Research Article

Evaluation of the Reliability and Validity of an Adult Version of the Salutogenic Wellness Promotion Scale (SWPS)

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ABSTRACT

Background: *Traditional health measurement tools use a pathogenic, or disease origins framework, to assess for the absence of disease or risk factors. Good or positive health, however, is more than the absence of disease and current tools do not reflect this.* ***Purpose:*** *The purpose of this study was to test the psychometric properties of the adult version of the multidimensional Salutogenic Wellness Promotion Scale (SWPS), a tool designed to measure positive health.* ***Methods:*** *Building on the previously validated young adult version of the SWPS, new scale items were developed for working adults. A sample of 304 administrative, academics, and staff personnel tested the psychometric properties of the adult version of the SWPS.* ***Results:*** *The SWPS demonstrated it had a seven factor multidimensional structure, had good internal consistency, and was positively correlated with perceived health ($p<.0001$) and life satisfaction ($p<.001$). Validity was also supported by negative correlations between the SWPS and both a depression and symptom measure.* ***Discussion:*** *The SWPS demonstrated good evidence of reliability and validity and fills a positive health status assessment need.* ***Translation to Health EducationPractice:*** *Using the SWPS with adult populations could assist health educators in their development of effective health promotion practices.*

BACKGROUND

The idea and concept of positive health has been discussed since the 1950s. For example, Abraham Maslow proposed possible reciprocal benefits for individuals and society if we would work towards positive health[1] and later introduced the concept of positive psychology.[2] Similar positive health concepts were proposed by Dunn[3,4] in his articles and book [5] about high level wellness for man and society. Dunn articulated that there must be more than a simple state of "unsickness."[5 (p2)] In 1972 Breslow, in supporting the idea of positive health, proposed the development of a quantitative measure for the positive or physical, mental, and social well-being portion of the WHO's definition of health.[6] If positive health is the desired outcome, it should be necessary to not only work to prevent and treat disease, but also to develop methodologies and strategies to promote physical, mental, and social well-being.

Past and current researchers[5, 7-12] have proposed that we can do better than simply be free from risk factors and disease. As the World Health Organization (WHO) definition proclaims, health is …not merely the absence of disease and infirmity…it is (the presence) of physical, mental, and social well-being.[13, 14] Although positive health outcomes are desired, health professionals continue to use pathology—the study of disease origins—as their underlying framework when working to develop health pro-

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grams.[15,16] An assumption in that approach is that the absence of pathology-related problems represents the presence of good health. This pathology-related approach has guided the work of health educators as they have developed assessment methods and techniques that rely on identifying and measuring health as the absence of deficits, disorders, and dysfunctions.[17,18] The use of such assessments to guide program planning has therefore led to the development of interventions and programs aimed at the elimination of these problems.

As health status has improved and its conceptualization has changed, concurrent changes in the work focus of health professionals have also occurred.[15,19] Over the past century, the main focus of health professionals had to be on germs and communicable or infectious diseases because of their associated lethal consequences. As medicine evolved and management of illness and disease improved, the health professional's focus was able to evolve toward treatment and health care infrastructure expansion. During this time, health professionals also developed a focus on prevention and used Health Risk Appraisals (HRAs) to identify and treat risk factors associated with disease.[20] Effective primary, secondary, and tertiary prevention techniques evolved from this focus. Today the health field continues to build on the gains in previous eras, but the focus has evolved toward learning how to build health's enabling capacity and potential by treating health as a resource.[21-24]

Good or positive health is more than the absence of disease, and the development of a tool to measure positive health in adults would be a valuable resource. Currently, over 90% of the current general population in the U.S. has self-reported their health as good to excellent.[25] People expect to be able to live a fully functioning life and not be hampered by ill health. To help people reach this expectation, health professionals must not only continue to work at preventing and treating ill-health but also to put emphasis into the evolved conceptualization of health where it has been viewed as an enabling capacity and potential.[22]

Although the conceptualization of health and the focus of health professionals continue to change, health status measurement tools have not. To be consistent with the current conceptualization of health, in what has been called the "Third Era of Health," [22 (p17)] a positive health measurement tool is needed. As David Byrne, the European Union Commissioner explained, "The time has come for a change of emphasis from treating ill health to promoting good health." [26 (p7)] To meet these needs, a new health measurement tool should assess the presence of health promoting factors in such a way as to stimulate the development of interventions for or invitations to positive health programs. The SWPS was designed to meet these needs by measuring health potential or capacity.

