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### **Empirical Investigation of SAMHSA's (Substance Abuse and Mental Health Services Administration) Model of Wellness**

Dipanjana Das

*CUNY City College of New York*

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Empirical Investigation of SAMHSA's (Substance Abuse and Mental  
Health Services Administration) Model of Wellness

Dipanjana Das

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### Abstract

The quest to operationalize the construct of wellness has been elusive. Part of the difficulty resides in the way wellness has been conceptualized in the literature, using different non-overlapping models. Another drawback is that many existing models are not based on solid empirical evidence. The current study addressed these limitations by assessing the empirical validity of SAMHSA's (Substance Abuse and Mental Health Services Administration) model of wellness. We created an instrument to assess wellness based on a thorough review of the literature that serves as the basis of the SAMHSA model that can be used to assess wellness. Findings revealed a refined view of wellness in which the dimension of Community Resources represented the single greatest contribution to wellness in a multidimensional structure.

The traditional view of physical and mental health is that disease and health is fully explained by deviations from the norm of measurable biological or somatic variables (Engel, 1977). Unfortunately, this approach has not proved optimal in understanding many modern health care issues, including mental disorders and other health-related issues with significant behavioral and psychosocial components (Johnson, 2013). Recently, a complementary perspective based on wellness has been introduced. Wellness is defined not simply as the absence of illness or disease but as a comprehensive understanding of multiple components of an individual's lives (World Health Organization [WHO], 1948). The present study provides empirical evidence for the construct of wellness as it has been defined recently in the literature.

#### *Operational definition of wellness*

Repeated attempts have been made to formalize the concept of wellness. The problem of defining wellness has been made more complex from its usage with other interrelated terms, including wellbeing, quality of life, life satisfaction, happiness, and general satisfaction (Miller & Foster, 2010). All models have been broadly consistent with WHO's (1948) conception of wellness as a state of complete physical, mental and social wellbeing (Ardell, 1977). Examples include Dunn (1959) who considered wellness to be an integrated way of functioning that maximizes health in the context of the total environment. More recently, Ardell (2005) emphasized the conscious choice to take responsibility for improving the quality of one's life. Hatfield and Hatfield (1992) recognized the importance of healthy cognitive processes in overall wellbeing. Gatterman and Brimhall (2006) linked an

individual's capacity to adapt creatively to all aspects of life in reaching an optimal level of functioning. Witmers and Sweeney (1992), and later Myers, Sweeney and Witmer (2000), conceptualized wellness in their own model in terms of five life tasks: spirituality, self-regulation, work, friendship and love.

Much of the literature on wellness converges on a holistic perspective. Wellness has been associated with a strong sense of personal identity; a reality oriented perspective; the recognition of a unifying force in one's life; the ability to manage one's affairs creatively and maintain a hopeful view; and the capability of inspired, open relationships (Egbert, 1980). Dunn (1977) emphasized the interconnected nature of wellness in mind, body and environment, which exists in dynamic equilibrium. Dunn also acknowledged the fluctuating nature of wellness as people make active choices towards or away from their maximum potential. Yet these holistic definitions, albeit compelling and productive in theorizing about wellness, have fallen short of an operational definition of the construct.

Researchers have addressed this limitation by proposing multidimensional or feature-based models of wellness, which view the construct as an assemblage of constituent dimensions. Lafferty (1979), for example, defined wellness as a balanced combination of six dimensions: physical, emotional, social, intellectual, spiritual and purposeful. Greenberg (1985) viewed wellness as an individual's integration of these dimensions. Hettler (1980) replaced the purposeful dimension with an occupational dimension, emphasizing the importance of awareness of one's wellness and actively making choices towards optimal living. The multidimensional approach has the advantage of more clearly specifying the component attributes of

the wellness construct. Multidimensional models also emphasize the holistic quality of wellness as the integration of components to assess overall functioning and quality of life. Multiple dimensions allow for the construct of wellness to be holistic or integrative, consistent with the bio-psycho-social framework (Miller & Foster, 2010). However, multidimensional models are nevertheless difficult to operationalize, as they are dynamic and open to interpretation. The current study aimed to define wellness more clearly by better specifying its constituent dimensions using an empirical-based psychometric approach.

#### *Existing measures of wellness*

The process of developing a valid instrument involves several steps. Usually, a theoretical model of a construct – here, wellness – is formalized by the creation of a set of items that collectively represent the construct. Statistical data reduction techniques, such as factor analysis or principal components analysis, are then performed on the items from a target population. The reliability and factor structure of items is used to assess the internal integrity of the model. Several existing wellness models have been subjected to this approach (Adams et al., 1997, Hettler, 1980; Myers, Luecht & Sweeney, 2004; Renger et al., 2000). Some notable measures are discussed below:

(1) Hettler's (1980) Life Assessment Questionnaire (LAQ). The LAQ is a 100-item instrument derived from a six-dimensional (social, spiritual, physical, intellectual, emotional, and occupational) model of wellness. Psychometric investigations of this scale in a college-aged sample by Palombi (1992) and

DeStefano and Richardson (1992) found low test-retest reliability. Palombi (1992) reported low to moderate correlations among the total and subscale scores.

