



Development and Preliminary Evaluation of a Positive Health Scale

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ABSTRACT

Background: Health educators have long advocated health promotion, yet their health measurement techniques have a pathogenic focus. Pathogenesis refers to the origin of a disease and the chain of events (precursors) leading to that disease. Traditional health measurement tools with this focus therefore measure health by assessing for the absence of disease or associated risk factors. Salutogenesis, as proposed by Aaron Antonovsky, refers to associated factors and precursors of good health similar to how pathogenesis focuses on associated factors and precursors of bad health. **Purpose:** This study proposes a health measurement scale with a salutogenic focus that measures health by assessing for the multidimensional capacity or potential for good health. **Methods:** Two samples of university students ($N=226$, $N=365$) were surveyed to develop and test the psychometric properties of the Salutogenic Wellness Promotion Scale (SWPS). **Results:** The SWPS demonstrated a multidimensional structure with good internal consistency, that positively correlated with and predicted perceived health ($p<.001$), and did not invoke socially desirable responses. **Discussion:** The SWPS demonstrated preliminary evidence of reliability and validity in its measurement of health potential. **Translation to Health Education Practice:** Using the SWPS could assist health educators in developing methodologies and practices that facilitate improved health status.

BACKGROUND

Pathology, the study of disease origins, has guided much of health measurement. Based on pathology, health has often been equated with the absence of disease, infirmity, and/or associated risk factors.¹ Although health status has dramatically improved over the last century and the conceptualization of health has evolved beyond a pathogenic focus, health measurement methods have not.²⁻⁵ While it may have once been acceptable to describe and measure health as the avoidance of death and disease, in contemporary society it is more appropriate to describe health as a capacity or potential. A new health measurement approach con-

sistent with this philosophy is proposed in this paper. The Salutogenic Wellness Promotion Scale (SWPS) was developed based on the work of Aaron Antonovsky, who first proposed the concept of salutogenesis. Salutogenesis evolved as a framework from which to investigate associated factors and precursors of good health similar to the way pathogenesis guides researchers to discover associated factors and precursors of bad health or disease.^{6,7}

In 1948, the World Health Organization (WHO) defined health as a complete state of physical, mental, and social well-being and *not merely the absence of disease and infirmity* [italics added].^{8,9} From this definition, one

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can infer that health is a multidimensional phenomenon. Ongoing research supports the WHO definition, and findings have demonstrated that health exists across multiple areas of life.^{3,5,7,10-12}

The conceptualization and field of health continue to evolve. Researchers have suggested that the conceptualization of health is in the third of three eras.¹³⁻¹⁵ The first era has been referred to as the communicable, bacteriology, or germ phase. This era began in ancient times and continues today with a focus on infectious disease. During this era, health measurement was crude, and it was assumed that if a person was living without a fatal disease and had observable physical health, his/her health status was good. When prevention and treatment efforts successfully reduced the incidence and severity of many infectious diseases, the second era of health began. The second era is marked by a shift from a focus on communicable diseases to a focus on chronic diseases. In this era, the health care infrastructure was expanded.¹³⁻¹⁵ Measurement of health in this era included assessment for the absence of risk factors (such as being sedentary or smoking) and tests to identify signs of disease. In essence, one was labeled as healthy in this era if neither illness nor major risk factors were present.^{4,13} The Health Risk Appraisal (HRA) was the hallmark measure of this era. While HRAs are useful in the measurement of risk factors, they do not measure the presence of physical, mental, or social well-being.^{16,17} Presently, an emerging view of health indicates that the field is moving into the health promotion era¹³⁻¹⁵ or the “third era of health.”^{9(p17)} As each era of health has evolved, the conceptualization and measurement of health have adapted.³ However, while the conceptualization of health has evolved in this health promotion era, its measurement has not.

In short, if absence of disease, infirmity, or risk factors is the standard, then health programs based on this standard would necessarily focus on the prevention of disease, illness, and risk factors rather than the promotion of physical, mental, and social well-being. Unfortunately, the basic

assumption in a pathogenic model is that if disease, infirmity, and risk factors are absent, then health is present.¹⁸ This is not necessarily true.

