The Hierarchical Structure of Well-Being

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Abstract

Theories of hedonic, eudaimonic, and social well-being provide 3 extensively studied models for explaining flourishing mental health. Few studies have examined whether these models can be integrated into a comprehensive structure of well-being. The present study builds upon previous theoretical and empirical work to determine the complex relationships among these 3 models of well-being. Confirmatory factor analysis techniques were used to test a series of models in order to (a) confirm the proposed latent structures of hedonic, eudaimonic, and social well-being and (b) examine whether these models could be successfully integrated into a hierarchical structure of well-being. In 2 large samples, results supported the proposed latent structures of hedonic, eudaimonic, and social well-being and indicated that the various components of well-being could be represented most parsimoniously with 3 oblique second-order constructs of hedonic, eudaimonic, and social well-being.

There has been a dramatic expansion of the scientific study of well-being and the positive aspects of mental health in recent years. Much of this research has distinguished between hedonic well-being (the pleasant life) and eudaimonic well-being (the meaningful life) as first proposed by Aristotle centuries ago. Researchers have recently begun to question the potential costs of this distinction between the hedonic and eudaimonic aspects of well-being (Kashdan, Biswas-Diener, & King, 2008), however, and have begun to examine the potential for integrating the theories and components of hedonic and eudaimonic well-being into a comprehensive model of flourishing mental health (Keyes, 2005, 2007; Keyes, Shmotkin, & Ryff, 2002). Unfortunately, the results of these previous empirical investigations have been inconclusive, and it remains unclear whether existing models of well-being can or should be integrated. The purpose of the present paper was to explore the latent structure of well-being by evaluating a series of competing models that could explain how these various components of well-being relate to one another. Following a review of existing models of well-being and previous attempts to integrate these models, we present the results of our analyses of three integrative, hierarchical models of well-being in two large samples of American adults. In doing so, we hope to clarify the potential for integrating existing theories and components of well-being while maintaining previously proposed theoretical distinctions between the hedonic and eudaimonic aspects of well-being.

Contemporary Theories of Well-Being

To date, hedonic theories of well-being have been the most extensively studied models of well-being. Exemplifying the hedonic tradition, researchers such as Flugel (1925) and Bradburn (1969) studied how people feel as they go about their daily lives. Diener's (1984)

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review of research on subjective well-being culminated in a model composed of a person's cognitive and affective evaluations of life as a whole. Specifically, Diener considers subjective well-being as the experience of high levels of pleasant emotions and moods, low levels of negative emotions and moods, and high life satisfaction. In Diener's work, "subjective well-being" is used synonymously with "hedonic well-being"; we refer to this aspect of well-being as "hedonic well-being" (Kahneman, Diener, & Schwarz, 1999).

In the eudaimonic tradition (Waterman, 1993), well-being is considered the outcome of positive goal pursuits (Ryan, Huta, & Deci, 2006). Exemplifying this tradition, Ryff (1989) reviewed work from developmental, humanistic, and clinical psychology and presented a model of psychological (eudaimonic) well-being that is made up of six components: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. This model of eudaimonic well-being is built on the assumption that individuals strive to function fully and realize their unique talents. Taken together, the six dimensions of eudaimonic well-being encompass a breadth of well-being that includes positive evaluation of oneself and one's past life, a sense of continued growth and development as a person, the belief that one's life is purposeful and meaningful, the possession of quality relations with others, the capacity to effectively manage one's life and surrounding world, and a sense of self-determination (Ryff & Keyes, 1995; Ryff & Singer, 2008).

Whereas eudaimonic well-being is conceptualized as a primarily private phenomenon that is focused on the challenges encountered by adults in their private lives, social well-being represents primarily public phenomena, focused on the social tasks encountered by adults in their social lives. Drawing on classical sociology, Keyes (1998) conceived of a five-component model of social well-being: social integration, social contribution, social coherence, social actualization, and social acceptance. These five elements, taken together, indicate whether and to what degree individuals are overcoming social challenges and are functioning well in their social world (alongside neighbors, coworkers, and fellow world citizens). Keyes's (1998) model of social well-being therefore extends the eudaimonic tradition of well-being from the intrapersonal focus of Ryff's model (1989) to the interpersonal realm.

Limitations of Previous Work

Previous attempts to define and classify the structure of well-being have led to the identification of the list of factors proposed to represent hedonic, eudaimonic, and social well-being (Diener, 1984; Keyes, 2005; Ryff, 1989). Theoretical reviews of the well-being literature have suggested that there are distinctions among these components of well-being (Lent, 2004; Ryan & Deci, 2001), and the factors of hedonic, eudaimonic, and social well-being have been proposed to together represent flourishing mental health (Keyes, 2005, 2007). Empirical examinations of this integrated model of well-being (Keyes, 2005; Keyes et al., 2008) have provided preliminary support for this multidimensional conceptualization, but, to date, the explication of the latent structure of well-being has suffered from methodological inconsistencies, psychometric limitations, and inconsistent results. These limitations and inconsistencies prevent us from concluding that these models can be unified into a hierarchical structure that is a parsimonious and comprehensive conceptualization of the various layers of flourishing mental health.