(2) Hettler's (1980) model also is the basis of TestWell, a 100-item wellness measure developed by the National Wellness Institute (1992). TestWell contains 100 items scored on a 5-point Likert Scale. Owen (1999) reported that the scale has high reliability on test-retest, subscale as well as total scale conditions.

(3) The Perceived Wellness Model (PWS; Adams et. al., 1997) is a multidimensional measure of perceived wellness in social, spiritual, physical, intellectual, emotional and psychological domains. The scale contains 36 items, six on each of the six dimensions. The PWS showed convergent validity with related instruments (e.g., instruments measuring wellbeing, social support and self-esteem). However, internal reliability of the PWS is low; only four of the six subscales demonstrated adequate consistency. Further, Harari et al., (2005) found no evidence supporting the multidimensional structure of the PWS scale.

(4) The Optimal Living Profile (OLP; Renger et al., 2000) is a 135 item questionnaire tapping six dimensions of wellness (i.e., emotional, spiritual, physical, social, intellectual and environmental). Although Renger et al., (2000) reported adequate reliability and validity of the scale, independent psychometric analysis of OLP is needed.

(5) The Wellness Evaluation of Life Inventory (WEL; Myers, Luecht & Sweeney, 2004) is derived from a model that conceptualizes wellness in terms of five life tasks (Witmer & Sweeney, 1992; Myers, Sweeney, & Witmer, 2000): spirituality, self-regulation, work, friendship, and love. The scale includes twelve

sub-life tasks that together comprise the Wheel of Wellness: sense of worth, sense of control, realistic beliefs, emotional awareness and coping, problem solving and creativity, sense of humor, nutrition, exercise, self-care, stress management, gender identity and cultural identity. Psychometric analyses in a large, diverse sample suggest adequate test-retest reliability, high internal consistency, and strong convergent and divergent validity. Unfortunately, the scale and its underlying model stand apart as distinct from current theorizing in the wellness literature.

(6) Travis (1981) developed the Wellness Inventory (WI), which includes 120 items covering 12 dimensions: self-responsibility and love, breathing, sensing, eating, moving, feeling, thinking, playing and working, communication, sex, finding meaning and transcending. Eight of the 12 dimensions reveal high internal consistency (Palombi, 1992). Yet Palombi (1992) warned that the instrument might be measuring a unidimensional construct.

To be sure, the wellness measures discussed here have advanced the research and applications of wellness. However, they all share a similar set of limitations. First, the wide disparities that exist among various models and definitions of wellness (see *Operational definition of wellness*) also plague the instruments that measure wellness. The lack of a gold standard definition of wellness leads to development of instruments that measure different, non-overlapping aspects of wellness (Rachele, Washington, Cuddihy, Barwais, & McPhail, 2013). Second, most of the instruments are limited to use within small research teams with little clinical application and little independent empirical scrutiny from the larger scientific community. Third, the current instruments have resisted a



cyclical process of review and refinement. Instead, extant instruments measure wellness using a locally favored multidimensional model and proceed without rigorous investigation to evaluate, improve, or provide further support for the original structure. Adams et al.'s (1997), for example, criticized creators of the Perceived Wellness Scale (PWS) for eschewing investigation to establish dimensional structure of the instrument; other wellness instruments share this limitation. Consequently, overall support is weak for the construct of wellness using these measures. The goal of the current study was to develop and evaluate a rigorous wellness instrument built from a comprehensive analysis of the modern scientific literature on wellness.

#### *SAMHSA's Wellness Initiative*

The Substance Abuse and Mental Health Services Administration (SAMHSA, 2015) is a government agency within the U.S. Department of Health and Human Services that leads public health efforts to advance the behavioral health of the nation and to reduce the impact of substance abuse and mental illness on America's communities. SAMHSA promotes the idea of wellness as fundamental to recovery.

SAMHSA has developed a multidimensional model of wellness comprised of eight orthogonal dimensions (Swarbick, 2006): (1) Emotional, (2) Environmental, (3) Financial, (4) Intellectual, (5) Occupational, (6) Physical, (7) Social, and (8) Spiritual. Each of the eight dimensions rests on a substantial body of scientific literature (see Adams et al., 1997; Anspaugh et al., 2004; Diener et al., 2009; Dolan et al., 2008; Durlak, 2000; Hales, 2005). SAMHSA's model is significantly more comprehensive than other existing definitions and models of wellness because it

enjoys strong theoretical underpinnings. The model maintains an integrative characterization of overall wellness, specifically, as “the presence of purpose in life, active involvement in satisfying work and play, joyful relationships, a healthy body and living environment, and happiness.” The SAMHSA perspective fits well with the World Health Organization’s (1948) view on health as a state of physical, mental and social wellbeing. Nonetheless, the SAMHSA model has never actually been empirically validated. There is no evidence that each of the dimensions is independent. Furthermore, the SAMHSA model is not embodied in any current scientific instrument, thus preventing quantitative assessment of wellness in specific populations. Finally, the model contains no integrative mechanism to represent the holistic quality of wellness.

