Journal of Personality 83:4, August 2015

DOI: 10.1111/jopy.12116

Toward a Resolution of the Tripartite Structure of Subjective Well-Being

Michael A. Busseri
Brock University

Abstract

Diener (1984) introduced the concept of "subjective well-being" (SWB) as comprising three primary components: life satisfaction (LS), positive affect (PA), and negative affect (NA). Busseri and Sadava (2011) identified multiple competing conceptualizations of the tripartite structure of SWB and delineated problems with this ambiguity with respect to defining, operationalizing, analyzing, and synthesizing information concerning SWB. The present work provides an empirical evaluation of four competing structural approaches in which SWB is conceptualized variously as three separate components (Model 1), a hierarchical construct (Model 2), a causal system (Model 3), and a composite (Model 4). Data from a longitudinal study of middle-aged Americans (N = 3,707; 20–75 years old, 55% female, 94% Caucasian) were used to examine the relatedness versus independence of the three SWB components within and across time, as well as predictive effects on SWB. The various structural models differ in how adequately they accommodate the joint relatedness/independence of the SWB components and lead to different conclusions concerning predictive effects on SWB. Conceptual and empirical considerations are considered within and across models. Implications and next steps for further understanding the tripartite structure of SWB are discussed.

In a landmark review article, Diener (1984) introduced the concept of "subjective well-being" (SWB) to describe how people evaluate and experience their lives in positive ways. Three primary components were delineated: a cognitive evaluation of one's live overall, referred to as life satisfaction (LS), along with frequent experiences of positive affect (PA) and infrequent negative affect (NA). This definition of SWB has been extremely influential. However, despite the tremendous proliferation of research literature since the publication of Diener's (1984) review, little ground has been made in clarifying the tripartite structure of SWB. In a recent review of this issue, Busseri and Sadava (2011) identified several competing structural approaches. These authors also outlined attendant ambiguities concerning several fundamental issues related to SWB, including its definition, conceptualization, operationalization, analysis, and synthesis. Expanding on the conceptual arguments made by Busseri and Sadava (2011), the present study provides a side-by-side empirical investigation of multiple structural conceptualizations, with the goal of informing, and ultimately resolving, the tripartite structure of SWB.

Research on SWB

The large volume of research on SWB has produced a massive amount of information concerning the correlates and predictors of individual differences in the components of SWB (Eid & Larsen, 2008). Reviews of this research (e.g., Diener, Suh, Lucas, & Smith, 1999; Lyubomirsky, Sheldon, & Schkade, 2005; Pressman & Cohen, 2005) generally suggest that higher LS, more frequent PA, and less frequent NA are associated with greater socioeconomic advantages (e.g., higher education, higher income) as well as more positive psychological, interpersonal, and physical functioning (e.g., higher self-esteem, greater optimism, stronger interpersonal bonds, less physical impairment and illness). Further, over the past two decades, national- and societal-level databases from countries around the globe have become available to researchers, prompting exploration of SWB based on a large-scale perspective. Emerging findings based on these large data sets (Diener, Kesebir, & Lucas, 2008; Diener & Lucas, 2000; Diener & Tov, 2007; Dolan & White, 2006) provide compelling evidence that at the aggregate level, societies and nations with higher SWB are characterized by higher standards of living and economic prosperity, more positive population-health indicators, greater access to democratic institutions, and greater peace compared to nations with lower SWB. Inspired by such results, policy makers are beginning to invest in the creation and monitoring of "national accounts" of well-being to better guide and inform the impact of social policies and reforms (Cooper & Maddocks, 2011; Cummins, Eckersley, Pallant, Van Vugt, &

Correspondence concerning this article should be addressed to Michael A. Busseri, Department of Psychology, Brock University, St. Catharines, Ontario, Canada L2S 3A1. Email: mbusseri@brocku.ca.

Misajon, 2003; Diener, Lucas, Schimmack, & Helliwell, 2009).

Interest in monitoring SWB over time has also been fueled by empirical findings from large-scale longitudinal studies indicating that SWB may be impacted by life events and changes in life circumstances, particularly over the short (i.e., days and weeks) and medium term (i.e., months and the first few years; Lucas, 2007; Luhmann, Hofmann, Eid, & Lucas, 2012). Such findings qualify other proposals suggesting that SWB is trait-like and influenced primarily by genetics and dispositions, and thus bound to remain stable over the long term, despite short-term deviations from personal “set-points” (Cummins, 2010; Lykken & Tellegen, 1996). Indeed, statistical modeling has revealed substantial proportions of stable, trait-like variance in SWB as well as reliable variance that is occasion-specific and changeable over time (Lucas & Donnellan, 2012; Schimmack, Krause, Wagner, & Schupp, 2010).

It would seem, therefore, that basic questions concerning SWB, including its nomological network and its stability over time, have been well attended to. Recently, however, Busseri and Sadava (2011) identified several fundamental issues concerning the current state of SWB research that call into question such sanguine conclusions. Based on a review of the relevant empirical literature predating and subsequent to Diener (1984), these authors identified multiple conflicting conceptualizations concerning the structure of SWB, in terms of “how SWB is internally organized with respect to its three primary components: LS, PA, and NA . . . [and] how these three primary components constitute, reflect, and/or combine to produce the theoretical construct called SWB” (Busseri & Sadava, 2011, p. 291). In addition, Busseri and Sadava (2011) described potential problems this ambiguity has created with respect to developing a shared understanding of the meaning of SWB, studying SWB (i.e., operationalization, measurement, analysis), and synthesizing findings concerning the properties, characteristics, and significance of SWB. Below we summarize the fuller discussion of these competing models provided by Busseri and Sadava (2011).

Competing Structural Conceptualizations

Model 1: SWB as Three Separate Components

In Model 1, SWB is conceptualized as three separate components: LS, PA, and NA. To study SWB according to this approach, researchers examine these three separate components and compile findings for each component. From this perspective, knowledge concerning SWB thus accrues even if just one component of SWB is studied within a given investigation. For example, Steel, Schmidt, and Schulz (2008) reported results from a meta-analytic review concerning the association between SWB and dominant factors of personality. In this review, correlations between SWB and personality factors were tabulated and reported separately for LS, PA, and NA and revealed both consistencies across SWB components and potential unique associations between particular traits and specific SWB components.

An advantage of this structural conceptualization is the ease with which it can be implemented. Disadvantages include the fact that it is unclear what the term *SWB* means: In Model 1, SWB is not a psychological construct in the standard psychometric sense (Bollen, 2002), but could simply refer instead to a broad domain of inquiry (Pavot, 2008). This approach also ignores the often substantial commonality (i.e., covariation) among SWB components, in stark contrast to several of the other structural frameworks. Thus, Model 1 provides no theoretical framework for understanding the *structure* of SWB per se beyond the tacit assumption that the associations among SWB components are irrelevant to understanding SWB. Nonetheless, Model 1 is included in the present work because investigation of the correlates and predictors of SWB, and tabulation of such findings across studies, often occurs for LS, PA, and NA separately; thus, much of what is known about SWB comes from studies based on Model 1.