Specifically, there has been inconsistency in the level of analysis and the specific constructs included in the previous attempts to evaluate the proposed models of well-being. Some studies have independently examined eudaimonic or social well-being (Keyes, 1998; Ryff & Keyes, 1995), some have examined hedonic and eudaimonic well-being in tandem (Keyes et

al., 2002), and some have used aggregate measures of eudaimonic, social, and hedonic well-being (Keyes, 2005, 2007). As a result, the extent to which we can determine the validity of the proposed integration (Keyes, 2005, 2007) of these components of well-being has been limited.

Our ability to evaluate and integrate the proposed models of well-being has also been hindered because the analyses of the proposed structure have come almost exclusively from a single data source: the National Survey of Midlife Development in the United States (MIDUS) 1 national survey (Keyes, 2005; Keyes et al., 2002). Although this survey provided a remarkable amount of information about the psychosocial functioning of American adults, there were limitations in terms of how the dimensions of well-being were measured and analyzed. Specifically, the short forms of the scales developed for the MIDUS survey to measure eudaimonic well-being have demonstrated poor internal consistency (α ranging from .37 to .59). The short form scales used to measure social well-being also demonstrated poor to marginal internal consistency (α ranging from .41 to .73). Additionally, one component of hedonic well-being, satisfaction with life, was modeled using only a single item. Single-item indicators are problematic when researchers attempt to use statistical modeling procedures because they prevent them from identifying the proportion of variance tapping the desired construct relative to the error variance unique to a particular item or parcel (Coffman & MacCallum, 2005). Thus, the measurement of eudaimonic, social, and hedonic well-being in the MIDUS 1 survey has been hindered by psychometric limitations.

Finally, support for the proposed dimensional structures of well-being has been inconsistent. Specifically, previous work has questioned the support for the proposed six-factor model of eudaimonic well-being (Springer & Hauser, 2006) and has indicated that there may be considerable overlap in the factors of hedonic and eudaimonic well-being (Keyes et al., 2002). It is also unclear whether the current categorization of the first-order well-being factors could be refined to improve theoretical clarity. For example, although it would appear that positive relations with others would reflect social functioning and should therefore be considered a component of social well-being, this factor is currently proposed to be a component of eudaimonic well-being (Ryff, 1989; Ryff & Singer, 2008). The state of research on the structure of well-being is therefore limited by these inconsistent methods, inconsistent results, and psychometric limitations. These inconsistencies and limitations hinder conclusions regarding whether the proposed models of well-being are accurate representations of optimal human functioning.

The Present Study

The purpose of the present study was to build upon previous research by iteratively analyzing the components and levels of flourishing mental health using reliable measures in order to determine whether the various factors of well-being could be integrated into a hierarchical structure of well-being. Beyond demonstrating the need for adequate measurement of the various components of well-being, we were interested in examining a series of competing hierarchical models in order to determine the most parsimonious model that could adequately capture the complex nature of well-being. The scientific study of well-being has greatly expanded in recent years and the development and validation of a theoretically grounded and empirically supported taxonomy is a critical step in the advancement of our understanding of well-being and positive mental health. We expected that each of the three theoretical models of well-being would be supported by the analyses. We also expected that the 14 components of well-being could be successfully integrated into a hierarchical structure of well-being containing three second-order latent factors, thereby

maintaining the distinctions between the hedonic, eudaimonic, and social dimensions of well-being.

METHOD

Participants and Procedure

Two samples of participants were used to examine the latent structure of well-being. The first sample consisted of undergraduates at a large Midwestern university who participated to fulfill a course requirement.[1] After consenting to participate, all participants logged on to a secure Web site and completed the measures of well-being. The order of the scales and the order of the items within each scale were randomized to minimize any potential fatigue effects. These procedures were conducted in compliance with the university's institutional review board.

The second sample of participants came from the second wave of the National Survey of Midlife Development in the United States (MIDUS2). The MIDUS survey was initiated in 1994 with the goal of identifying psychological, behavioral, and physical factors that promote healthy aging in middle-aged American Adults. For the MIDUS1 survey, a nationally representative sample of adults between the ages of 25 and 74 was obtained via random digit dialing procedures. The MIDUS2 survey was conducted from 2004 to 2006 as a longitudinal follow-up of these same individuals. The second wave of the MIDUS sample was chosen for the current study because, although the sample size of the second wave was smaller due to attrition, more reliable measures of well-being were used during the second wave of MIDUS data collection.[2] Demographic information for both samples can be found in Table 1.