For example, traditional health measurement scales use a pathogenic framework even though data suggest that about 90 percent of the population self-report their health to be good to excellent.¹⁹ This finding suggests that ceiling effects may limit the usefulness of traditional scales for those considered generally healthy. For example, on the Short Form 36, emotional well-being is assessed by asking, “Have you felt downhearted and blue?” with response options ranging from “all of time” to “none of the time.” A response of “none of the time” is the *highest* score a participant can report for emotional well-being.²⁰ Importantly, not feeling downhearted or blue does *not* imply that a state of mental well-being is present—just that these depressive symptoms are not.²¹ A pathogenic philosophy is also evident in many scales that assess limitations rather than the presence of a desired quality.^{22,23}

These limitations are also evident in national health assessment surveys such as the Behavior Risk Factor Surveillance System (BRFSS). The rationale for the BRFSS content is based on the estimate of the Centers for Disease Control and Prevention that half of all deaths in the United States are the result of risk behaviors. The BRFSS includes items pertaining to tobacco use, automobile injuries, fires and burns, poor diet, sexual behaviors, alcohol consumption, and lack of exercise. Although many BRFSS items have a descriptive function with regard to nutrition and exercise, many have a pathogenic orientation because of the BRFSS focus on chronic disease and injury.²⁴ For example, the BRFSS includes four items that assess Health Related Quality of Life, which refers to aspects of life that are influenced by mental and physical well-being. Although the goal is to assess the presence of well-being, a careful review of these items indicates that, on these items, excellent health status is inferred from the absence of any limitations or problems. For example, “Now thinking about your mental health, for how many

days during the past 30 days was your mental health *not* good?”¹²

The value of avoiding or limiting risk factors, disease, and infirmity is well-accepted, but perhaps information about *positive* health could enhance an understanding of health status.^{1-5,17,18,25-30} Past studies have demonstrated that risk or illness measures are not as predictive of future health status as generally believed, leading researchers to assume more information is needed.² Based on these findings, researchers suggest that including positive health measures may provide helpful complementary information about health status. This incorporation of positive measures with traditional measures may provide a more complete picture and understanding of health status.¹ Such a transformation is underway in psychology with the development of positive psychology, which readily acknowledges, for instance, that if people are not clinically depressed, they may still need positive reasons to make life worth living.^{31,32} Additionally, Herzberg’s work, based on his Motivation-Hygiene Theory, demonstrated that the absence of dissatisfaction did not mean satisfaction was present.^{33,34} Herzberg discovered that more was needed than the elimination or absence of factors related to dissatisfaction if satisfaction was the desired outcome. Such a transformation is needed in health assessment as well.

Consistent with the third era of health, the measurement of health should be based on capacity or potential,^{1,3} and should therefore use a strength-based or health-causing theoretical framework.^{35,36} This was implied by the European Union Commissioner David Byrne during the introduction of its new health model when he stated, “The time has come for a change of emphasis from treating ill health to promoting good health.”^{37(p7)} Further, as indicated by the WHO definition, measurement of health should be multidimensional.⁹ Besides the physical, mental, and social dimensions cited by the WHO, other commonly cited components of health include occupational or vocational,^{38,39} spiritual,^{39,40} emotional,^{39,41} and environmental^{39,42,43} dimensions. Each



of these dimensions of health is unique but interdependent and overlapping. For example, when an individual is engaged in activities related to one's vocation, these actions almost always overlap with the mental, intellectual, social, physical, emotional, and environmental domains.

PURPOSE

The purpose of this study was to develop and evaluate the psychometric properties of a multidimensional health measurement scale. This new scale was based on a salutogenic philosophy and was designed to assess the presence of health potential to complement and supplement existing health status measures.

METHODS

Pilot Study 1

Sample

The sample for Pilot Study 1 included 226 volunteer student participants who were enrolled in introductory health and psychology undergraduate classes at a large public university in the southwest United States. Students received credit for participation; this study was one option that students could choose to participate in for credit. Approximately 60% of the participants were female, 40% were male, and participants ranged in age from 18 to 37 with a mean age of 22.4 years.