The Salutogenic Wellness Promotion Scale (SWPS) was designed to measure health potential and fill the assessment need for positive health assessments that has been identified by practitioners and researchers.[15,16,27] Up until now the SWPS has been used as an assessment tool for use with young adults. The young adult SWPS used Antonovsky's concept of salutogenesis—the study of health origins[12] as its base model for development. The young adult SWPS used a seven factor multidimensional structure to assess an individual's health promoting actions in the physical, social, emotional, spiritual, intellectual, vocational, and environmental areas of life. This scale has been validated with young adults at a university setting.[28] To help meet the needs of working adults, an adult version of the SWPS has now been designed.

PURPOSE

The purpose of this study was to evaluate the psychometric properties of the adult version of the multidimensional positive health measurement scale, the Salutogenic Wellness Promotion Scale (SWPS). The scale tested was an adaptation of the previously validated young adult version of the SWPS.[28] Like the young adult version, this version was designed to assess the presence of health potential in multiple dimensions and to work as a supplementary complement to existing pathogenic based health status measures.

METHODS

Sample

A random sample of 304 employees at a private university in the southeastern United States voluntarily participated in this study. Participating employees worked in several areas at the university including administration (executive, financial, organizational), academics (classroom, instruction, research), support staff (office, clerical), or service staff (campus and or physical plant operations). Eligible employees included all individuals 18 years of age or older currently employed by the studied university.

Procedure

The adult SWPS assessed health potential through self-report. Building on the previously validated young adult version of the SWPS, new scale items were developed to better reflect the working adult populations rather than college students. Expert review by ten health professionals with expertise in assessment indicated that appropriate adjustments were made to the revised scale and that it had face validity to assess a working adult population. The revised items for the adult version of the SWPS were designed to assess health-promoting actions in the seven dimensions or latent constructs that emerged in the original version.

After receiving Institutional Review Board approval for the study, two universities, separated by 100 miles, cooperated to conduct the study. One university served as the studied university where data were collected from working adults. The other university served as the research university and coordinated the research process. Partners at the studied university numbered a list of all 1024 eligible employees and matched each employee to a random number list provided by the research university to create a random sample.

To complete the study, the questionnaires were uploaded to an online format to provide participants access to the question-

naires. Following this setup, coordinators contacted employees identified by the random number list with an approved request letter via email. Coordinators at the studied university made follow-up telephone calls. Entry into a drawing to win one of five $20 gift certificates to the local mall served as an incentive to participate and was described in the request letter. Coordinators continued to contact randomly selected participants until at least 300 employees completed the questionnaires.

Participant request letters asked participants to complete six questionnaires about health status, lifestyle habits, depression, symptoms, satisfaction, and demographics. To complete the questionnaires, participants were provided a unique URL in the request letter that provided them with access to the questionnaires. To assure anonymity of data, those at the researching university were blinded to participant identities and those at the studied university were blinded to participant responses, so neither party could match identities to questionnaire responses. Only authorized researchers at the university conducting the research had access to the secured online database that collected participant questionnaire responses.

Measures

Participants responded to:

- A question that assessed perceived health
- The Salutogenic Wellness Promotion Scale
- The Center for Epidemiological Studies Depression (CES-D) scale
- The Memorial Symptom Assessment Scale– Short Form (MSAS-SF)
- The Satisfaction With Life Scale (SWLS)
- Questions related to demographics.

Each of these six sections is described below.

Perceived Health. Using the WHO definition of health as a basis, ("Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity") participants were asked to rank their health status on a five-point Likert scale, with responses ranging from "1-poor" to "5-excellent."

Salutogenic Wellness Promotion Scale (SWPS). The 25-item multidimensional positive health scale queried participants about their health-promoting actions in seven dimensions. For the physical construct, items assessed physical activity and nutrition choices. For the social construct, items assessed network and relationship building interpersonal actions. For the emotional construct, items assessed the participant's ability to manage their emotions. For the vocational construct, items assessed participant's perception of vocational value and importance. For the intellectual construct, items assessed efforts to improve verbal and writing skills. For the spiritual construct, items assessed actions to develop spirituality through meaning and religion. Additionally, for the environmental construct, items assessed actions to support and promote a healthy environment. Each scale question asked participants to indicate how often they engaged in the identified item on a six-point Likert scale, with responses ranging from "0-never" to "5-always."