Model 2: SWB as a Hierarchical Construct

In Model 2, SWB is conceptualized as a hierarchical construct manifested in LS, PA, and NA. To study SWB according to this approach, researchers typically operationalize SWB as a higher-order latent factor with three first-order factors as indicators (LS, PA, and NA) and examine characteristics of the latent SWB factor and, in some studies, the unique variance in each of the components (Busseri, Sadava, & DeCourville, 2007). Indeed, as a hierarchical construct (see Brunner, Nagy, & Wilhelm, 2012; Kline, 2011), both the common variance among the SWB components *and* the unique variance in each SWB component that is independent of the higher-order factor (e.g., the variance in LS that is not shared with PA and NA) are relevant to understanding SWB. From this perspective, in order for knowledge concerning SWB to accrue, all three SWB components need to be employed within a given investigation to estimate a higher-order latent SWB factor, as well as the unique variances in LS, PA, and NA. For example, Linley, Maltby, Wood, Osborne, and Hurling (2009) estimated the association between a higher-order latent SWB factor (indicated by LS, PA, and NA) and a latent factor representing the “psychological well-being” construct, and examined whether this association was consistent across age, gender, or ethnic groups.

Advantages of conceptualizing SWB as a higher-order construct include the explicit attention to the commonality among SWB components, and the unique variances in each component, thus permitting the possibility of developing knowledge (a) concerning SWB as a higher-order factor based on the shared variance among its components, *and* (b) with respect to aspects of its three components that may be unique from the higher-order factor, as opposed to informing only the three separate components. Disadvantages include the fact that this approach requires at least moderate correlations between each pair of SWB components, including between PA and NA—an association that has been debated based on conceptual and empirical grounds (see Schimmack, 2008; Schimmack & Crites, 2005).

Model 3: SWB as a Causal System

In Model 3, SWB is conceptualized as a causal system in which PA and NA influence LS, but PA and NA do not influence LS; in addition, PA and NA are often examined as potential mediators of the influence of other variables (particularly personality factors) on LS (Schimmack, Diener, & Oishi, 2002; Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002). In this model, therefore, LS is typically treated as the ultimate SWB outcome, that is, the "essence" of SWB (Davern, Cummins, & Stokes, 2007, p. 432). To study SWB according to this approach, researchers typically test path models in which PA and NA are specified as predicting LS, as well as models in which direct and indirect effects (through PA and NA) of other variables on LS are tested. A variation of this model treats PA and NA as inputs to a composite affect variable (i.e., PA minus NA; labeled variously as "affect balance," "hedonic balance," or "affective well-being"; e.g., Schimmack, Schupp, & Wagner, 2008), which is then modeled as predicting LS.[1] From this perspective, knowledge concerning SWB accrues based on findings related to direct and indirect effects of other variables on LS. That is, variance in LS that is not explained by PA and NA and predictive effects on LS not mediated by PA and NA are also relevant to understanding well-being (e.g., Schimmack et al., 2008). For example, Kuppens, Realo, and Diener (2008) evaluated the extent to which PA and NA predicted LS in a cross-national sample and assessed whether societal-level differences in individualism and survival/self-expression values moderated these predictive links.

Advantages of this structural conceptualization include an opportunity to identify predictors of LS independent of, and/or mediated (in whole or in part) by, PA and NA. For example, across several studies, Schimmack and colleagues (Schimmack, Diener, et al., 2002; Schimmack, Radhakrishnan, et al., 2002; Schimmack et al., 2008) have found that predictive effects of extraversion and neuroticism on LS are largely indirect, that is, mediated by PA and NA; Schimmack et al. (2008) also found that the effects of unemployment and regional differences (i.e., East vs. West Germany) on LS were direct, rather than indirect through PA and NA. However, one limitation of this model is that PA and NA are thought to have a *causal* impact on LS—an assumption that awaits systematic empirical verification.

Model 4: SWB as a Composite

In Model 4, SWB is conceptualized as a composite, arising from the combination of its three main components: LS, PA, and NA. To study SWB according to this approach, researchers need to assess all three components and then combine them to estimate a fourth variable, in this case a composite (aggregate) SWB score. From this perspective, knowledge concerning SWB accrues if all three SWB components are employed within a given investigation to compute a composite SWB score, and this composite is then studied in relation to other variables. For example, Sheldon and Lyubomirsky (2012) employed a composite SWB score derived from measures of LS, PA, and NA and evaluated this composite across three time points in relation to various factors, including experiences of positive events and appreciation of life changes.

An advantage of Model 4 is that a high value of a single overall SWB score maps onto the popular notion of "high SWB" as the combination of high LS, frequent PA, and infrequent NA. Disadvantages include the fact that this structural framework ignores the commonality among SWB components, focusing instead of the combination of components. In addition, composite SWB scores are sometimes used by researchers as a "stand-in" for a higher-order SWB factor (e.g., Sheldon & Hoon, 2007), creating confusion concerning the meaning of a composite SWB score as either a combination of separate components, consistent with Model 4, versus an estimate for a higher-order SWB factor, consistent with Model 2. Further, although researchers often employ a unit-weighting approach for combining LS, PA, and NA into a composite SWB score, the most appropriate (or optimal) weighting of the three components in forming a composite SWB score (particularly LS vs. the two affective components) has yet to be systematically investigated and, consequently, is unclear.[2]

Implications

In addition to delineating these differences among structural models, Busseri and Sadava (2011) highlighted several practical implications for the study of SWB with respect to measurement, analysis, and synthesis. For example, whereas measurement of all three SWB components (LS, PA, and NA) is required to inform Model 2 and Model 4, it is not necessary when studying SWB with respect to Model 1 and Model 3 (if LS is taken as the ultimate indicator of SWB). With respect to analysis of SWB-related findings, a fourth variable is required in Model 2 (a higher-order latent SWB factor) and Model 4 (a composite SWB score), whereas in the other models no more than three variables are required (i.e., LS, PA, and NA) and perhaps as few as one variable may be required (LS, or PA, or NA in Model 1; LS in Model 3). Concerning synthesis and integration of the multitudinous SWB-related findings, prominent literature reviews (e.g., DeNeve & Cooper, 1998; Diener et al., 1999; Howell & Howell, 2008; Steel et al., 2008) have presented SWB-related findings separately for LS, PA, and NA. Such information is most directly relevant to Model 1; however, it does not inform SWB as a higher-order construct (Model 2), causal system (Model 3), or composite (Model 4).

Clearly, the current state of ambiguity concerning the structure of SWB needs to be resolved. Whereas Busseri and Sadava (2011) delineated several steps researchers could undertake in order to begin addressing this issue, these authors did not present evidence that would help resolve the ambiguity. Toward this end, in the present work, we undertook several of the empirical steps recommended by Busseri and Sadava (2011). By considering empirical findings concerning SWB within and across structural models, the present work thus highlights the implications of adopting particular structural conceptualizations. Such steps are expected to provide progress toward resolving the tripartite structure of SWB.