Procedure

To generate items for this scale, a number of existing health scales were examined. Items reviewed that assessed relevant concepts in the physical, social, intellectual, emotional, vocational, spiritual, or environmental dimensions were rewritten to assess for the presence, rather than absence, of the related health action. For example, rather than asking if any limitations prohibited a person from engaging in physical activity, the new item would ask how often the individual engaged in physical activity or sport. Additionally, original items were added to represent areas not adequately assessed. Two hundred relevant items were created and/or modified. Overlapping and unclear items

were eliminated, yielding 150 items that were tested. All items used the following response options on a five-point Likert scale: Always, Very often, Often, Sometimes, and Never.

The study began after receiving approval from the university's Institutional Review Board (IRB). The researchers entered classrooms to administer the 150-item positive health questionnaire. Each participant received and read an informed consent form, approved by the university's IRB. Completion of the questionnaire indicated consent.

Results

The data were analyzed with an exploratory principal components factor analysis. The retention criterion for items was a rotated factor loading of at least .40 on one dimension with no loading greater than .275 on any other dimension.⁴⁴ The factor analysis of these data yielded seven factors with eigenvalues greater than one; however, only 14 items met the above criteria and loaded adequately on any dimension. For each of the seven dimensions, there was at least one item with a sufficient, unique loading.

Pilot Study 2

Sample

The sample for Pilot Study 2 included 365 students who were enrolled in introductory health and/or psychology undergraduate classes at the same southwestern university in the United States. Students voluntarily chose to participate in this study. Approximately 60% of the participants were female and 40% were male, and their ages ranged from 18 to 78 with a mean age of 22.7 years; 90% were under 30 years of age. Participants, individually and in groups, were recruited either from introductory psychology classes or introductory exercise and health classes.

Procedure

The final 14 items identified by the exploratory principal components factor analysis in Pilot Study 1 were retained and augmented with a new set of 86 items that were generated in the same manner as the original 150 items. The participants completed the revised 100-item questionnaire in their classrooms after reading the consent form approved by the university's IRB.

Completion of the questionnaire indicated consent. Response options were the same as those described in Pilot Study 1. Researchers entered classrooms to administer the questionnaire. To accommodate participants, on 10 different occasions over a two-week time frame, at various locations and times, classroom settings were used for groups of participants to complete all survey instruments and demographic questionnaire. Completion of the questionnaire took approximately 15 minutes.

Results

Data were analyzed with an exploratory principal components factor analysis using the same inclusion criteria described above for Pilot Study 1. This analysis again yielded seven factors with eigenvalues greater than one. In this analysis, 26 items each loaded significantly on one of these seven factors; four items loaded sufficiently and uniquely on each of five factors, and three items loaded sufficiently and uniquely on the other two factors. A review of each cluster of items suggested that the seven factors represented the physical, intellectual, social, emotional, spiritual, vocational, and environmental areas. This solution was consistent with the seven theoretical health dimensions identified in the literature review.

The Current Study

A mixed group of 10 health professionals working in the field and at the university reviewed the 26 items identified in Pilot Study 2 for face validity. By consensus, these health experts agreed that the items adequately assessed factors related to health with regard to the overall scale and the seven identified domains. These 26 items were then designated as a preliminary version of the Salutogenic Wellness Promotion Scale (SWPS). The validity and reliability testing of the SWPS were examined, and the results of that investigation are described next.

Sample

The convenience sample for the current study consisted of the 365 undergraduate students who participated in Pilot Study 2. The data collected from survey instruments in Pilot Study 2 were reanalyzed



using only the 26 items designated to be in the preliminary version of the SWPS based on the exploratory principal components factor analysis.

Measures

Salutogenic Wellness Promotion Scale. The 26-item preliminary version of the SWPS was used to measure the presence of health promoting factors. Items queried about engagement in health promoting actions related to physical, intellectual, social, emotional, spiritual, vocational, and environmental areas of life. To complete the scale, participants responded to each item by indicating how often they engaged in the listed cognition or behavior on the following Likert scale: 5 (Always), 4 (Very often), 3 (Often), 2 (Sometimes), and 1 (Never).