Measures

Hedonic Well-Being—In the student sample, two separate measures were used to assess the three components of hedonic well-being. The trait form of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to assess general levels of positive and negative emotions. The PANAS consists of 10 items measuring positive affect and 10 items measuring negative affect. Participants respond to each item by indicating on a 5-point scale the degree to which they generally feel each emotion. The positive and negative affect subscales both demonstrated acceptable internal consistency (α =.89 and .88, respectively). The Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999) was used to assess the cognitive component of hedonic well-being in the student sample. The SHS consists of four items assessing general cognitive evaluations of one's life. Responses to the four SHS items are given using a 7-point Likert scale. The single negatively worded item was reverse coded prior to all analyses. The SHS has previously demonstrated adequate reliability and validity (Lyubomirsky & Lepper, 1999) and demonstrated acceptable internal consistency (α =.87) in this sample.

In the MIDUS2 survey, six item scales were used to measure positive and negative affect. These questions asked "During the past 30 days, how much of the time did you feel . . ." Participants responded to each item on a 5-point scale with response options ranging from *all of the time* to *none of the time*. Example items include "nervous" and "worthless" for negative affect and "cheerful" and "calm and peaceful" for positive affect. The positive and negative affect scales both demonstrated excellent internal consistency (α =.90 and .85,

respectively) in the MIDUS2 sample. Life satisfaction was assessed in the MIDUS2 survey using five items that asked participants to rate their satisfaction with their life overall, health, work, relationship with children, and relationship with spouse/partner. This measure demonstrated marginal internal consistency ($\alpha = .65$).

Eudaimonic Well-Being—In both samples, a 42-item version of Ryff's (1989) scales was used to measure the six components of eudaimonic well-being (autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance). Each component was measured with seven items and participants responded to each item using a 7-point Likert scale with response options ranging from *strongly disagree* to *strongly agree*. Negatively worded items were reverse coded prior to all analyses. The six scales of eudaimonic well-being demonstrated adequate internal consistency in both samples: αs ranged from .72 to .85 in the undergraduate sample and .71 to .84 in the MIDUS2 sample.

Social Well-Being—In the student sample, a 34-item version of Keyes's (1998) measure of social well-being was used to measure the five components of social well-being (social acceptance, social actualization, social coherence, social contribution, and social integration). Each component was measured with either six or seven items, and participants responded to each item using a 6-point Likert scale with response options ranging from *strongly disagree* to *strongly agree*. Negatively worded items were reverse coded prior to all analyses. The five scales of social well-being demonstrated adequate internal consistency in the undergraduate sample: αs ranged from .66 to .86. In the MIDUS2 survey, short forms of the Keyes (1998) scales were used so that each of the five components of social well-being was measured using three items. Four of these scales demonstrated adequate internal consistency (αs of .64, .66, .70, and .75), but the scale used to measure one of the components of social well-being (social acceptance) demonstrated poor internal consistency ($\alpha = .41$).

Preliminary Data Analysis

As would be expected, the 14 components of well-being were almost uniformly significantly correlated with one another in both samples. The means, standard deviations, and correlations of the 14 components of well-being in the student sample are presented in Table 2. The univariate normality of the data was examined next. As would be expected for nonclinical samples, the distribution of each of the measures of well-being was slightly negatively skewed, with skewness ranging from –0.02 to –0.94 in the student sample and −0.77 to −2.98 in the MIDUS2 sample.

Models Tested

Seven models of well-being were examined. The first model was designed to test the proposed structure of hedonic well-being (Diener, 1984) and specified the latent constructs of positive affect, negative affect, and life satisfaction as three correlated factors. The second model was designed to test the proposed structure of eudaimonic well-being (Ryff, 1989) and specified the latent constructs of autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance as six correlated factors. The third model was designed to test the proposed structure of social well-being (Keyes, 1998) and specified the five latent constructs of social acceptance, social actualization, social coherence, social contribution, and social integration as five correlated factors. The fourth model was the first attempt to integrate the various components of well-being and specified the three components of hedonic well-being, the six components of eudaimonic well-being, and the five components of social well-being as 14 correlated well-being factors.

A series of three hierarchical models was specified next in order to explore whether the associations between the 14 first-order well-being factors could be represented more parsimoniously by using either one, two, or three second-order well-being factors. The first of these hierarchical models (Figure 1a) tested the most parsimonious option, that a single second-order well-being factor could be identified to represent the relationships among the 14 first-order factors. The second hierarchical model (Figure 1b) tested a model proposed by Keyes (2005) in which the three components of hedonic well-being are designated as indicators of hedonia, and the six components of eudaimonic well-being and the five components of social well-being are designated as 11 indicators of positive functioning. The final hierarchical model (Figure 1c) tested a mod-ified version of the model proposed by Keyes (2005) in which three second-order well-being factors were specified (hedonic well-being, social well-being, eudaimonic well-being). The latent constructs of positive affect, negative affect, and life satisfaction were specified as the three indicators of the second-order hedonic well-being factor. The latent constructs of autonomy, environmental mastery, personal growth, purpose in life, and self-acceptance were specified as five indicators of the second-order eudaimonic well-being factor. The latent constructs of social acceptance, social actualization, social coherence, social contribution, social integration, and positive relations with others were specified as six indicators of the second-order social well-being factor. The one modification we made to the model originally proposed by Keyes (2005) was specifying positive relations with others to be a component of social well-being rather than eudaimonic well-being. The three second-order factors in this model were specified to be correlated factors.