The Present Study

The main goal of the present work was to inform the tripartite structure of SWB through examining multiple structural conceptualizations with respect to empirical results derived from the same database. Using cross-sectional and longitudinal results from a representative survey of middle-aged American adults followed across two waves separated by a 10-year period (Brim, Ryff, & Kessler, 2004), we evaluated structural frameworks in which SWB is conceptualized as three separate components (Model 1), a hierarchical construct (Model 2), a causal system (Model 3), and a composite (Model 4). These models were evaluated in terms of the relatedness versus independence of the SWB components within and across time, and with respect to predictive effects of other variables on SWB.

The two-wave design permitted evaluation of the structural models over an extended period of time. According to the separate components model (Model 1), longitudinal stability should be observed for each SWB component. According to the hierarchical construct model (Model 2), longitudinal stability should be observed for the latent SWB factor; further, the individual components may also exhibit stability that is unique from the latent SWB factor. According to the causal system model (Model 3), longitudinal stability in LS should be observed; further, PA and NA should influence (i.e., predict) LS over time. According to the composite model (Model 4), longitudinal stability should be observed in the composite SWB score.

To evaluate predictive effects on SWB, an illustrative set of predictor variables was chosen based on Lyubomirsky and colleagues' (2005) delineation of three main categories of influences on well-being: personality/genetics, life circumstances, and intentional activities. Personality was assessed in terms of the two most prominent personality factors (i.e., extraversion, neuroticism) purportedly underlying the general tendency toward long-term stability in well-being levels over time (Davern et al., 2007; DeNeve & Cooper, 1998; Steel et al., 2008). Life circumstances were assessed in terms of sociodemographic factors, including participant age, gender, income, health, employment status, and relationship status. Based on the notion of intentional activities proposed by Lyubomirsky et al. (2005), comprising behavioral routes to greater well-being through effective investment of personal effort in specific activities, the present work also assessed the degree of thought and effort invested in various life domains as an indicator of overall "intentional living."

According to Model 1, predictors should have unique effects on the various SWB components; further, consistent with the presumed irrelevance of the intercomponent associations, predictive results for a given SWB component should not be impacted by the other components. According to Model 2, predictors should have direct effects on the latent SWB factor, as well as possible unique effects on one or more of the individual components independent of the higher-order SWB factor. According to Model 3, predictors should have predictive effects on LS; further, both direct effects on LS and indirect (or mediated) effects on LS through PA and NA are possible, with mediation being particularly likely for personality traits. According to Model 4, predictors should have direct effects on a composite SWB score.

METHOD

Participants and Procedure

Participants were drawn from the Midlife in the United States (MIDUS) study, a two-wave longitudinal national probability sample of middle-aged adults in the United States recruited using random-digit dialing (Brim et al., 2004). MIDUS began in 1995 and 1996 (Wave 1) with baseline phone interviews and self-report surveys administered by trained research staff, with follow-up assessments (via phone interview and survey) occurring 8–10 years later, from 2004 to 2006. The current study employed the publicly released MIDUS data, comprising 7,108 participants at Wave 1. Of these participants, 3,707 (52% of the Wave 1 sample) had data on the study measures (described below) at both Wave 1 and Wave 2. These longitudinal participants ranged in age from 20 to 75 years, 55% were female, and 94% self-identified their primary racial origin as White (4% African American, 2% other).

Measures

SWB

Life Satisfaction. Based on the self-anchoring ladder developed by Kilpatrick and Cantril (1960), respondents at Wave 1 and Wave 2 completed an11-point evaluation of their life overall "these days" (referred to subsequently as present LS), ranging from 0 (*worst possible life overall*) to 10 (*best possible life overall*). Higher scores indicated higher present LS. A large volume of research has demonstrated the reliability and validity of simple one-item approaches to assessing LS (Diener, Inglehart, & Tay, 2013). In the MIDUS sample, the estimated parallel-form reliability of this item is .65 (Brim et al., 2004), consistent with previous empirical estimates of the test-retest reliability of similar one-item LS measures assessed over varying periods of time, ranging from several weeks to annual assessments across two decades (Lucas & Donnellan, 2012; Schimmack et al., 2010; Schimmack & Oishi, 2005).

Positive Affect. Self-reported frequency of positive affect over the previous 30 days was assessed at Wave 1 and Wave 2 using six items (e.g., cheerful, in good spirits), each rated on a 5-point scale ranging from 1 (*all of the time*) to 5 (*none of the time*; see Mroczek & Kolarz, 1998). Ratings were reverse-scored and averaged (αs = .91 at Wave 1 and Wave 2), such that higher scores indicated more frequent positive affect (PA).

Negative Affect. Self-reported frequency of negative affect over the previous 30 days was assessed at Wave 1 and Wave 2 using six items (e.g., so sad nothing could cheer you up, nervous), each rated on a 5-point scale ranging from 1 (*all of the time*) to 5 (*none of the time*; see Mroczek & Kolarz, 1998). Ratings were reverse-scored and averaged (αs = .87 and .85 at Wave 1 and Wave 2, respectively), such that higher scores indicated more frequent negative affect (NA).

Composite SWB. A composite measure of SWB was computed at Wave 1 and Wave 2 by averaging standardized scores for LS, PA, and reverse-scored NA (αs = .79 at Wave 1 and Wave 2). Higher scores indicated higher levels of SWB.

Predictors

Age. Respondent age (in years) was determined at Wave 1 based on the participant's date of birth and the date of interview.

Gender. Respondent gender was self-reported at Wave 1 and coded as 0 (female) or 1 (male).

Income. Self-reported household income over the past 12 months (all sources, in U.S. dollars) was assessed at Wave 1. Note that incomes greater than $300,000 (USD) were recoded by the study administrators as $300,000.

Partner Status. Based on self-reported information at Wave 1 concerning marital status and whether respondents were living with someone, a dichotomous variable was computed to differentiate between respondents who were currently living with a partner/spouse (coded as 1) or living alone (coded as 0).

Health Conditions. At Wave 1, respondents indicated whether they had experienced or been treated (yes/no) for any of a series of 29 chronic health conditions in the previous year (e.g., asthma, skin trouble, hay fever, high blood pressure). The number of conditions was summed (maximum range = 0 to 29), such that higher scores indicated a greater number of health conditions experienced.

Personality Traits. Extraversion and neuroticism were assessed at Wave 1 using self-reported ratings of the extent to which each of nine adjectives described them using a 4-point rating scale ranging from 1 (*a lot*) to 4 (*not at all*; Brim et al., 2004). Five adjectives pertained to extraversion (e.g., outgoing, friendly), and four pertained to neuroticism (e.g., moody, worrying). Ratings for each trait were reverse-scored and averaged, such that higher scores indicated greater extraversion (α = .78) and neuroticism (α = .75).