Center for Epidemiological Studies Depression (CES-D). The CES-D is a 20-item self-report scale that measures depressive symptoms. It was developed in 1976 to study depression in the general adult population (aged 18 or older) by the Center for Epidemiologic Studies.[29] The scale has been found to be reliable (α>.85) in previous research.[30]

Memorial Symptom Assessment Scale–Short Form (MSAS-SF). The Memorial Symptom Assessment Scale is a self-report instrument that queries 32 physical symptoms during the previous week. Tests have documented adequate reliability and validity for use with adult populations.[31]

Satisfaction With Life Scale (SWLS). The SWLS is a five-item assessment of life satisfaction that evaluates a person's cognitive-judgmental assessment of their satisfaction of life and does not invoke socially desirable responses. The SWLS is a valid and reliable measure (α = .87) of life satisfaction.[32]

Demographic questions. Subjects were asked personal and work-related questions. Personal information obtained included their gender, age, ethnicity, height, and weight, as well as income level, marital status and education (highest degree earned) and hours of involvement in volunteer activities. They were also asked about their physical work area (administration, academics, support staff, service staff, other), type of work day (typical eight hour day, non traditional eight hour day, or part-time work).

ANALYSIS

Dimensionality

Dimensionality was determined using Principle Axis Factoring and a direct oblimin rotation due the expectation of unique, interdependent, but not orthogonal dimensions. Principle Axis Factoring is a widely supported technique in the psychometric literature and it has been recommended for scale development.[33,34]

Reliability

To determine internal consistency of dimensions and total scale, Cronbach's alphas were calculated. It is the recommended reliability test for instruments using a Likert scale.[35] Item correlations and item-total correlations were also computed to determine the relationships among scale items, subscale scores, and total SWPS scores.

Validity

Multiple validity tests were used to determine if the SWPS measures what it purports to measure. Pearson correlation coefficients were calculated between subscale and total SWPS scores with perceived health, depression scale (CESD), symptom scale (MSAS-SF), and satisfaction scale (SWLS). The total score of the SWPS was calculated as an average. Averages were calculated for each dimension by summing items and dividing the sum by the number of items in that dimension. Calculating dimension scores in this manner allows direct comparisons, regardless of the number of items included. The total score for the SWPS was calculated by using the sum of the average scores for each dimension. Summing average scores gives equal weight to each dimension's score in the total score.

RESULTS

Sample

The sampling procedure produced 304 usable responses. The average age of respondents was 43.7 years (range 23 – 76 years). Based on self-reported height and weight, the average BMI was 26.7 (range 17.8 – 49.7). Table 1 describes other demographic characteristics.

Dimensionality

The Kaiser Rule of eigenvalue greater than one was used to determine factors or dimensions to extract. The principle axis extraction method produced seven dimensions using this criterion. Initial eigenvalues explained 71.6% of the variance. Twenty-five items met a criterion of at least a 0.40 loading on one dimension (lowest loading 0.42) and no loading on any other dimension more than .20 (next highest loading 0.19). (Table 2)

Content analysis revealed that most dimension clusters on the adult SWPS were the same as the young adult version. The first exception was that two items that were included in the physical dimension in the young adult version clustered and loaded sufficiently in the environmental dimension on the adult version. These two items focused on choosing and consuming healthy food options. The second exception was associated with the intellectual dimension. In the adult version of the scale, one intellectual item was transcribed wrong and another intellectual item failed to load sufficiently on any dimension. Additionally, a new spiritual item relating to efforts to develop spirituality clustered with that dimension.

In the adult version of the SWPS, five items defined the environmental dimension, four items defined the spiritual dimension, four items defined the vocational dimension, four items defined the emotional dimension, four items defined the social dimension, two items defined the physical dimension, and two items defined the intellectual dimension. Each dimension explained greater than 4% of the variance. A clear break point was indicated after the seventh factor because the eighth factor explained less than 4% of the variance and it had an eigenvalue under 1.0 (0.88). (Table 2)

Reliability

The internal consistency reliability calculations for the adult version of the SWPS indicated the 25 item scale had an alpha of 0.84 and the subscale reliability scores ranged from 0.75 to 0.93 (Table 2). Item-total correlations calculated for each item to total SWPS ranged from 0.36 to 0.61. These results indicated that internal consistency of the SWPS would not be improved by the removal of any items.