#### *The current study*

The current study addressed these limitations. A thorough review of the definition in the literature of each dimension of wellness was conducted to construct a representative set of survey items. Thus, findings from previous research investigations on each of the eight SAMHSA dimensions served as the basis of instrument development. The resulting instrument was then employed in a target population. A factor analytic approach was adopted to systematically evaluate the SAMHSA model. For this purpose, the current study adapted the first four steps of Churchill’s (1979) eight-step item development procedure to evaluate how well SAMHSA’s theoretical model of wellness matches the construct’s empirical composition. The factor structure of the responses was analyzed using several analytic techniques with the goal of recovering the original SAMHSA eight-

dimensional model. Empirical deviations from the model were used to refine the wellness construct. Factor solutions allowing correlated dimensions were used to evaluate properties of holistic integration.

### *Participants and Procedure*

Undergraduate psychology students (n = 517) were recruited as research participants from a subject pool at a large public university in New York City. Inclusion criterion for the study required participants to be at least 18 years of age. They were given course credit for their participation. Consent was obtained from all participants. The Institutional Review Board of the City University of New York approved the protocol. The study was conducted in a computer laboratory over the course of two academic semesters. Participants were asked to answer questions from a web-based questionnaire. All participants completed the questionnaire within the designated time of one hour and fifteen minutes.

### *Material and Methods*

*Testing Instrument.* Participants responded to a 157-item questionnaire modeled after the dimensional model of wellness proposed by SAMHSA. More specifically, respondents answered a series of questions that aimed to assess wellness as a construct comprised of the following eight dimensions: (1) Social (2) Emotional (3) Spiritual (4) Financial (5) Occupational (6) Environmental (7) Physical and (8) Intellectual (Swarbick, 2006).

A four-step process of item development, adapted using guidelines by Churchill (1979) for creating testing instruments, was utilized in creating this questionnaire. Churchill's (1979) original guideline enumerates a procedure for

instrument development that describes steps beginning from the conceptualization of the construct(s), to item creation and refinement to ultimately, over several testing phases, verification of reliability and validity of the measure created. These recommendations guide research efforts aimed at developing sound and valid measures. This study adapted the first four steps of Churchill's (1979) eight-step process to evaluate how well SAMHSA's theoretical model of wellness matches the construct's empirical composition.

### **Step one: Specifying the domain of the construct**

The aim of this step was to operationally define wellness. SAMHSA defines wellness in terms of its eight overlapping dimensions. Thus, we sought an operational definition of each of the dimensions. A thorough review of the separate literatures on each of the eight dimensions helped delineate the defining characteristics of each. A summary of the operational definitions derived from the literature for each of the eight dimensions appears in Table 1 (Appendix A).

### **Step two: Generating a sample of items**

Combining information from the literature review (Table 1; Appendix A), a list of sample items was generated. In constructing these items, each of the operational definitions from the previous step was taken one at a time to create a question. For example, the following excerpt is part of the operational definition of the social dimension: "Getting along with others; being comfortable and willing to express one's feelings, needs, opinions and being supportive; having fulfilling relationships and interaction with social environment; making a contribution to one's community" (Renger, et. al., 2000). A separate statement was created for each

constituent of social wellness contained in the excerpt: (1) I get along with others; (2) I am comfortable expressing my feelings; (3) I am comfortable expressing my needs; (4) I am willing to express my feelings; (5) I am willing to express my needs, etc. Researchers in two-person groups generated the items, which were then reevaluated for precision, relevancy and comprehensibility. In generating sample items, emphasis was placed on ample coverage of the breadth of each of the constructs being studied. No limits were placed on how many items could be included in each wellness category. The upshot was unequal numbers of items generated across dimensions.

### **Step 3: Item refinement**

A total of 148 items were created across eight dimensions. Items were presented randomly to avoid grouping with the source dimension. Response sets for the items were created in the form of a seven-point Likert scale (144 items), ranging from “Never” to “All of the time,” and in a fill-in-the-blank format (4 items).

Demographic questions for age, ethnicity, marital status, education level, employment status and insurance status of participants were added in multiple-choice format to the initial questionnaire. Finally, the questionnaire included an open-ended question asking participants to provide feedback.