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA), which permits the specification and evaluation of hypothesized factor structures, was used to investigate each of the seven models of well-being. CFA is particularly appropriate for the present investigation because our primary interest lay in determining the most appropriate hierarchical factor model underlying eudaimonic, social, and hedonic well-being. Comparing competing models (via model selection) is considered by many to be a mode of scientific inquiry substantially superior to evaluating single models in isolation (Meehl, 1990; Platt, 1964), a strategy prone to confirmation bias. Given that all models are mathematical conveniences and none are literally correct (MacCallum, 2003), it is sensible to determine which model, out of a set of competing alternatives, presents the best balance of interpretability, fit to data, parsimony, and predictive success. CFA is well suited for comparing competing, theoretically motivated models. In addition, because CFA is a special case of structural equation modeling (SEM), all of the data-model fit indices available in SEM are also available in CFA, which permits us to evaluate rival models with a variety of fit indices.

Maximum likelihood estimation, using the covariance matrix as input, was used for evaluating all of the models. LISREL 8.80 was used to specify and evaluate each model. In the undergraduate sample, parcels were constructed for 13 of the components of well-being (all but life satisfaction). Parceling is a technique commonly used in CFA and latent variable analysis and consists of aggregating individual items into a smaller number of parcels. Parcels generally demonstrate higher reliability than individual items and have better distributional properties (Little, Cunningham, Shahar, & Widaman, 2002). Three parcels were created for the 13 components of well-being by randomly assigning individual items to parcels. These parcels were then specified as the three manifest indicators of the respective latent well-being constructs. The four items from the Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) were specified as the four manifest indicators of the latent construct of life satisfaction. For the MIDUS2 data, parcels were constructed for positive affect, negative affect, and the six components of eudaimonic well-being by randomly

assigning individual items. The five life satisfaction items and the three items for each of the components of social well-being were specified as manifest indicators of their respective latent constructs for the MIDUS2 data. The scale for all models was set by constraining the variance of each latent construct to be 1.0.

Model Evaluation—Several fit indices and selection criteria are available to help researchers choose the most appropriate model in CFA. In accordance with commonly recommended criteria, we report the root mean square error of approximation (RMSEA; Steiger & Lind, 1980), the 90% confidence interval of RMSEA (Browne & Cudeck, 1992), the standardized root mean-square residual (SRMR; Jöreskog & Sörbom, 1996), the comparative fit index (CFI; Bentler, 1990), the nonnormed fit index (NNFI; Bentler & Bonett, 1980), and the Bayesian information criterion (BIC; Schwarz, 1978). Values of RMSEA lower than .05 indicate close fit, values between .05 and .08 indicate acceptable fit, values between .08 and .10 indicate mediocre fit, and values greater than .10 indicate poor fit (Browne & Cudeck, 1992). Typically the 90% confidence limits are used to make decisions about fit using RMSEA. If the lower bound of the 90% CI is below .05, for example, the hypothesis of close fit cannot be rejected. If the upper limit is above .10, the hypothesis of not-close fit cannot be rejected (MacCallum, Browne, & Sugawara, 1996). Values of SRMR below .06 and values of CFI and NNFI close to 1 are considered to represent good fit. BIC is a model selection index used to determine which of a series of competing models provides the best fit for the data, penalized for complexity. Models with lower values of BIC are considered to demonstrate superior fit to those with higher values of BIC. No post hoc model modifications (e.g., correlated measurement errors) were performed on any of the evaluated models. This was because the purpose of our analysis was to evaluate the appropriateness of the various theoretical models, and we were therefore interested in examining the theoretically "pure" models.

RESULTS

Structure of Hedonic Well-Being

We began by examining the latent structure of hedonic well-being. A CFA model with three first-order factors showed adequate to close fit in both samples. Fit statistics for the CFA models of hedonic well-being in both samples can be found in Table 3. Standardized factor loadings were uniformly large and significant across both samples. Thus, as hypothesized, a three-factor model appears to adequately characterize the latent structure of hedonic well-being.

Structure of Eudaimonic Well-Being—We next examined the six-factor model of psychological well-being proposed by Ryff (1989) to encompass the eudaimonic aspects of well-being. A CFA model with six first-order factors (autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance) showed adequate to close fit in both samples. Fit statistics for the CFA models of eudaimonic well-being in both samples can be found in Table 3. Standardized factor loadings were again uniformly large and significant across both samples. Thus, a six-factor model adequately characterizes eudaimonic well-being.