Perceived Health. The WHO's definition of health, "A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity,"⁹ was used to define health for a perceived health ranking. Participants were asked to define health using this definition when ranking their perceived state of health on a 10-point scale ranging from 1 (Poor health) to 10 (Excellent health).

Social Desirability. Measures that assess attributes commonly considered to be positive have the potential for participants to confound results by providing responses that are socially desirable. Therefore, socially desirable response patterns were assessed to determine if they were a source of bias or controllable error. To determine if a social desirability tendency existed, the Balanced Inventory of Desirable Responding (BIDR) Version 6 was used. The BIDR measures both Impression Management, the desire to present oneself favorably or mislead others, and Self-Deception, an overly positive representation of self.⁴⁵ Respondents marked their responses to each item using a seven-point Likert scale ranging from Not True to Very True.

Demographics. Basic demographic data including age and sex were collected.

ANALYSIS

Dimensionality. To determine the di-

mensionality of the SWPS, a confirmatory factor analysis using maximum likelihood extraction with an oblimin rotation was conducted. Maximum likelihood and oblimin methods were used because health contains unique, interdependent dimensions that are not necessarily orthogonal. Orthogonality is an assumption for principle components extractions and varimax rotations.⁴⁴

Social Desirability. A correlation between the social desirability scale (BIDR) and the preliminary version of the SWPS and each of its subscales was conducted to determine if it invoked socially desirable responses.

Reliability. Cronbach's alpha reliabilities were calculated to determine the internal consistency of the total SWPS and each derived subscale. Cronbach's alpha is a generalized internal consistency reliability coefficient that is more versatile than other methods, is effective for tests using Likert scales, and reflects the extent to which the items of a measure assess a common characteristic.⁴⁶ Item-total correlations were computed to determine if each of the scale items correlated with the total SWPS, and if each of the subscale items correlated with their respective subscale totals.

Validity. Validity tests were completed to determine whether the SWPS assesses what it purports to measure.⁴⁷ The relationships of health promoting actions to perceived health were investigated to test the construct validity of the SWPS. Pearson correlations between the total SWPS and subscale scores and the measure of perceived health were conducted. A regression analysis was also completed using perceived health as the dependent variable and the seven factors as independent variables to determine which of the factors were the strongest predictors.

RESULTS

Dimensionality

An eigenvalue greater than one was used as a cutoff for the number of factors or dimensions to be extracted.⁴⁴ The maximum likelihood extraction factor analysis yielded seven factors with eigenvalues greater than one. To place an item on a factor, criterion

determinants of at least .40 loading and no other loading above .275 were considered adequate.⁴⁴ The analysis determined that all 26 items met the identified criteria (Table 1). Four items each were clustered on dimensions one, three, four, six, and seven. Three items each were clustered on dimensions two and five. The seven clusters of items accounted for 66 percent of the variance, and each factor contributed at least five percent of the total variance explained by the solution. Reliability of each factor was greater than 0.6.

Content analysis procedures included a thorough review of the literature and consultation with academics in the field. These procedures indicated that each factor assessed a specific dimension of health (see Table 1). Results suggested that factor one assesses the *Vocational Dimension*. This factor assesses whether work contributes to positive well-being by querying if work was satisfying, inspirational, enjoyable, and if work was thought to be important. Factor two assesses the *Spiritual Dimension* of positive health by querying about prayer, religious activities, and consulting a higher power. The third factor assesses the *Emotional Dimension* of health by querying about life management, coping skills, ability to manage life well, and ability to create opportunities from difficulties. The fourth factor assesses the *Social Dimension* of health by analyzing how often a person communicates with others, meets new people, has pleasant interactions, and shows affection. The fifth factor evaluates the *Environmental Dimension* of health as it determines how often action was taken to protect the environment, support pro-environment political efforts, and recycle. The sixth dimension focuses on the *Intellectual Dimension* of health and assesses efforts to improve writing skills, verbal skills, how often people engage in extended thought, and how often they read. The seventh factor assesses the *Physical Dimension* of health by querying about sport, physical activity, and nutritional intake.