A paper and pencil version of the questionnaire was subjected to pilot testing to ensure that the items and formatting were comprehensible to potential participants. Pilot testing was conducted using responses from research assistants in the laboratory who were not involved in the generation of sample items. Pilot participants were asked to answer the items while also providing feedback on

legibility and pointing out instances of ambiguity. The items were revised based on the feedback from the pilot exercise.

The questionnaire was transferred to a web-based data collection platform called Qualtrics®. Thus, the final version of the questionnaire was administered to participants online, using Qualtrics®. The website allowed data collection simultaneously from multiple participants and automatic data storage. For the Likert-scale items, a sliding bar enabled respondents to indicate their responses by sliding the scale to any position between “1-Never” to “7-All of the time.” This process yielded a greater dynamic range in the results and allowed for the data to be treated as continuous. The items in multiple-choice, fill-in-the-blank or open-ended formats could be answered by either clicking a choice or typing in a response. At the end of this step, the questionnaire was administered to 517 participants in a computer laboratory over the course of two academic semesters.

#### **Step Four: Assessment of Wellness Factors**

To identify and evaluate the factor dimensions of wellness that emerge from the questionnaire, a three-phase analysis procedure was used. Here, the procedure is described briefly. In the Results section, the outcomes of each phase are reported in detail.

*Phase I: Reliability Analysis.* In this step, Cronbach’s Alpha was used to assess the internal consistency of the items within each of the eight dimensions. This analysis also was used to eliminate items that lowered the consistency within each of the dimensions.

*Phase II: Principal Components Analysis.* The items remaining from Phase I were analyzed using a principal components analysis. The purpose of Phase II was to group latent items emerging from the larger set of internally consistent items. Several well-recognized criteria for the factorability of a correlation were employed.

*Phase III: Principal Axis Factoring (fixed).* In this phase, a fixed principal axis factoring analysis was used to verify the factor solution that emerged from the principal components analysis.

## **Results**

Data from 517 (187 males, 330 females) participants were analyzed. Participants ranged in age from 18 to 49 years, with a mean age of 20.11 (SD=3.187). About ten percent of participants reported being White (10.6), 11.0 percent African-American or Black, 29.2 percent Hispanic or Latino, 35.9 percent Asian or Pacific Islander, 0.6 percent American Indian, 3.5 percent Multiethnic and 9.1 percent identified as other (not belonging to any of the above-mentioned categories). All data analysis was conducted on Statistical Package for the Social Sciences (SPSS®). As discussed earlier, the data were analyzed in three phases.

*Phase I.* Internal consistency of the items within each dimension was assessed using Cronbach's Alpha. Results appear in the Table 2 below. This analysis also was used to eliminate items that lowered the consistency within each of the dimensions: items with an item-to-total correlation of less than 0.40 were discarded from the final analysis (Nunnally, 1967). Using this rule, 39 items were discarded from the original 144 items, resulting in a final item count of 105.

Table 2: Reliability analysis using Cronbach's Alpha

Dimension	Number of items	Cronbach's Alpha
Social	42	0.948
Physical	15	0.829
Intellectual	22	0.861
Spiritual	15	0.754
Occupational	8	0.778
Financial	9	0.557
Environmental	13	0.830
Emotional	19	0.910
All items	144	0.973

*Phase II.* A principal components analysis (PCA) with promax rotation was conducted to explore the dimensionality of the construct of wellness based on the data collected. The 105 items gathered from the previous phase were analyzed using PCA. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis,  $KMO = .949$ , which falls into the range of high adequacy (Hutcheson & Sofroniou, 1999). Barlett's test of Sphericity ( $\chi^2 (5460) = 343336.01, p < .001$ ) indicated that correlations between items were sufficiently large for PCA.

An initial analysis was conducted to obtain eigenvalues for each component in the data. Twenty components had eigenvalues exceeding Kaiser's criterion of 1.0 and in combination explained 65.15% of the variance (Kaiser, 1960). The Scree plot was found to be ambiguous and hence was not employed to determine the number of factors to extract. Of the 20 components in the PCA solution, 9 factors were retained. Perusal of the items with the heaviest loading on each factor (see Table 3 below for factor loadings after rotation) facilitated interpretation and naming of the



nine factors as follows: (1) Emotional expression; (2) Giving emotional support; (3) Relationship satisfaction; (4) Physical health; (5) Intellectual Stimulation; (6) Emotional regulation; (7) Occupational satisfaction; (8) Social interaction; and (9) Spirituality.

Table 3: Factor loadings based on a principle components analysis with promax rotation for 105 items from the original Wellness questionnaire. Loadings <0.4 were suppressed from the output.