Structure of Social Well-Being—The third model tested was the five-factor structure of social well-being proposed by Keyes (1998). A CFA model with five first-order factors (social acceptance, social actualization, social coherence, social contribution, and social integration) showed adequate to close fit in the student sample. In the MIDUS2 sample, the five-factor model of social well-being demonstrated marginal fit according to some fit indices (RMSEA, SRMR), but poor fit according to other fit indices (CFI, NNFI). Fit

statistics for the CFA models of social well-being in both samples can be found in Table 3. Standardized factor loadings were all large and significant in the student sample, but there were localized areas of misfit in the MIDUS2 sample. Thus, it appears that when the components of social well-being are reliably measured, five factors adequately characterize the latent structure of social well-being. When the five components of social well-being are each measured using only three items, support for this model is less clear.

Integrated First-Order Model of Well-Being

After finding empirical support for the proposed structures of hedonic, eudaimonic, and social well-being independent of one another, we examined an integrated model of well-being in which the three factors of hedonic well-being, the six factors of eudaimonic well-being, and the five factors of social well-being were specified as 14 correlated first-order facets of well-being. This integrative model of well-being demonstrated adequate to close fit in both samples. Fit statistics for the CFA models of the integrated first-order model of well-being can be found in Table 3. Standardized factor loadings were all large and significant in the student sample, but there were again localized areas of misfit in the social well-being factors in the MIDUS2 sample. Thus, 14 factors adequately characterize well-being constructs when analyzed simultaneously.

Hierarchical Structure of Well-Being

We next conducted tests of the series of three hierarchical models to determine the extent to which the first-order components of the three models could be integrated into a unified hierarchical structure of well-being. Results for each of the three hierarchical models in the student and MIDUS2 samples can be seen in Table 4. The first (and most parsimonious) hierarchical model (Figure 1a) specified a single second-order well-being factor. This model demonstrated adequate to close fit in both samples. The second hierarchical model (Figure 1b) specified two second-order factors identified based upon distinctions between the components of well-being proposed to represent hedonia (positive affect, negative affect, and life satisfaction) and those components proposed to represent positive functioning (the components of eudaimonic and social well-being) as suggested by Keyes (2005). This model demonstrated adequate to close fit in both samples, and an examination of BIC values indicated that the model with two second-order factors provided marginally better fit than the model with a single second-order factor in both samples. Chi-square difference tests, possible because the model containing a single second-order factor is parametrically nested within this model, also demonstrated that the model containing two second-order factors demonstrated superior fit to the model containing a single second-order factor in both samples. Based on these results, it appears that the distinction between hedonia and positive psychological functioning is a meaningful distinction.

The final hierarchical model (Figure 1c) specified three second-order factors: hedonic well-being, eudaimonic well-being, and social well-being. This model was based on the model proposed by Keyes (2005) and the original theories of Diener (1984), Ryff (1989), and Keyes (1998), with one modification. The first-order factor of positive relations with others was specified to be a component of social well-being rather than eudaimonic well-being as originally proposed by Ryff (1989). This model demonstrated adequate to close fit in the student and MIDUS2 samples and demonstrated superior fit to the single second-order factor and two second-order factors models according to almost every index of fit across both samples. Although the differences in fit between these three hierarchical models was small, an examination of BIC values also indicated that this model with three second-order factors provided a better fit than both the model with a single order factor and the model with two second-order factors in both samples. Chi-square difference tests, again possible because the previous two hierarchical models are parametrically nested within this model,

provided further support for the superiority of the model containing three second-order factors. Results of these chi-square difference tests were uniform in demonstrating that the model containing three second-order factors provided a better representation than both the model with a single second-order factor and the model with two second-order factors. These results suggest that the distinction between the components of eudaimonic well-being (Ryff, 1989) and social well-being (Keyes, 1998) is a meaningful one.

In addition to examining the fit statistics of the three hierarchical models, we examined the second-order latent correlations in the final model (Figure 1c) as a further test of whether the distinctions among hedonic, eudaimonic, and social well-being are meaningful. In the MIDUS2 sample, the latent correlation between hedonic well-being and eudaimonic well-being was .78, the latent correlation between hedonic well-being and social well-being was .69, and the latent correlation between eudaimonic well-being and social well-being was .85. In the student sample the associations among the second-order latent constructs were stronger: the latent correlation between hedonic well-being and eudaimonic well-being was .92, the latent correlation between hedonic well-being and social well-being was .78, and the latent correlation between eudaimonic well-being and social well-being was .88. These second-order correlations suggest that between 48% and 73% and between 61% and 84% of the latent variance of these three constructs was shared variance in the MIDUS2 and student samples, respectively. The results of our analyses therefore indicate that, across a large sample of undergraduates and a diverse sample of American adults, the 14 first-order components of well-being can best be represented via a hierarchical structure of well-being containing three highly correlated, but distinct second-order factors of hedonic well-being, eudaimonic well-being, and social well-being.