Intentional Living. Five items were combined assessing the degree to which respondents indicated investing "thought/effort" into work, finances, relationships, health, and life overall at Wave 1. Ratings were made using an 11-point scale ranging from 0 (*none*) to 10 (*very much*; Brim et al., 2004) and were averaged (α = .64), such that higher scores indicated greater intentional living.

Data Analysis Overview

Descriptive statistics and correlations among the study variables are shown in Table 1. To adjust for measurement error, latent variables for LS, PA, NA, composite SWB, extraversion, neuroticism, and intentional living were estimated using structural equation modeling software (AMOS v20, maximum likelihood estimation) by setting the residual variance in each of the standardized measured variables equal to 1-reliability.

To test Model 1 in the cross-sectional analyses, the set of eight Wave 1 predictors was specified to have directional paths to Wave 1 LS, PA, and NA. Correlations were estimated among each pair of predictor variables and among the residual variances in the latent LS, PA, and NA variables in order to account for associations among the SWB components not explained by the model. In the longitudinal analyses, the Wave 2 latent LS, PA, and NA variables were regressed onto the set of eight Wave 1 predictor variables along with the Wave 1 latent LS, PA, and NA variables. Correlations were estimated among each pair of predictor variables and among the residual variances in the three Wave 2 SWB variables in order to account for associations not explained by the model. These models were saturated ($df = 0$).

To test Model 2 in the cross-sectional analyses, a higher-order Wave 1 latent SWB factor was modeled with loadings from the Wave 1 latent LS, PA, and NA variables. Residual variances for each of three latent indicators were estimated to account for variance in the latent LS, PA, and NA variables not explained by the latent SWB factor. The latent SWB factor was regressed onto the set of eight Wave 1 predictor variables, with correlations specified among the predictors. The residual variance of the latent SWB factor was fixed to 1 in order to identify the scale of this factor. This model was overidentified ($df > 0$), and thus model fit was evaluated using several global indicators (i.e., model χ^2, CFI, RMSEA) as well as "local" discrepancies between the observed versus model-implied variance-covariance matrix. Modifications made to this model

Table 1 Means, Standard Deviations, and Correlations Among Study Variables

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SWB																	
1. W1 Life satisfaction	7.85	1.52	—														
2. W1 Positive affect	3.41	0.71	0.56	—													
3. W1 Negative affect	1.51	0.59	−0.47	−0.64	—												
4. W1 Composite SWB	0.00	1.00	0.81	0.88	−0.84	—											
5. W2 Life satisfaction	7.89	1.53	0.46	0.39	−0.32	0.46	—										
6. W2 Positive affect	3.43	0.70	0.37	0.53	−0.39	0.51	0.57	—									
7. W2 Negative affect	1.51	0.57	−0.27	−0.38	0.52	−0.47	−0.47	−0.61	—								
8. W2 Composite SWB	0.00	1.00	0.44	0.51	−0.49	0.57	0.81	0.87	−0.83	—							
W1 Predictors																	
9. Age	47.11	12.36	0.16	0.11	−0.13	0.16	0.16	0.14	−0.11	0.16	—						
10. Gender	45%		0.01	0.04	−0.09	0.05	−0.02	0.02	−0.09	0.04	0.03	—					
11. Income	75.25	61.08	0.14	0.08	−0.12	0.13	0.13	0.08	−0.13	0.14	−0.07	0.11	—				
12. Partnership status	76%		0.23	0.14	−0.15	0.21	0.14	0.06	−0.06	0.10	0.01	0.11	0.31	—			
13. Health conditions	2.34	2.39	−0.21	−0.31	0.40	−0.37	−0.16	−0.23	0.30	−0.28	0.16	−0.14	−0.12	−0.09	—		
14. Extraversion	3.19	0.56	0.29	0.38	−0.22	0.35	0.21	0.27	−0.12	0.24	0.03	−0.07	0.05	0.02	−0.09	—	
15. Neuroticism	2.22	0.66	−0.33	−0.49	0.55	−0.55	−0.25	−0.35	0.41	−0.40	−0.15	−0.11	−0.06	−0.05	0.28	−0.16	—
16. Intentional living	7.83	1.23	0.41	0.28	−0.19	0.35	0.28	0.21	−0.13	0.25	0.07	−0.10	0.06	0.09	−0.09	0.34	−0.11

Note. $N = 3{,}707$. W1 = Wave 1; W2 = Wave 2; SWB = subjective well-being. For sex (0 = female, 1 = male), *M* indicates proportion of males in sample. For partnership status (0 = living alone, 1 = living with partner), *M* indicates proportion of sample living with partner/spouse. Income is shown in units of US$1,000. Correlations larger in absolute value than .04 are statistically significant at $^{*}p < .05$.

are reported in the Results section. In the longitudinal analyses, a higher-order Wave 2 latent SWB factor (specified as above) was regressed onto the set of eight Wave 1 predictor variables, with correlations specified among predictors, as well as the Wave 1 latent higher-order SWB factor. Correlations between residuals in the corresponding Wave 1 and Wave 2 latent LS, PA, and NA variables were also included in order to account for component-specific stability over time not explained by the predictive model. Further, in order to incorporate the unique (specific) associations between the Wave 1 predictors and the Wave 1 latent LS, PA, and NA variables identified in the cross-sectional analysis (as reported below in the Results section), seven additional covariances were included in this model, as described below. This model was overidentified ($df > 0$), and thus model fit was evaluated based on global and local fit.

To test Model 3 in the cross-sectional analyses, the Wave 1 latent LS variable was regressed onto the set of eight Wave 1 predictor variables (with correlations estimated among each pair of predictors) and Wave 1 PA and NA. The eight predictor variables were also specified as predictors of PA and NA, and a correlation was added between the residual variances for PA and NA to account for covariance not explained by the predictors. With these specifications, direct and indirect effects (through PA and NA) were estimated for each of the eight predictors. In the longitudinal analyses, the Wave 2 latent LS variable was regressed onto the set of eight Wave 1 predictor variables, along with Wave 1 LS, PA, and NA. Correlations were estimated among all Wave 1 variables. Each of the Wave 1 predictors, including all three Wave 1 SWB components, were also specified as predicting Wave 2 PA and NA (a correlation was included between their residual variance terms), which in turn were specified as predicting Wave 2 LS. Using this set of specifications, for each of the Wave 1 variables direct and indirect effects (through Wave 2 PA and NA) on Wave 2 LS were estimated. These models were saturated ($df = 0$).

To test Model 4 in the cross-sectional analyses, the Wave 1 latent composite SWB variable was regressed onto the set of eight Wave 1 predictor variables simultaneously, and correlations were estimated among the predictors. In the longitudinal analyses, the Wave 2 latent composite SWB variable was regressed onto the set of eight Wave 1 predictor variables and the Wave 1 SWB composite score simultaneously, with correlations estimated among all predictors. These models were saturated ($df = 0$).