Factor & Item description	Factor loadings
<b>Emotional Expression (percent variance extracted = 28.716)</b>	
I am comfortable expressing my feelings	.887
I am comfortable in expressing my opinions	.840
I am willing to express my feelings	.948
I am willing to express my needs	.717
I am willing to express my opinions	.888
I am comfortable in expressing my needs	.824
I can effectively express my emotions	.870
<b>Giving Emotional Support (percent variance extracted = 4.929)</b>	
It is important for me to provide support to others	.819
It is important for me to listen to other peoples' ideas	.759
It is important for me to helpful to others	.895
I am comfortable in being supportive to others	.882
I am willing to be supportive to others	.934
<b>Relationship Satisfaction (percent variance extracted= 3.745)</b>	
I am satisfied with the relationships in my life	.900
I am satisfied with the level of attachment or bonds with others	.812
I am satisfied with the amount of support that I receive from my relationships	.605
<b>Physical Health (percent variance extracted = 3.347)</b>	
I take care of my physical fitness	.783
During the past month, other than your regular job how often did you participate in physical activities such as running, walking or housework?	.824
During the past month, other than your regular job how often did you participate in vigorous physical activities such as running, cycling, swimming (cardio)?	.892
<b>Intellectual Stimulation (percent variance extracted = 2.484)</b>	
I enjoy finding answers and new information	.704
Intellectual growth is a priority in my life	.744
I seek out intellectual stimulation	.856
It is important for me to be a life long learner	.743
<b>Emotional Regulation (percent variance extracted= 2.409)</b>	
I can effectively manage my emotions	.826
I can determine the origins of my emotional state	.644
I am able to manage my emotional behavior	.833
<b>Occupational Satisfaction (percent variance extracted=2.345)</b>	
My work is consistent with my values	.628
I feel that my paid/unpaid work contributes to society	.771
I am satisfied with my paid/unpaid work	.871
I am enriched by my paid/unpaid work	.91
<b>Social Interaction (percent variance extracted = 1.868)</b>	
I interact with my friends and relatives	.605
I get along with others	.724
I am comfortable interacting with people in my everyday environment	.754
I can communicate well with others in general	.657
<b>Spiritual (percent variance extracted = 1.780)</b>	
It is important for me to seek meaning and purpose in life	.798
It is important for me to achieve inner peace	.736
I think about the meaning and purpose in life	.716
I seek inner peace	.780
KMO= .949; $\chi^2(5460) = 343336.01, p < .001$	

*Phase III.* In the final phase of data analysis, the 105 items were analyzed using a principal axis factoring analysis (PAF) with promax rotation. The rationale for this analysis was to compare (and confirm) the solution of the PCA (which always generates a solution because its goal is to explain as much of the total variance in the variables as possible) with the solution generated by the PAF procedure (which seeks to explain only the common variance among the measured variables [items]) (Floyd & Widaman, 1995).

The PAF analysis was first limited to 9 fixed dimensions using a promax rotation (again assuming correlation between variables), based on the 9-factor solution generated from the PCA. This analysis failed to converge as the communality of the variables was found to exceed their variance. When the same procedure was conducted with 8 fixed dimensions, a solution was generated. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis,  $KMO = .949$  (Hutcheson & Sofroniou, 1999). Barlett's test of Sphericity ( $\chi^2(5460) = 343336.007, p < .001$ ) indicated that correlations between items were sufficiently large for PAF. Eight factors were extracted with eigenvalues exceeding 1.0, with the first factor explaining 28.23% of the total variance. The use of PAF resulted in the emergence of the following eight factor structures (see Table 4 below): Community Resources, Emotional Expression, Giving Emotional Support, Physical Fitness, Intellectual Stimulation, Emotional Regulation, Occupation Satisfaction, and Spirituality.

Table 4: Factor loadings and communalities based on a principle axis factoring with promax rotation for 105 items from the original Wellness questionnaire