DISCUSSION

The Structure of Hedonic, Eudaimonic, and Social Well-Being

As expected, the results of the confirmatory factor analyses for the models of hedonic, eudaimonic, and social well-being supported the proposed factor structures for each of these models. Although the structure of hedonic well-being has been proposed to consist of positive affect, negative affect, and life satisfaction (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999), recent examinations of the nature of flourishing mental health have not included low levels of negative affect as a component of hedonic well-being (Keyes, 2005). Based on the results of our CFA models, it appears that negative affect is in fact a component of hedonic well-being and the larger structure of well-being. It would therefore appear that just as high negative affect and low positive affect are together indicative of mental illnesses such as Major Depressive Disorder (American Psychiatric Association, 2000), low negative affect and high positive affect may together be indicative of flourishing mental health. Our results also provide support for the proposed models of eudaimonic (Ryff, 1989) and social well-being (Keyes, 1998), which have not been as extensively studied as models of hedonic well-being (Diener, 1984). Measurement issues have limited previous examinations of the factor structures of both eudaimonic and social well-being and the results of these examinations have been inconsistent (Keyes et al., 2002; Springer & Hauser, 2006). Our results therefore provide important support for the two theoretical models by demonstrating, across a large undergraduate sample and a diverse sample of American adults, that when the factors of eudaimonic and social well-being are reliably measured, the proposed multidimensional factor structures are supported.

The Measurement of Well-Being

Our results also demonstrate the need for adequate measurement in order to accurately model the complex relationships among the 14 components of well-being. As the scientific

study of flourishing mental health expands in future years, it will be critical for researchers to have a reliable and valid battery of measures that can be used consistently. Although the motivations for creating and using short-form measures are numerous and often very reasonable, the results of our analysis suggest that the inconsistent and inconclusive findings of previous examinations of the latent structure of well-being may have been a result of measurement limitations rather than problems with the proposed theoretical models. There may be certain situations in which the short-form or aggregate measures are appropriate or sufficient, such as when researchers are interested only in the higher-order factors. However, our findings suggest that a longer and more thorough battery of items may be necessary in order to accurately model the complex latent structure of well-being. The collection of measures used in the student sample, totaling 100 items, appears to provide one such option, in that they reliably measure the 14 components of well-being, and our analyses using these measures support the proposed factor structure of each of the examined components of well-being. The measures used with the student sample might therefore provide an ideal balance of reliability and brevity.

The Hierarchical Structure of Well-Being

An important aspect of the results was support for the hierarchical models that integrated the 14 first-order factors of well-being. Previous attempts to integrate the models of well-being have been hindered by the inconsistent levels of analysis and selection of factors. Because we first independently evaluated the proposed structures of hedonic, eudaimonic, and social well-being and then evaluated the extent to which these models can be unified into a hierarchical structure, these results provide a statistically rigorous and theoretically necessary examination of the latent structure of well-being.

By examining the relative fit of three hierarchical models of well-being, we were able to determine which hierarchical structure of well-being best represented the 14 first-order factors of well-being. Each of the three hierarchical models examined provided a reasonable explanation for how these first-order factors might best be represented, but our results consistently demonstrated that the model containing three second-order factors of hedonic, eudaimonic, and social well-being provided the best representation of the hierarchical structure of well-being. These results therefore build upon the theoretical and empirical work of Keyes (2005, 2007) and demonstrate that when the 14 components of well-being are assessed using reliable measures, they can be successfully integrated into a hierarchical structure of well-being that maintains the theoretical distinctions between the hedonic, eudaimonic, and social dimensions of well-being.

It should be noted, however, that although the results of our CFA models supported the distinctions among the second-order constructs of hedonic, eudaimonic, and social well-being, the three second-order factors demonstrated very strong associations with one another in both samples. The magnitudes of these second-order correlations indicate that the higher order dimensions of hedonic, eudaimonic, and social well-being may have more shared variance than unique variance and therefore that there may be more overlap among these dimensions of well-being than previously has been recognized (Kashdan et al., 2008). It is likely that, although empirically distinct, these factors strongly covary across time, and increases or decreases in one dimension of well-being may lead to subsequent increases or decreases in other dimensions of well-being. A recent daily diary study provides support for this hypothesis by demonstrating that the daily pursuit of eudaimonic behaviors was associated with improved hedonic well-being both on the days in which those behaviors were performed and on subsequent days (Steger, Kashdan, & Oishi, 2008).

A particular strength of these findings is that we were able to demonstrate support for the proposed hierarchical model of well-being across two large samples with a combined

population of almost 5,000 individuals. The consistent support for this model, across a diverse population of younger and older adults, provides strong evidence that this hierarchical model (Figure 1c) may provide a reasonable conceptualization of the latent structure of well-being. Although it is likely that future research will continue to modify this model by adding or removing different facets of well-being, these results provide an important step in establishing a theoretically grounded and empirically validated taxonomy of well-being.

