25. In the past, I hardly ever expected things to go my way.*
- 31. Things will not work out the way I want them to in the future.*

Emotional Items

- 2. There have been times when I felt inferior to most of the people I knew.*
- 8. In general, I feel confident about my abilities.
- 14. I sometimes think I am a worthless individual.*
- 20. I am uncertain about my ability to do things well in the future.*

- 26. I will always be secure with who I am.
- 32. In the past, I have felt sure of myself among strangers.

Social Items

- 3. Members of my family come to me for support.
- Sometimes I wonder if my family will really be there for me when I am in need.*
- 15. My friends know they can always confide in me and ask me for advice.
- 21. My family has been available to support me in the past.
- 27. In the past, I have not always had friends with whom I could share my joys and sorrows.*
- 33. My friends will be there for me when I need help.

Physical Items

- 4. My physical health has restricted me in the past.*
- 10. My body seems to resist physical illness very well.
- 16. My physical health is excellent.
- 22. Compared to people I know, my past physical health has been excellent.
- 28. I expect to always be physically healthy.
- 34. I expect my physical health to get worse.*

Spiritual Items

- 5. I believe that there is a real purpose for my life.
- 11. Life does not hold much future promise for me.*
- 17. Sometimes I don't understand what life is all about.*
- 23. I feel a sense of mission about my future.
- 29. I have felt in the past that my life was meaningless.*
- 35. It seems that my life has always had purpose.

Intellectual Items

- 6. I will always seek out activities that challenge me to think and reason.
- 12. I avoid activities which require me to concentrate.*
- Generally, I feel pleased with the amount of intellectual stimulation I receive in my daily life.
- 24. The amount of information that I process in a typical day is just about right for me (i.e., not [too much, not too little]).
- In the past, I have generally found intellectual challenges to be vital to my overall well-being.
- 36. My life has often seemed devoid of positive mental stimulation.*

The Perceived Wellness Survey Scoring Methods

- Score each item from 1, "Very strongly disagree" to 6, "Very strongly agree." Items with * are reverse scored.
- 2. Sum all of the subscale means. The result is the Wellness Magnitude.
- 3. Divide Wellness Magnitude by 6. The result is called "xbar."
- For each subscale, compute the following: (subscale mean - xbar)². The result is called subscale deviation.
- 5. Sum all of the subscale deviations, then divide the total by 5 (n - 1). The result is called the variance. Compute the Wellness Balance with the following formula ([square root of the variance] + 1.25). The 1.25 is added to the denominator to prevent a Wellness Balance of 0 from creating an invalid Wellness Composite.
- 6. Compute the Wellness Composite with the following formula: Wellness Magnitude ÷ Wellness Balance.
- 7. For a copy of the SPSS program used to score the Perceived Wellness Survey, please contact the author.