Factor & Item description	Factor loadings
<b>Community Resources (percent variance extracted=28.228)</b>	
I am satisfied with the food available in my environment	.512
I am satisfied with the natural environment around me	.796
I am satisfied with my social environment	.886
I am satisfied with my social growth	.643
I am satisfied with my living situation	.718
My home life supports other aspects of my life	.772
I am satisfied with the resources available in my community	.978
I find my surroundings to be pleasing	.740
<b>Emotional Expression (percent variance extracted = 4.440)</b>	
I am comfortable in expressing my feelings	.899
I am comfortable in expressing my opinions	.846
I am willing to express my needs	.773
I am willing to express my opinions	.953
I am comfortable in expressing my needs	.916
I can effectively express my emotions	.944
<b>Giving Emotional Support (percent variance extracted= 3.264)</b>	
I am comfortable in caring for others	.752
It is important for me to provide support to others	.798
It is important for me to listen to other peoples' ideas	.551
It is important for me to be helpful to others	.765
I am willing to be supportive to others	.873
I am comfortable in being supportive to others	.830
<b>Physical (percent variance extracted = 2.919)</b>	
I take care of my physical fitness	.850
It is important for me to maintain a healthy diet	.626
During the past month, other than your regular job how often did you participate in physical activities such as running, walking or housework?	.710
During the past month, other than your regular job how often did you participate in vigorous physical activities such as running, cycling, swimming (cardio)?	.793
I am confident that I can maintain my physical health	.715
I am able to take care of my overall nutritional needs	.655
I am proactive in taking care of my body	.779
<b>Intellectual Stimulation (percent variance extracted = 2.030)</b>	
I like focusing on mental challenges	.501
I enjoy finding answers and new information	.694
I engage in intellectually stimulating activities such as learning a new language, going to cultural events, reading books and articles, watching interesting shows and movies	.526
I seek out intellectual stimulation	.669
I like to engage in critical reasoning such as problem solving or puzzles	.571
It is important for me to be a life long learner	.572
<b>Emotional Regulation (percent variance extracted = 1.942)</b>	
I can effectively manage my emotions	.864
I am satisfied with my ability to solve problems	.547
I can determine the origins of my emotional state	.583
I am able to manage my emotional behavior	.787
I am able to cope with stress	.601
<b>Occupational Satisfaction (percent variance extracted = 1.823)</b>	
I feel that my paid/unpaid work contributes to society	.567
I am satisfied with my paid/unpaid work	.840
I am enriched by my paid/unpaid work	.836
<b>Spiritual (percent variance extracted 1.364)</b>	

It is important for to seek meaning and purpose in life	.659
It is important for to achieve inner peace	.578
I think about meaning and purpose in life	.615
I seek inner peace	.576
KMO= .949; $\chi^2 (5460) = 343336.007, p < .001$	

## Discussion

The current study represents the first systematic effort to evaluate the empirical composition of wellness as proposed by SAMHSA. Although we explored the internal consistency of our measure using a healthy college-aged population, the dimensions of wellness uncovered in our analysis are applicable in assessing and studying a wide range of individuals including those with physical and mental illnesses. As we discuss below, the results of our analyses also hold clear implications for the conceptualization of wellness as a theoretical construct.

### *The structure of wellness*

The primary goal of the current study was to evaluate the dimensional makeup of wellness as a construct. We began our structural analysis with the eight-dimensional conception of wellness contained in the SAMHSA model. We evaluated this model in a college-aged sample. Our analysis identified a nuanced view of what wellness means in this population. We adopted a three-stage approach to isolate the factor structure of wellness.

The principal components analysis (PCA) of the data revealed that a nine-dimensional solution best explained the most variance among wellness items. This new, empirically supported structure of wellness, although related to SAMHSA's original theoretical construct, provides a more refined view of the underlying dimensions. Specifically, the nine-factor solution retained several of the original

SAMHSA dimensions and eliminated some others. The analysis also revealed that some of the original dimensions might actually represent multiple dimensions. For example, although SAMHSA's occupational, intellectual, and spiritual dimensions were retained, the environmental and financial dimensions were not. The emotional dimension was divided into three distinct categories: Emotional Expression, Giving Emotional Support, and Emotional Regulation. Similarly, instead of a single Social dimension, the PCA results bifurcated into one dimension pertaining to Relationship Satisfaction and another to Social Interaction. Overall, we found that the dimensions of Spirituality, Intellectual Stimulation, Physical Health and Occupational Satisfaction were closest to SAMHSA's original proposal.

We also performed a principal axis factoring (PAF) analysis. Here, the best-fitting factor solution (9 dimensional) extracted a dimension that we named Community Resources as the primary component of wellness, explaining the largest single percentage of variance (28.23%). The items that were part of Community Resources dimension were most closely related to the Environmental and Social dimensions in SAMHSA's original model. Interestingly, the dimensions of Social Interactions and Relationship Satisfaction, which were found to be influential in the PCA solution, were absent from the PAF solution.

Finally, a reliability analysis using Cronbach's Alpha revealed high internal consistency of items within each dimension, suggesting that the items created from the literature search were correlated with each other and with a particular dimension.

We found that our different analytic approaches led to slightly different factor structures. Specifically, unlike the PCA, the PFA introduced Community Resources as a significant indicator of one's wellness, while removing Relationship Satisfaction and Social Interaction as central components of wellness. We endorse for two reasons the eight-factor PAF solution over the solution generated by the nine-factor PCA. First, PAF is a more suitable analytic procedure for uncovering latent variables from a set of measured variables, as it separates the common (covariance) variance in the data from the unique (uncorrelated) variance. By contrast, PCA does not differentiate between common and unique variance and extracts factors whose linear combination retains as much information from the original data set of measured variables as possible. Thus, PCA is inappropriate for isolating latent variable, the main purpose of the current study. PCA is deemed more appropriate for data reduction than for a rigorous representation of the relationships among measures variables (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

Second, the PAF solution unexpectedly uncovered a theoretically significant latent variable that we named "Community Resources." This factor, explaining an impressive 28% of the common variance, incorporates from the original SAMHSA model items belonging to both the Environmental dimension and the Social dimension. The simultaneous appearance of Community Resources in this solution and the disappearance of the social dimensions (from the PCA solution) suggests that Community Resources must be a significant contributor to an individual's

wellness. Importantly, Community Resources represents a factor that is influenced by all aspects of our surroundings, both people and the environment.