Validity

Statistically significant positive correlations between the calculated total score on the SWPS, perceived health, ($r=.43$, $p<.01$) and satisfaction on the SWLS ($r=.37$, $p<.01$) indicated that those who engaged in more health behaviors had both higher perceived health and higher reported levels of life satisfaction. Additionally, statistically significant negative correlations between the total score on the SWPS, the CESD Depression scale, ($r= -.25$, $p<.01$) and the Memorial Symptom Scale ($r= -.21$, $p<.01$) indicated that those who scored higher on the SWPS scored lower on symptoms and depression. Statistically significant positive correlations were also found between perceived health and five of the dimensions assessed on the SWPS: physical ($r=.44$, $p<.001$); vocational ($r=.29$, $p<.001$); emotional ($r=.36$, $p<.001$); social ($r=.25$, $p<.001$); and environmental ($r=.27$, $p<.001$).

Table 1. Demographic Characteristics of Respondents

Item	Percent
Gender	n = 304
Male	62.2
Female	37.8
Race	n = 301
Caucasian	88.0
African American	5.3
Latino	2.7
Asian American	1.7
Native American	.6
Multiracial	1.7
Marital Status	n = 304*
Never married	1.0
Married	17.3
Divorced	69.8
Live with significant other	13.3
Widowed	6.3
Separated	1.0
Income	n = 291
<$ 30,000	12.4
$30,000 - 39,000	25.0
$40,000 - $59,000	30.6
$60,000 - 89,000	19.6
≥$90,000	12.4
Education	n = 299
High school diploma	11.7
Associates degree	5.0
Bachelor's degree	24.7
Masters degree	29.8
Doctoral degree	28.8
Area of Work	n = 304
Administrative	29.9
Academic	33.6
Support staff	24.3
Service staff	3.6
Multiple areas	8.6
Work Status	n = 302
8 hour day: traditional	82.1
8 hour day: non-traditional hours	16.9
Part time	1.0

Note: * For marital status, %s >100% - respondents could chose more than one response

DISCUSSION

Evidence from this study indicates the adult version of the Salutogenic Wellness Promotion Scale (SWPS) provides valid, reliable, and useful complementary information about health status. This 25-item SWPS measured health-promoting actions in seven regularly encountered lifestyle areas. It provides users with data about their physical activity patterns, spiritual development practices, and intellectual growth. It also measures how a chosen vocation contributes to their health, ability to manage emotions, social interconnectedness, and actions they take to encourage, nurture, and support a healthier environment. Each of these dimensions provides useful information

Table 2. Rotated SWPS Factor Loadings (25 items) from Factor Analysis*

Item	1 Envir.	2 Spirtl.	3 Voctnl.	4 Emotnl.	5 Social	6 Physcal	7 Intlctl
Protect	**0.74**	-0.12	0.01	0.05	-0.08	0.01	0.01
Support	**0.70**	-0.09	-0.03	0.05	0.04	0.00	0.06
Whole foods	**0.59**	0.09	0.08	-0.19	-0.02	0.05	0.02
Recycle	**0.57**	0.04	-0.16	0.09	0.01	-0.02	-0.02
Food knowledge	**0.53**	0.07	0.10	-0.15	-0.06	0.14	0.04
Pray	-0.05	**0.97**	0.01	0.04	-0.02	-0.03	-0.03
Higher power	-0.13	**0.87**	-0.06	0.08	-0.02	0.02	-0.02
Religion	-0.04	**0.85**	0.00	-0.03	-0.02	0.02	-0.03
Spirituality	0.17	**0.81**	0.01	-0.07	0.01	-0.03	0.04
Satisfying	0.05	-0.08	**-0.90**	-0.06	0.00	0.05	-0.07
Enjoy	-0.01	0.05	**-0.83**	-0.04	-0.03	0.05	-0.07
Inspired	0.02	-0.02	**-0.80**	0.01	0.05	-0.02	0.13
Important	0.02	0.08	**-0.57**	-0.04	-0.08	-0.02	0.07
Cope well	-0.02	-0.04	0.01	**-0.82**	-0.09	-0.08	0.01
Handle stress	0.05	0.04	0.06	**-0.80**	0.12	0.07	0.06
Manage Life	-0.04	-0.03	-0.13	**-0.76**	0.01	0.03	-0.05
Opportunity	0.02	0.11	-0.19	**-0.46**	-0.03	0.08	0.10
Network	-0.05	0.03	-0.06	-0.09	**-0.81**	0.01	-0.04
Communication	-0.04	0.05	-0.00	0.12	**-0.80**	0.03	0.03
Interact well	0.08	-0.09	0.00	-0.13	**-0.67**	0.03	-0.04
Affection	0.10	0.07	0.02	-0.01	**-0.42**	-0.01	0.17
Physical Activity	0.01	0.00	0.03	0.06	-0.04	**0.86**	-0.02
Active life	-0.01	-0.03	-0.05	-0.02	0.02	**0.72**	0.02
Writing Skills	0.01	0.00	0.03	-0.04	0.08	0.04	**0.87**
Verbal Skills	0.00	-0.04	-0.08	0.02	-0.13	-0.04	**0.70**
Eigenvalue	6.0	3.5	2.4	2.0	1.6	1.4	1.1
% Variance	24.1	13.9	9.4	7.9	6.3	5.7	4.2
Alpha	0.78	0.93	0.87	0.82	0.79	0.75	0.77