RESULTS

Predicting SWB: Wave 1 Cross-Sectional Findings

Model 1: SWB as Three Separate Components. As shown in Table 2 (see "Model 1" column), this predictive model explained 62% of the variance in latent LS, and each of the predictors except gender was statistically significant. Greater

Table 2 Prediction of Wave 1 SWB Based on Model 1 (SWB as Three Separate Components) and Model 4 (SWB as a Composite)

	Model 1			Model 4
Predictors	Life Satisfaction	Positive Affect	Negative Affect	Composite SWB
Age	.11*	.03	–.07*	.08*
Gender	–.01	–.01	.00	–.01
Income	.05*	–.01	–.03*	.02*
Partner status	.19*	.09*	–.09*	.14*
Health conditions	–.10*	–.13*	.23*	–.19*
Extraversion	.07*	.27*	–.09*	.18*
Neuroticism	–.32*	–.47*	.57*	–.55*
Intentional living	.51*	.14*	–.08*	.28*
R^2	.62*	.51*	.55*	.74*

Note. N = 3,707. SWB = subjective well-being. Standardized path coefficients are shown by predictor (row variable) for each criterion (column variable).
*p < .05.

Table 3 Prediction of Wave 1 SWB Based on Model 2 (SWB as a Hierarchical Construct)

Predictors	Higher-Order SWB	Life Satisfaction	Positive Affect	Negative Affect
Age	.05*	.08*		
Gender	–.01			
Income	.00	.05*		
Partner status	.12*	.12*		
Health conditions	–.16*			.13*
Extraversion	.12*		.17*	
Neuroticism	–.55*			.25*
Intentional living	.17*	.41*		
Latent SWB (loadings)		.61*	.84*	–.59*
R^2	.55*	.67*	.84*	.71*

Note. N = 3,707. SWB = subjective well-being. Standardized path coefficients are shown by predictor (row variable) for each criterion (column variable).
*p < .05.

Table 4 Prediction of Wave 1 Life Satisfaction Based on Model 3 (SWB as a Causal System)

Predictors	Direct Effect	Indirect Effect	Total Effect	% Mediated
Age	.09*	.02*	.11*	18
Gender	.00	.00	–.01	—
Income	.05*	.00	.05*	0
Partner status	.14*	.05*	.19*	26
Health conditions	.00	–.09*	–.10*	90
Extraversion	–.05*	.13*	.07*	IM
Neuroticism	–.03	–.29*	–.32*	91
Intentional living	.44*	.07*	.51*	14
Positive affect	.42*			
Negative affect	–.16*			
R^2	.75*			

Note. N = 3,707. SWB = subjective well-being; IM = inconsistent mediation. Standardized total, direct, and indirect effects are shown by predictor (row variable) for the prediction of life satisfaction.
*p < .05.

LS was predicted by greater age, higher income, not being single, fewer health conditions, more extraversion, less neuroticism, and greater intentional living. The predictive model also explained 51% of the variance in latent PA, and five of the predictors were statistically significant. Greater PA was predicted by not being single, fewer health conditions, more extraversion, less neuroticism, and greater intentional living. Further, the predictive model explained 55% of the variance in latent NA, and seven of the predictors were statistically significant. Greater NA was predicted by younger age, lower income, being single, more health conditions, less extraversion, more neuroticism, and less intentional living. These results reveal several similarities in the predictors of LS, PA, and NA (e.g., partnership status, health conditions, personality, intentional living), as well as apparent differences (e.g., age and income predicting LS and NA but not PA).

Model 2: SWB as Hierarchical Construct. This model provided inadequate fit, $\chi^2(16) = 728.14$, $p < .001$; CFI = .92; RMSEA = .11, p for close fit < .001, as a result of several significant associations between the individual predictors and individual SWB components not accounted for by the higher-order latent SWB factor. A modified model was specified using information concerning the magnitudes and statistical significances of these residual covariances, along with results presented in Table 2 concerning the relative predictive effects of each predictor on the individual SWB components. Based on these joint considerations, the following seven modifications (one per predictor, except gender) were made to the model in the form of direct paths from an individual predictor to an individual SWB component: age → LS, income → LS, partner status → LS, health conditions → NA, extraversion → PA, neuroticism → NA, and intentional living → LS.

The modified model provided excellent fit, $\chi^2(9) = 24.82$, $p = .003$; CFI > .99; RMSEA = .02, p for close fit > .99. This model explained 55% of the variance in the latent SWB factor, and six of the predictors were statistically significant. As shown in Table 3, greater SWB was predicted by greater age, not being single, fewer health conditions, more extraversion, less neuroticism, and more intentional living. In addition, greater LS was directly predicted by greater age, greater income, not being single, and greater intentional living; greater PA was directly predicted by greater extraversion; and greater NA was directly predicted by more health conditions and greater neuroticism. These findings indicate that in addition to predictive effects on the higher-order latent SWB factor, for each predictor except gender there was also a specific predictive association with an individual SWB component unique from the higher-order SWB factor.

Model 3: SWB as a Causal System. As shown in Table 4, this predictive model explained 75% of the variance in LS.

Greater LS was directly predicted by greater age, higher income, not being single, less extraversion, and greater intentional living, as well as greater PA and less NA. Several predictors also had significant indirect effects on LS (through PA and NA), including age, income, partnership status, health conditions, extraversion, neuroticism, and intentional living. (Note that the effects of the eight predictors on PA and NA are shown in Table 2.) To determine the extent to which the predictive effects on LS were mediated by PA and NA, the standardized indirect effect was divided by the standardized total effect (i.e., direct plus indirect effects). As shown in Table 4, evidence of partial mediation was found for age, partnership status, and intentional living; near-complete mediation was found for health conditions and neuroticism; and no mediation was found for income. In addition, the results for extraversion indicate "inconsistent mediation" (see MacKinnon, Krull, & Lockwood, 2000), given that the direct effect on LS was negative, but the indirect effect was positive. These results reveal that several variables had predictive effects on LS even independent of PA and NA, and that the degree to which PA and NA mediated the predictive effects on LS varied across the predictor variables.

Model 4: SWB as a Composite. As shown in Table 2 (see "Model 4" column), this predictive model explained 74% of the variance in composite SWB, and each of the predictors except gender was statistically significant. Greater composite SWB was predicted by greater age, higher income, not being single, fewer health conditions, more extraversion, less neuroticism, and greater intentional living.