The findings of the current study confirm SAMHSA's conceptualization of wellness as a multidimensional phenomena with multiple overlapping factors interacting with each other. Yet the current study goes beyond the original formulation in revealing specific qualities that appear to be vital in individual wellness:

- being expressive about one's emotions
- being supportive to others
- being in relationships that are satisfying
- taking care of one's physical health
- being involved in intellectually stimulating activities
- being able to regulate one's emotions
- being able to derive satisfaction from one's work life
- being able to interact comfortably with one's social network
- being spiritual and seeking inner purpose and peace

These qualities serve then as a set of nine behavioral markers that at once describe the activities that collectively lead to overall wellness and the features that can be assessed through use of the instrument. Thus, results of the current study address both management and assessment of wellness.

#### *Limitations of the current study*

The data used to examine wellness in the college-age sample was collected using a self-report questionnaire. The instrument developed in this study needs to be



further evaluated in different (clinical and non-clinical) populations. The procedures delineated in the current study embody the first crucial step towards validating a comprehensive model of wellness and developing a valid and reliable instrument.

### *Contributions of wellness*

The wide scale adoption of a wellness perspective carries implications for the practice, delivery, and scientific study of health and healthcare. In this section we explore applications of a wellness instrument to holistic care, improvements in quality of life, and clinical outcomes.

*Holistic care.* By introducing an instrument that defines wellness operationally and measures it empirically at the level of the individual, the current study offers new ways to conceptualize health and study healthcare outcomes. The instrument can serve as an essential tool for physicians seeking a holistic and integrative approach to management of patients' health and wellness. In decomposing wellness into distinct and measurable dimensions, the instrument provides health care providers with a wellness profile useful in planning lifestyle modifications to enhance wellness. Without such an instrument, health care providers may be unsystematic in their recommendations or generic (or absent) in advice to patients on wellness and lifestyle change.

*Quality of life.* SAMHSA's wellness model, and the accompanying instrument, may be effective in navigating the impact of the reciprocal relationship that exists between disease states and qualities of life. On the one hand, physical and mental illness and their treatments can have strong negative influences on many quality of life factors, such as social, emotional, intellectual or spiritual satisfaction. Cancer

treatment, for example, often is associated with depression and cognitive decline (chemobrain; Minisini et al., 2004; Paganini-Hill and Clark, 2000; Reid-Arndt, 2006) indicating a negative impact on emotional and intellectual satisfaction, respectively. Conversely, one's environment or psychosocial context can influence disease state and treatment outcomes. Patients with greater social support, for example, recover from physical disease relatively more quickly and to a higher level of functioning (Funch & Mettlin, 2002). Use of our instrument assists in mapping, and limiting the negative impact of, the interactive relationships between disease and qualities of life. Monitoring wellness enables patients to focus resources on guarding against challenges from disease on quality of life. Regular wellness assessment also allows patients to enhance satisfaction along those dimensions of wellness that most effectively yield positive or rapid improvements in disease outcomes.

*Clinical outcomes.* Wellness intervention programs seek to enhance health outcomes in certain populations by engaging individuals in disease prevention activities. The usual outcome (dependent) measures in these programs include symptom reduction and alleviation of illness (Cook et. al., 2012; Neville, Merrill & Kumpfer, 2011; Williams, et al., 2009; Turner, Thomas, Wagner, Moseley, 2008). The programs typically use a bio-psycho-social or wellness approach to address risk factors for chronic diseases in an effort to reverse symptomatology. Yet these wellness interventions have invariably examined only disease states and failed to explicitly assess wellness variables. Thus, while implementing a holistic approach to stem the spread of disease, these programs generally eschew holistic outcomes, satisfied instead to focus on disease outcomes. One possible reason for the

limitation is the lack of empirically validated research tools to measure wellness. Our introduction here of a wellness assessment instrument could enable researchers to gauge each of the dimensions of wellness before versus after completion of a wellness intervention program, thus providing a needed clinical outcome measures of wellness. The instrument also could be used to guide the course of intervention to enhance specific dimensions of wellness.

### *Conclusion*

The current study represents the first systematic effort to evaluate the empirical composition of wellness using current scientific understanding of wellness. Exploratory factor analysis revealed that the dimension of Community Resources represents the single greatest contribution to wellness in a multidimensional structure. The instrument developed in this study may be useful in assessing wellness profiles in clinical populations.