Social Desirability

Correlations between the preliminary version of the total SWPS and its subscales



Table 1. Rotated SWPS Factor Loadings (26 items) from Confirmatory Factor Analysis*

Item	1 Vocational	2 Environmental	3 Social	4 Emotional	5 Spiritual	6 Intellectual	7 Physical
Satisfy	.95	-.04	.01	-.03	.03	.03	-.05
Inspire	.81	.02	.02	-.05	.02	.03	.01
Enjoy	.79	-.03	.03	.01	.02	.00	-.01
Important	.68	.04	-.03	.12	-.01	-.05	.04
Protect	-.07	.90	-.05	.04	.02	-.01	.00
Support	.03	.83	.02	-.02	.03	.00	.05
Recycle	.03	.78	.05	.00	-.04	.01	-.04
Communicate	.01	.04	.84	.04	.09	-.03	-.06
Network	.04	-.04	.81	-.05	-.04	.08	.04
Interact	-.05	.04	.78	.09	.01	.03	-.03
Affection	.07	.02	.58	-.06	-.04	.00	.14
Cope	.02	-.01	.10	.86	.11	-.08	-.11
Mng Stress	.06	.03	-.09	.67	-.14	.08	.06
Handle Life	.02	.05	.07	.65	-.05	.07	.07
Opportunity	-.01	.00	-.01	.56	.10	.02	.03
Higher Power	-.04	.02	.10	.09	.78	-.02	-.07
Religiosity	.05	-.09	-.03	-.01	.67	.15	.15
Pray	.08	.06	-.01	-.02	.50	.03	-.01
Write Skill	.02	.03	.00	.07	-.11	.77	-.05
Verbal Skill	.09	.01	.07	.04	-.07	.71	-.03
Read	-.01	-.01	.11	-.08	.09	.40	.10
Thinking	-.05	.00	-.06	.02	.13	.40	.00
Phys Activity	-.03	-.01	.09	.06	-.16	-.02	.67
Sport	.16	.11	.06	-.05	.00	.05	.54
Whole Foods	-.01	-.03	.11	.19	.18	.01	.43
Food Knwldg	.02	.06	-.06	-.03	.27	.03	.42
Eigenvalue	5.92	2.26	2.20	2.03	1.90	1.55	1.30
% Variance	22.8	8.7	8.5	7.8	7.3	6.0	4.0
Alpha	0.89	0.87	0.85	0.79	0.70	0.69	0.66

*Extraction Method: Maximum Likelihood. Rotation Method: Oblimin with Kaiser Normalization Rotation converged in 6 iterations.

and the BIDR were negative for the total BIDR and both Impression Management and Self-Deception subscales. These negative correlations indicate the total SWPS and its subscales did not invoke socially desirable responses (Table 2).

Reliability

The overall SWPS internal consistency

reliability measure was .85, and the alphas of each subscale ranged from .89 to .66 (see Table 1). Item-total correlations of the scale items with the total SWPS, and of the subscale items with their respective subscale totals ranged from .39 to .85. All but one of the correlations were greater than .42, suggesting that the correlation of each item to

the total scale was sufficient.⁴⁸ These results indicate that the internal consistency of the total SWPS and its subscales would not be improved by the removal of any items.

Validity

The correlation between the SWPS total scale score and the rating of perceived health was statistically significant and positive, in-



Table 2. Correlations between the SWPS and BIDR

	BIDR - Self Deception	BIDR - Impression Management	BIDR Total
SWPS Total	- 0.32**	- 0.23**	- 0.31**
Emotional	- 0.37**	- 0.14*	- 0.30**
Vocational	- 0.13*	- 0.09	- 0.13*
Environmental	- 0.14**	- 0.17**	- 0.18**
Social	- 0.20**	- 0.07	- 0.14**
Intellectual	- 0.13*	- 0.139**	- 0.15**
Physical	- 0.20**	- 0.12*	- 0.18
Spiritual	- 0.13*	- 0.22	- 0.21

** $p < 0.01$; * $p < .05$

dicating that the more an individual engaged in health promotion actions as measured by the SWPS, the higher he or she described perceived health ($r=0.24$, $p < 0.001$). Statistically significant correlations were also observed between perceived health and the emotional ($r=0.27$, $p < 0.001$), vocational ($r=0.13$, $p=0.013$), spiritual ($r=0.11$, $p=0.034$), and physical ($r=0.27$, $p < 0.001$) dimensions.