Predicting SWB: Longitudinal Findings

Model 1: SWB as Three Separate Components. As shown in Table 5 (see "Model 1" column), this predictive model explained 51% of the variance in the Wave 2 latent LS variable. In addition to the high degree of stability seen in LS over time, greater LS at Wave 2 was also predicted by greater age and higher income at Wave 1. The predictive model also explained 37% of the variance in Wave 2 latent PA. In addition to the moderate stability in PA over time, greater PA at Wave 2 was predicted by greater age, greater income, being single, fewer health conditions, more extraversion, less neuroticism, and greater intentional living at Wave 1. Further, the predictive model explained 39% of the variance in Wave 2 latent NA. In addition to the moderate stability in NA over time, greater NA at Wave 2 was predicted by younger age, lower income, not being single, more health conditions, and more neuroticism at Wave 1. These results reveal several similarities in the longitudinal predictors of Wave 2 LS, PA, and NA (e.g., age, income) and apparent differences (e.g., health conditions predicting PA and NA but not LS), along with different degrees of stability in the SWB components. Note also that each of the correlations between the residual variances in the Wave 2 latent LS, PA, and NA variables (i.e., variance in the latent variables not explained by the predictive model) was significant: *r*s = .71, –.69, and –.66, respectively, for LS and PA, LS and NA, and PA and NA (all *p*s < .001). These findings indicate substantial associations among the residual changes in the SWB components independent of the Wave 1 predictors.

Model 2: SWB as Hierarchical Construct. This model provided inadequate fit, $\chi^2(30) = 496.71$, $p < .001$; CFI = .97; RMSEA = .07, p for close fit < .001, as a result of several significant associations between the individual Wave 1 predictors and individual Wave 2 SWB components not accounted for by the Wave 2 higher-order latent SWB factor. A modified model was specified using information concerning the magnitudes and statistical significances of these residual covariances,

Table 5 Prediction of Wave 2 SWB Based on Model 1 (SWB as Three Separate Components) and Model 4 (SWB as a Composite)

	Model 1			Model 4
Predictors	W2 Life Satisfaction	W2 Positive Affect	W2 Negative Affect	W2 Composite SWB
W1 Age	.07*	.09*	–.05*	.07*
W1 Gender	–.04	–.01	–.02	–.01
W1 Income	.07*	.04*	–.08*	.07*
W1 Partner status	–.05	–.04*	.05*	–.08*
W1 Health conditions	–.03	–.07*	.08*	–.03
W1 Extraversion	.03	.07*	.03	–.02
W1 Neuroticism	.00	–.11*	.17*	.02
W1 Intentional living	–.04	.06*	–.04	–.01
W1 Life satisfaction	.70*			
W1 Positive affect		.43*		
W1 Negative affect			.44*	
W1 Composite SWB				.74*
R^2	.51*	.37*	.39*	.54*

Note. N = 3,707. SWB = subjective well-being; W1 = Wave 1; W2 = Wave 2. Standardized path coefficients are shown by Wave 1 predictor (row variable) for each Wave 2 criterion (column variable).
*p < .05.

Table 6 Prediction of Wave 2 SWB Based on Model 2 (SWB as a Hierarchical Construct)

Predictors	Higher-Order W2 SWB	W2 Life Satisfaction	W2 Positive Affect	W2 Negative Affect
W1 Age	.10*	.05*		
W1 Gender	−.01			
W1 Income	.07*	.05*		
W1 Partner status	−.04*	.08*		
W1 Health conditions	−.08*			.09*
W1 Extraversion	−.04		.15*	
W1 Neuroticism	−.14*			.15*
W1 Intentional living	.06*	.25*		
W1 Latent SWB	.41*			
W2 Latent SWB (loadings)		.73*	.86*	−.70*
R^2	.33*	.73*	.81*	.65*

Note. N = 3,707. SWB = subjective well-being; W1 = Wave 1; W2 = Wave 2. Standardized path coefficients are shown by Wave 1 predictor (row variable) for each Wave 2 criterion (column variable).
*$p < .05$.

along with information observed in the analysis (reported above) concerning the relative predictive effects of each predictor on the individual SWB components. Based on these joint considerations, the following seven modifications were made to the model in the form of direct paths from an individual Wave 1 predictor to an individual Wave 2 SWB component: Wave 1 age → Wave 2 LS, Wave 1 income → Wave 2 LS, Wave 1 partner status → Wave 2 LS, Wave 1 health conditions → Wave 2 NA, Wave 1 extraversion → Wave 2 PA, Wave 1 neuroticism → Wave 2 NA, and Wave 1 intentional living → Wave 2 LS.

The modified model provided excellent fit, $\chi^2(23) = 171.07$, $p < .001$; CFI = .99; RMSEA = .04, p for close fit = .99. This model explained 33% of the variance in the latent SWB factor. As shown in Table 6, in addition to the moderate stability in latent SWB over time, greater Wave 2 latent SWB was predicted by greater age, greater income, being single, fewer health conditions, less neuroticism, and greater intentional living at Wave 1. In addition, greater Wave 2 LS was directly predicted by greater age, greater income, not being single, and greater intentional living at Wave 1; greater PA at Wave 2 was directly predicted by greater extraversion at Wave 1; and greater NA at Wave 2 was directly predicted by more health conditions and greater neuroticism at Wave 1. These findings indicate that in addition to the longitudinal predictive effects on the Wave 2 higher-order latent SWB factor, each Wave 1 predictor except gender also had a specific predictive association with an individual Wave 2 SWB component that was unique from the Wave 2 higher-order SWB factor. Note also that the correlations between the corresponding residual variances in the latent LS, PA, and NA variables over time were significant (rs = .51, .43, and .43, respectively; ps < .001), indicating moderate stability in the unique aspects of each SWB component over time.

Model 3: SWB as a Causal System. As shown in Table 7 (see "Model 3A" column), without the inclusion of Wave 2 PA and NA as predictors of Wave 2 LS, the model explained 51% of the variance in Wave 2 LS. In addition to the strong stability in LS over time, greater LS at Wave 2 was predicted by greater age and higher income. (Note that the effects of the Wave 1 predictors on Wave 2 PA and NA are shown in Table 7, in the "Model 3A" column.) As shown in the "Model 3B" column, with the inclusion of Wave 2 PA and NA as predictors of Wave 2 LS, the model explained 80% of the variance in Wave 2 LS. Taking into account the strong stability in LS over time and the concurrent predictive effects of Wave 2 PA and NA, greater LS at Wave 2 was directly predicted by gender, PA, and NA at Wave 1. Several additional variables had significant indirect effects on Wave 2 LS, including Wave 1 age, income, partnership status, health conditions, neuroticism, PA, and NA.

To determine the extent to which the predictive effects of each of the Wave 1 variables on Wave 2 LS were mediated by Wave 2 PA and NA, each standardized indirect effect was divided by the corresponding standardized total effect. As shown in Table 7, evidence of partial mediation was found for Wave 1 age, income, and partnership status; complete mediation was found for Wave 1 health conditions; and small or no mediation was found for Wave 1 gender and LS. In addition, for three variables (Wave 1 neuroticism, PA, and NA), evidence of inconsistent mediation was observed wherein the indirect effects were in the opposite direction from the corresponding direct effects. Finally, for Wave 1 extraversion and intentional living, none of the predictive effects (direct, indirect, total) differed significantly from zero. These results reveal that the degree to which Wave 2 PA and NA mediated the effects of the Wave 1 variables on Wave 2 LS varied across predictors.