Note: *Extraction Method: Principal Axis Factoring.
*Rotation Method: Oblimin with Kaiser Normalization.
Rotation converged in 8 iterations.

about health-promoting strengths of individuals, and can provide complementary guidance to health professionals working with populations by providing information about positive health-promoting opportunities. This information should be helpful because previous research has documented that positive health information can provide complementary information about health status that may assist the development of effective health programs.[15, 16, 28]

Validity for an instrument has been generally described as how well that instrument measures a construct.[17] This study suggests the SWPS measures what it purports to measure—positive health—because of expected correlations between the SWPS and other positive and negative health measures. For example, significant positive associations were found between the total score calculated for the SWPS and scales that measured the positive concepts of life satisfaction and perceived health. Additionally, negative correlations were found among total scores on the SWPS and scales that measured the negative phenomena of depression and illness symptoms. These results suggest the scores generated by SWPS are providing an assessment of positive health.

Differences were noted in how the items clustered on the adult and young adult versions of the SWPS. For young adults, items concerning nutrition clustered with the physical dimension but for working adults the nutrition items clustered with the environmental dimension. These differences may have occurred because working adults better recognize the connection between their food choices and the environment or because of the relative importance each group places on specific health behaviors such as physical activity. Further testing will be needed to understand these and other differences.

Although these results are encouraging, it is recommended future research continue to investigate the validity and reliability of this new scale. The results reported must therefore be understood with the existing limitations. Cause cannot be implied because factors not assessed may have accounted for outcomes, and it is recommended that future research investigates the positive but non-significant correlations of perceived health and the intellectual and spiritual dimensions. The data are also limited in that a single item was used to assess perceived health status and the data were obtained using self-report. Additionally, the working adult population used for these tests worked on a university campus and this may limit the generalizability of these findings to other working populations. With regard to reliability, only internal consistency was tested; future tests should assess additional forms of reliability such as test-retest reliability.

TRANSLATION TO HEALTH EDUCATION PRACTICE

Data obtained from the SWPS could be used for programming and cultural design that support and nurture positive health practices. As the field begins to incorporate the measurement of positive health, we expect the discovery of multiple possible uses. Measuring positive health with traditional health measurement tools would complement risk factor and negative health information such that a more comprehensive set of information would be collected about populations. This added information should aid in the understanding of health status of populations and in the development of programs to positively affect health status. Some specific applications of positive health scales could be as an assessment and or as an evaluation tool. Results from using the SWPS as an assessment tool could help health professionals understand a population's strengths associated with physical, social, emotional, spiritual, intellectual, vocational, and environmental areas. The SWPS could also be used as an evaluation tool to determine if a population engages in more health-promoting actions after programs or environmental changes designed to encourage health behaviors. Use of this scale as an evaluation tool may also encourage the development and use of positive health programs. The SWPS will be able to document a program's success in helping people engage in actions associated with positive health outcomes. Future research should investigate practical applications and uses of positive assessment results obtained from populations.

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