The regression analysis using perceived health as the dependent variable and the seven factors as independent variables found that the physical factor accounted for the greatest variance in perceived health (Adj R square=.071, $p=.001$). The addition of the emotional factor, (R square change=.032) significantly increased the variance accounted for in the final model (Adj R square=.102, $p=.001$).

DISCUSSION

As health educators address individual health needs and work to enhance health status, the development of methods to assess health potential using a salutogenic framework seems appropriate. This research provides evidence that the SWPS holds promise as a measure of positive health. The SWPS provides a valid and reliable measure of the presence of multiple factors associated with health and it does not invoke socially desired responses. The SWPS had a modest relationship to perceived health, a valid predictor of

health status.^{1,49} Traditional health measurement has disproportionately focused on elimination, treatment, and/or management of disease and infirmity—negative health. While these efforts have improved longevity and quality of life through treatment, management, and/or eradication of pathology, to continue to improve general health status, the health field must expand its vision of health toward precursors of positive health. The need for measurement of positive health and its precursors leaves an assessment gap. Filling this measurement gap could lead to the development of programs and interventions to manage and promote positive health and its precursors.

The 26-item SWPS measures positive health potential along seven health-promoting dimensions: physical, social, emotional, vocational, intellectual, spiritual, and environmental. Each dimension assesses actions that research has documented to be health-promoting. The physical construct measures physical movement in sport or lifestyle and nutrition from food intake.^{29,50} The social construct measures network and relationship building interpersonal activities.⁵¹⁻⁵³ The emotional construct measures the ability to effectively manage emotions.^{41,54} The vocational construct measures perceived value and importance of vocation.^{55,56} The intellectual construct measures efforts to improve verbal, reading, and thinking skills.^{5,57} The spiritual construct measures search for

meaning and religiosity.^{40, 58} The environmental construct measures activities to support laws and efforts to sustain and enhance personal and global environment.^{43,59}

The SWPS scores indicated that those who engaged in multiple health promoting actions reported better perceived health status than those who engaged in fewer health promoting actions. Additionally, because the SWPS summed actions across seven dimensions, it appears to support past research which reported that multiple health actions have a cumulative beneficial effect on health status.^{29,60}

Positive health assessments provide a complementary review of actions related to health. Previous research has documented discriminating value of positive health assessments. These studies have shown that assessing positive health provides an effective method to discriminate health status levels.^{1,2} It is likely that use of positive health assessments will lead to an increased understanding of factors that facilitate movement toward health.

As with all studies, the findings should be interpreted with the limitations in mind. A cross-sectional design was used, so causality cannot be determined and other factors not assessed may account for the observed relationships. A convenience sample was used and this limits the generalizability of the findings. There are limitations associated with the use of a single-item measure of per-



ceived health. Also, not all of the subscales of the SWPS had a significant relationship with perceived health, and two subscales had internal consistencies just below what is considered adequate, suggesting the need for further refinement and testing. Although there are several limitations, these preliminary tests provide a sound basis for future research. Future studies should investigate the predictive, divergent, and convergent validity and test-retest reliability of the SWPS and its subscales, as well as examine its psychometric properties in diverse populations. Although more testing and development is needed, the preliminary tests of the SWPS indicate potential. Use of this scale as a positive health status measure may lead to the development and use of interventions and environmental changes that enhance health promotion efforts.

TRANSLATION TO HEALTH EDUCATION PRACTICE

The salutogenic philosophy proposed by Antonovsky formed the basis for a new health measurement tool, the SWPS. The SWPS assesses health-promoting actions in seven empirically derived health dimensions of life (physical, emotional, vocational, intellectual, social, spiritual, and environmental) that build health potential and capacity. Common experience indicates that we can only manage that which we measure.⁶¹⁻⁶³ For example, we regularly measure cholesterol, weight, and blood pressure and also have many strategies and programs to manage these measured parameters. Therefore, using this scale in practice to measure positive health potential could attract more attention and emphasis on positive health, and measurement of positive health may lead to interventions to develop health potential.

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