Model 4: SWB as a Composite. As shown in Table 5 (see "Model 4" column), the predictive model explained 54% of the variance in Wave 2 SWB. Even despite the strong stability in composite SWB over time, greater SWB at Wave 2 was predicted by greater Wave 1 age, higher income, and being single.

Table 7 Prediction of Wave 2 LS Based on Model 3 (SWB as a Causal System)

	Model 3A			Model 3B, Predicting W2 Life Satisfaction			
Predictors	W2 Life Satisfaction	W2 Positive Affect	W2 Negative Affect	Direct Effect	Indirect Effect	Total Effect	% Mediated
W1 Age	.07*	.09*	–.05*	.01	.05*	.07*	71
W1 Gender	–.04	–.01	–.02	–.04*	.01	–.04	0
W1 Income	.07*	.04*	–.08*	.02	.05*	.07*	71
W1 Partner status	–.05	–.04*	.04	–.02	–.03*	–.05	60
W1 Health conditions	–.05	–.08*	.08*	.01	–.06*	–.05	100
W1 Extraversion	.04	.07*	.03	.02	.02	.04	—
W1 Neuroticism	–.05	–.12*	.17*	.07	–.11*	–.05	IM
W1 Intentional living	–.06	.02	–.08	–.10	.04	–.06	—
W1 Life satisfaction	.76*	.08*	.08	.76*	.00	.76*	0
W1 Positive affect	–.05	.42*	.01	–.21*	.16*	–.05	IM
W1 Negative affect	.07	.06	.47*	.21*	–.14*	.07	IM
W2 Positive affect				.40*			
W2 Negative affect				–.35*			
R^2	.51*	.37*	.39*	.80*			

Note. $N = 3{,}707$. LS = life satisfaction; SWB = subjective well-being; W1 = Wave 1; W2 = Wave 2; IM = inconsistent mediation. Standardized path coefficients, direct effects, indirect effects, and total effects are shown by predictor (row variable) for each Wave 2 criterion (column variable).
$^*p < .05$.

DISCUSSION

Extending the review of competing tripartite structural conceptualizations of SWB provided by Busseri and Sadava (2011), the present study presented a side-by-side evaluation of four structural models with respect to several fundamental issues. By considering empirical findings within and across these models, the present work illustrates the strengths, shortcomings, and implications of each structural conceptualization. As discussed below, such information is valuable to more fully understanding, and ultimately resolving, the tripartite structure of SWB.

Joint Relatedness and Independence Among SWB Components

An important theme to emerge from the present results is that the three primary components of SWB (LS, PA, and NA) are related, but also partially independent. The relatedness was observed in the concurrent correlations among components, in the strong loadings of all three components onto a higher-order latent SWB factor in Model 2, and in the concurrent predictive effects of PA and NA on LS in Model 3. The independence was seen in the variances in LS, PA, and NA that were unique from the higher-order latent SWB factor in Model 2, and in the residual variance in LS that was not explained concurrently by PA and NA in Model 3. Within time, therefore, the three SWB components showed robust relations *and* partial independence. In contrast, little evidence of relatedness was observed among the components across time. The SWB components were moderately (PA and NA) to highly (LS) stable over time (Model 1, Model 2, and Model 3), as was the latent SWB factor in Model 2 and the composite SWB score in Model 4. After controlling for the within-component stabilities, however, only one of the potential cross-component predictive effects (Wave 1 LS to Wave 2 PA) was significant. Across waves, therefore, the three SWB components showed near-complete cross-component independence, despite robust intercorrelations among components within each wave.

A second theme to emerge is that conclusions concerning the predictors of SWB differed depending on the structural model. These differences stem from whether and how the structural models address the joint relatedness/interdependence of the SWB components. In Model 1, which does not account for the associations among SWB components, predictive effects were more extensive than in the other models. However, whether such effects were unique to any individual SWB component (independent of the other components) was unclear based on this model. Findings from Model 2 were unique among the four structural models in revealing whether each variable predicted the commonality among SWB components and/or a specific component of SWB (independent of the commonality among components). Results from Model 2 concerning the predictors of the unique aspects of the three SWB components were considerably less extensive than the effects on LS observed in Model 1 and Model 3, and the effects on PA and NA observed in Model 3.

In Model 3, which accounts for the associations among all three SWB components with respect to predicting LS, predictive effects on LS were more conservative than in Model 1 (but similar to Model 2), whereas predictive effects on PA and NA in Model 3 were as extensive as in Model 1 (and more extensive than in Model 2). Further, consistent with Schimmack's "mediator model" (see Schimmack, Diener, et al., 2002;

Schimmack, Radhakrishnan, et al., 2002; Schimmack et al., 2008), evidence of near-complete mediation was found in both cross-sectional and longitudinal predictive models for health conditions. However, findings concerning the effects of extraversion and neuroticism (the variables expected to be most likely to be mediated) were mixed, with evidence of near-complete mediation for neuroticism in the cross-sectional analyses, but evidence of inconsistent mediation (in which direct and indirect effects were in opposite directions) for extraversion in the cross-sectional model, and for both extraversion and neuroticism in the longitudinal model. Such patterns suggest that the implications of examining PA and NA as mediators of the effects of other variables on LS need to be better understood, particularly in a longitudinal context. Finally, in Model 4, which focuses on a composite SWB score instead of the individual SWB components, predictive effects on the individual components are omitted. Thus, whether predictive effects on the composite SWB variable also applied to the individual components is unknown based on this model.

Toward a Viable and Comprehensive Structural Model for SWB

Taken together, the present findings suggest that a comprehensive structural account of SWB as a tripartite concept would account for the joint relatedness/independence of LS, PA, and NA; accommodate differences in the degree of relatedness/independence within versus across time; and address the joint relatedness/independence of the SWB components with respect to evaluating predictive effects on SWB. Present findings concerning these issues lead to several new insights concerning the viability of the four structural conceptualizations examined in the present work.

In Model 1, the three SWB components are conceptualized and treated separately. One consequence is that this model omits from direct consideration the substantial concurrent associations among LS, PA, and NA with respect to understanding SWB. This omission would seem to be less consequential for the longitudinal associations among the SWB components. Indeed, five out of the six possible cross-component longitudinal predictive effects were nonsignificant—suggesting near-complete independence among LS, PA, and NA over a 10-year period. Even so, associations among the Wave 2 residual variances in LS, PA, and NA were strong for each pair of components, indicating robust associations among changes in LS, PA, and NA over time. And yet according to Model 1, such associations are irrelevant with respect to understanding SWB. A second consequence is that results concerning the predictors of SWB (whether evaluated using cross-sectional or longitudinal approaches) are more extensive than would be indicated if the associations among the SWB components were accounted for, rather than ignored. These considerations suggest that Model 1 is inadequate as a conceptualization for the tripartite structure of SWB.