Limitations and Future Directions

Although our results suggest that the models of hedonic, eudaimonic, and social well-being can be successfully unified into a hierarchical structure of well-being, certain limitations of our study should be noted. We were able to establish support for the five-factor model of social well-being (Keyes, 1998) only in the student sample. Although we believe the inability to establish strong support for this model in the MIDUS2 sample was a result of the poor internal consistency of certain social well-being measures used in the MIDUS2 survey, alternative explanations are also possible. Additional CFA research examining the latent structure of social well-being in diverse samples could therefore help to clarify whether the proposed model of social well-being (Keyes, 1998) is in fact supported when the components are measured reliably. Additional examinations of the latent structure of social well-being could also provide further support for our finding that the "positive relations with others" factor of well-being should be considered an indicator of social well-being rather than eudaimonic well-being. Future CFA studies should also consider interspersing individual items from the various well-being scales, as it is possible that the ordering of subscales and the different response formats of these scales may have produced method variance that artificially inflated the interrelations of certain components of well-being. The findings are also potentially limited by the cross-sectional nature of the data in both samples. This is currently a pervasive problem in positive psychology research (Lazarus, 2003) and longitudinal studies examining the components of well-being could provide further evidence for our proposed hierarchical structure of well-being.

Longitudinal studies of the components of well-being would also allow for an examination of the potential for intraindividual change or growth in well-being. The practice of clinical psychology is built upon the belief that positive changes in mental health are achievable, yet few studies have adequately examined the degree to which individual levels of well-being can change over time (Mroczek & Griffin, 2007). Whereas psychologists have previously asserted that "It may be that trying to be happier is as futile as trying to be taller" (Lykken & Tellegen, 1996, p. 189), more recent theoretical and empirical work suggests that as much as 40% of the variance in individual well-being can be determined by intentional activity (Lyubomirsky, Sheldon, & Schkade, 2005). Although this recent work provides cause for optimism concerning the potential for achieving sustainable growth, more sophisticated methodological designs are necessary to determine whether individuals can achieve sustainable gains in the components of hedonic, eudaimonic, and social well-being.

An additional important area for further research will be to replicate and extend the numerous findings regarding the correlates of hedonic well-being for eudaimonic and social well-being. We know a great deal regarding how demographic variables such as age, gender, income, and ethnicity as well as personality variables such as extraversion, optimism, and self-esteem, relate to hedonic well-being (Diener et al., 1999; Myers & Diener, 1995), but less is known regarding how these same variables relate to the components of eudaimonic or social well-being. Our understanding of the correlates and consequences of each of the components of well-being therefore will be advanced best by examining the various components in unison. It will be particularly important to examine how each of the components of well-being relates to various forms of mental illness in order to determine

how the science of well-being can most effectively aid the practice of clinical psychology. Finally, it should be noted that the models of well-being we examined may reflect a Western perspective on flourishing mental health, and it is possible that certain components (e.g., autonomy) may not be as relevant or valued in different cultures or countries.

Conclusions

Although a great deal of research remains to be done, these findings provide an important step in the classification and understanding of the nature of well-being. A theoretically grounded and empirically supported taxonomy is critical to any scientific pursuit. The sequential analysis of the models of well-being and the successful integration of these models into a hierarchical structure of well-being provide support for one such taxonomy of well-being. This analysis builds upon the work of Keyes (2005, 2007), which first examined the potential for empirically integrating the models of hedonic (Diener, 1984), eudaimonic (Ryff, 1989), and social well-being (Keyes, 1998) into a unified structure. These results therefore elucidate the latent structure of well-being. It now remains to be seen what psychological processes and interventions can best serve as pathways to well-being.

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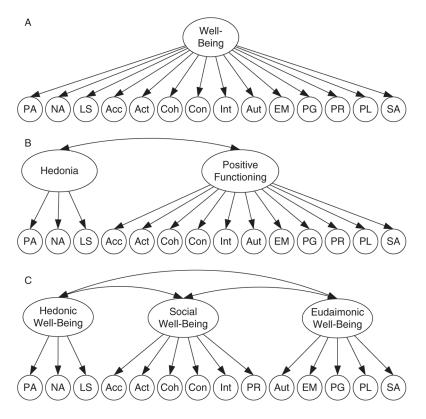
Figure 1.
Three competing hierarchical models of well-being. (a) Hierarchical structure of well-being model containing one second-order factor. (b) Hierarchical structure of well-being model containing two second-order factors based upon Keyes's (2005) model of hedonia and positive functioning. (c) Hierarchical structure of well-being model containing three second-order factors (hedonic well-being, social well-being, eudaimonic well-being). PA =Positive Affect, NA =Negative Affect, LS =Life Satisfaction, Acc =Social Acceptance, Act =Social Actualization, Coh =Social Coherence, Con =Social Contribution, Int =Social Integration, Aut =Autonomy, EM =Environmental Mastery, PG =Personal Growth, PR =Positive Relations with Others, PL =Purpose in Life, SA =Self-Acceptance.