## Appendix A

Table 1: Operational definitions of each of the eight dimensions of wellness

(Literature Review)

Dimensions	Operational Definitions
Social	<p>Getting along with others; being comfortable and willing to express one's feelings, needs, opinions and being supportive; having fulfilling relationships and interaction with social environment; making a contribution to one's community (Renger et al., 2000)</p> <p>Peer acceptance; attachments/bonds with others; social skills (communication, assertiveness, conflict resolution) (Durlak, 2000)</p> <p>Ability to maintain intimacy, to accept others different from yourself (Anspaugh et al., 2004).</p> <p>Developing and building close friendships and intimacy, practicing empathy and effective listening, caring for other and for common group and allowing others to care for you</p> <p>Amount of support received and reciprocated; the value attached to the actions of giving and receiving support (Adams et al, 1997)</p>
Emotional	<p>As a continual process that incorporates the awareness, constructive expression and management of emotions, as well as realistic self assessment and positive approach to life (Hettler,1980)</p> <p>As the awareness and acceptance of a wide range of feelings in one's self and others, as well as one's ability to constructively express, manage and integrate feelings (Hettler, 1980)</p> <p>As a secure internal self-image and a positive sense of self-regard, or the extent of self-valuing ((Adams et al, 1997; Renger et al, 2000)</p> <p>As awareness and acceptance of feelings, the degree to which one feels positive about life and about oneself, and the capacity to manage feelings and corresponding behaviors (Leafgren, 1990)</p>

Physical	<p>physical activity, nutrition and self-care and involves preventative and proactive actions that take care of one's physical body</p> <p>encompassing the degree to which one maintains and improves cardiovascular fitness, flexibility, and strength, seeking appropriate medical care and taking action to prevent and detect illnesses (Hettler, 1980)</p> <p>As a positive perception and expectation of physical health (Adams et al,1997)</p> <p>As one's level of fitness and nutrition, as well as the avoidance of harmful behavior (Renger et al., 2000)</p>
Environmental	<p>As a separate dimension and defined it to include the impact on and balance between home and work life, as well as an individual's relationship with nature and community resources (Renger et al, 2000)</p> <p>As a broad dimension that looked at the nature of an individual's reciprocal interaction with the environment</p> <p>Refers to one's relationship to their surroundings that affect humans' wellness. It refers to living in harmony with earth by becoming aware of one's interactions with nature and environment and the impact such interactions have.</p>
Occupational	<p>As the level of satisfaction and enrichment gained by one's work and the extent one's occupation allows for the expression of values, balance between occupational and other commitment (Hettler and Anspaugh, 2004)</p> <p>Is one's attitude about work and the amount of personal satisfaction and enrichment gained from work (Leafgren, 1990)</p> <p>Personal satisfaction and enrichment in one's life is derived from participation in work and volunteer activity, as well as activities and tasks from which we derive meaning, pleasure, and gratification</p>
Spiritual	<p>As the process of seeking meaning and purpose in existence. It includes the appreciation of the depth and expanse of life and the universe, questioning the meaning and purpose in life, as well as recognizing, accepting, and tolerating the complex nature of the world and accepting that the universe cannot be completely understood (Adams et al, 1997; Renger 2000)</p>

	<p>Holistic dimensions, proposing four spiritual wellness dimensions: meaning in life, intrinsic values, transcendence, and spiritual community. The meaning in life dimension was described as an innate human need where purpose and life satisfaction provide hope (Westgate, 1996)</p> <p>As a positive perception of meaning and purpose in life, as well as recognition and acceptance of a unifying and integrating force between mind and body (Adams et al., 1997)</p> <p>As a worldview that gives unity and goals to thoughts and actions, as well as the process of seeking meaning, purpose in existence, and understanding of one's place in the universe (Hettler, 1980)</p>
Financial	<p>Learning to use self-discipline and self restraint in money matters and using a budget to get out of debt</p> <p>Feeling in control of your personal finances</p> <p>Is an intricate balance of the mental, spiritual and physical aspects of money</p> <p>Is the balance between having a health state of well-being today while preparing financially for tomorrow</p>
Intellectual	<p>Perception of being energized by an optimal amount of intellectually stimulating activity was central to intellectual wellness. Stimulating intellectual activity included mental challenges and critical reasoning, both of which require concentration (Adams et al., 1997)</p> <p>As one's orientation and achievement toward personal growth, education and achievement, and creativity, seeking opportunity to gain and share knowledge (Renger et al, 2000)</p> <p>Is the degree to which one engage in creative and stimulating activities, as well as the use of resources to expand knowledge and focus on the acquisition, development, application and articulation of critical thinking</p> <p>stimulation can come from reading, studying, travelling and exposure to media (Leafgren, 1990)</p>

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