Table 1

Demographic Information in the Student and MIDUS2 Samples

Sample	Student	MIDUS2
N		
Total	591	4,032
Male	239	1,794
Female	352	2,222
Unknown	—	16
Age		
Mean	18.94	56.25
SD	1.65	12.39
Range	18–45	28–84
Ethnicity		
% Caucasian	87.8	91.1
% Asian American	5.4	0.6
% African American	1.4	3.7
% Hispanic	1.9	2.6
% Other	3.6	2.0

Table 2

Correlations, Means, and Standard Deviations of the 14 Measures of Well-Being in the Student Sample

	AUT	EM	PG	PR	PL	SA	ACC	ACT	COH	CON	INT	PA	NA	LS
AUT	1													
EM	.397	1												
PG	.414	.444	1											
PR	.395	.602	.502	1										
PL	.396	.683	.604	.596	1									
SA	.430	.722	.500	.680	.688	1								
ACC	.115	.415	.320	.519	.422	.450	1							
ACT	.181	.459	.424	.489	.521	.509	.582	1						
COH	.376	.379	.469	.364	.443	.405	.358	.416	1					
CON	.346	.546	.523	.487	.658	.586	.441	.571	.530	1				
INT	.263	.594	.413	.644	.609	.625	.555	.641	.441	.733	1			
PA	.345	.544	.389	.443	.548	.543	.302	.368	.230	.532	.513	1		
NA	−.292	−.505	−.298	−.387	−.407	−.507	−.304	−.267	−.271	−.311	−.342	−.305	1	
LS	.319	.600	.403	.595	.544	.694	.445	.424	.294	.452	.524	.566	−.516	1
Mean	29.09	29.74	32.69	33.21	32.86	31.29	26.97	31.32	26.71	27.03	30.55	36.11	20.05	20.64
SD	5.48	5.59	4.98	5.61	5.61	6.42	5.71	5.21	4.12	4.78	5.95	6.82	7.04	4.73

Note. All correlations significant at the .005 level (two-tailed). AUT =Autonomy, EM =Environmental Mastery, PG =Personal Growth, PR =Positive Relations with Others, PL =Purpose in Life, SA =Self-Acceptance, ACC =Social Acceptance, ACT =Social Actualization, COH =Social Coherence, CON =Social Contribution, INT =Social Integration, PA =Positive Affect, NA =Negative Affect, LS =Life Satisfaction.

Table 3

Confirmatory Factor Analysis Results of Hedonic, Eudaimonic, Social, and Integrated 14-Factor Models of Well-Being

Sample	Latent Structure	χ^2	df	CFI	NNFI	RMSEA	90% CI	SRMR
Student (n =591)	Hedonic well-being	137.06	32	.983	.977	.075	.062–.088	.047
	Eudaimonic well-being	473.90	120	.977	.971	.071	.064–.077	.050
	Social well-being	263.02	80	.985	.980	.062	.054–.071	.041
	Integrated 14-factor model	1,870.70	769	.985	.983	.049	.046–.052	.046
MIDUS 2 (n =4,043)	Hedonic well-being	1,262.46	41	.975	.966	.086	.082–.090	.045
	Eudaimonic well-being	2,036.79	120	.982	.977	.063	.061–.065	.034
	Social well-being	2,951.03	80	.880	.842	.094	.092–.097	.072
	Integrated 14-factor model	11,162.88	811	.973	.969	.056	.055–.057	.046

Table 4

Confirmatory Factor Analysis Results of Three Competing Hierarchical Models of Well-Being

Sample	Latent Structure	χ^2	df	CFI	NNFI	RMSEA	90% CI	SRMR	BIC
Student (n =591)	One second-order factor[*]	2,938.41	846	.975	.974	.065	.062–.067	.065	3,576.59
	Two second-order factors[**]	2,897.65	845	.976	.974	.064	.062–.067	.063	3,542.21
	Three second-order factors[***]	2,676.55	843	.978	.976	.061	.058–.063	.061	3,333.87
MIDUS 2 (n =4,043)	One second-order factor[*]	18,189.57	888	.957	.954	.070	.069–.070	.064	19,036.43
	Two second-order factors[**]	16,462.66	887	.961	.958	.066	.065–.067	.058	17,317.82
	Three second-order factors[***]	15,603.62	885	.963	.960	.064	.063–.065	.058	16,475.38

[*] The one second-order factor model is depicted in Figure 1a;

[**] The two second-order factor model is depicted in Figure 1b;

[***] The three second-order factor model is depicted in Figure 1c.