In Model 2, SWB is conceptualized as a hierarchical construct, typically studied as a higher-order latent factor that is superordinate to LS, PA, and NA as first-order factors. The joint relatedness/independence of LS, PA, and NA is fully accommodated through specifying both the common variance among components and the unique variance in each component as meaningful with respect to understanding well-being. Indeed, as in previous research (e.g., Arthaud-Day, Rode, Mooney, & Near, 2005; Busseri et al., 2007), in the present findings, the standardized loadings of the latent LS, PA, and NA variables on the higher-order latent SWB factor were less than 1, indicating reliable variance in each component that was independent of the latent SWB factor. Stability in the latent SWB factor and in each component unique from the latent factor are also accounted for. Thus, the model fully accommodates the difference in the degree of relatedness/independence among components within versus across time. The joint relatedness/independence is also addressed in evaluating predictors of SWB through testing variables as predicting the latent SWB factor and also allowing for specific predictors of the unique variances in LS, PA, and NA independent of the latent SWB factor. These considerations suggest that Model 2 is a viable approach to conceptualizing the tripartite structure of SWB.

In Model 3, LS is conceptualized as the primary outcome, with PA and NA treated as joint causes of LS. This model thus accommodates the relatedness/independence of all three components by specifying PA and NA as correlated predictors (causes) of LS, and also through ascribing meaning to the unique variance in LS that is not explained by PA and NA. Cross-sectional results in the present work support this model, including the near-complete mediation of the effects on health conditions and neuroticism on LS (consistent with Schimmack, Diener, et al., 2002; Schimmack, Radhakrishnan, et al., 2002; Schimmack et al., 2008). In the longitudinal results, however, PA and NA did not predict LS over time; further, some evidence for a reverse pathway was found in which individuals with higher LS at Wave 1 experienced more frequent PA at Wave 2. Such a finding contradicts the assumption of the causal systems model that PA and NA influence LS, but LS does not influence PA and NA (Schimmack et al., 2008). These mixed results are noteworthy because studies based on Model 3 have been based exclusively on cross-sectional analyses (e.g., Davern et al., 2007), and the present results demonstrate that such findings may not generalize to a longitudinal context.

With respect to evaluating predictors of LS in Model 3, the inclusion of concurrent measures of PA and NA in the predictive model resulted in the attenuation of several predictive effects on LS (compared to Model 1), consistent with the potential (but not required) mediational role of PA and NA. Nonetheless, Model 3 does not fully account for the associations among SWB components with respect to the shared and unique variances in PA and NA (e.g., variance in PA that is explained by LS and NA, and the unique variance in PA independent of LS and NA) as well as when evaluating predictors of PA and NA (e.g., LS and NA are not controlled for when assessing predictors of PA). Consequently, conclusions concerning the predictors of PA and NA from Model 3 are likely to be more extensive (as in Model 1) than would be indicated if the associations among all three SWB components were fully accounted for. Together, these considerations suggest that Model 3 may be a viable approach for addressing the tripartite structure of SWB primarily with respect to the cross-sectional prediction of LS.

In Model 4, SWB is conceptualized as a composite construct and operationalized by combining LS, PA, and NA into a single SWB index. Model 4 does not address the joint relatedness/independence of the SWB components or inform the implications of this duality for understanding SWB. Consequently, results concerning predictive factors are nonspecific, that is, they do not inform the unique or shared predictors of LS, PA, and NA, nor provide for a comparison of predictive effects between the composite score and the individual components. Further, predictive findings are more extensive in Model 4 than would be indicated if the associations among the three SWB components were accounted for. Together, these considerations and the present findings suggest that Model 4 is insufficient for addressing the tripartite structure of SWB.

Looking Forward: Studying SWB and Understanding Well-Being

As demonstrated in the present work, the use of different structural models to study SWB as a tripartite concept can lead to different conclusions concerning basic issues, including predictive effects of other variables of SWB or the stability of SWB over time. To date, however, little direct consideration has been given to these issues in the published research on SWB. This situation needs to be corrected if we are to arrive at a more comprehensive understanding of SWB—a topic of huge interest among researchers, laypeople, and policy makers alike. To this end, the present work was undertaken to further understand the implications of adopting each structural model.

Yet the information presented in this work does not identify which structural model of SWB is "best" or "ideal" or "optimal." In fact, direct empirical comparisons among all four models based, for example, on the statistical fit of each model may not be informative or even possible, given the different assumptions that each model makes. For example, the statistical fit of Model 2 and Model 3 is identical because they both can fully account for the associations among LS, PA, and NA, albeit in different ways. In contrast, the fit of Model 4 cannot be compared with the other models because it only includes a composite SWB score, rather than the three SWB components. What can be gleaned from the present findings, however, is information concerning the consequences of adopting the various structural models, and the similarities and differences in results across models. This information is critical to more fully understanding the empirical implications of each structural model—including relative merits, unique features, omissions, and shortcomings. The present work thus provides a valuable advance in understanding these issues.

Nonetheless, further testing of the issues examined in the present work is needed in order to more fully inform the relative implications of the different structural conceptualizations. For example, with respect to Model 2, few studies have sought to evaluate the predictors of a latent SWB factor alongside predictors of the unique variances in LS, PA, and NA. With respect to Model 3, despite some promising findings (e.g., Schimmack, Radhakrishnan, et al., 2002; Schimmack et al., 2008), no systematic attempt has been made to determine which predictors of LS have direct, indirect, and/or mediated effects via PA and NA. Beyond the issues examined in the present work, Busseri and Sadava (2011) also recommended a meta-analysis of the associations among LS, PA, and NA—and exploring potential moderating factors, including measurement approach and participant characteristics. Such an undertaking is critical to evaluating the generalizability (and thus viability) of structural models that assume some degree of intercorrelation among all three SWB components (Model 2) or among two of the three components (i.e., LS with PA and NA, Model 3). Experimental studies are also needed to directly assess the assumption in Model 3 that PA and NA are causes of LS, but that LS does not cause PA and NA. Such an approach could provide valuable information concerning the extent to which manipulated changes in one SWB component lead to or are accompanied by changes in the other components. Complementing such experimental evidence, longitudinal studies employing multiple assessments could be used to inform the stability and change of each SWB component and whether such changes relate to each other over time. Indeed, although some studies have tracked changes in SWB over time, emphasis is often given to understanding the LS component, and thus little is known at present concerning relations among all three components, as they vary over time (Busseri et al., 2007).

With respect to synthesizing the large and growing database on SWB, reviews of the SWB literature typically tabulate, discuss, and synthesize results separately for LS, PA, and NA (e.g., DeNeve & Cooper, 1998; Diener, 1984; Diener et al., 1999; Luhmann et al., 2012; Steel et al., 2008). This approach fails to directly inform SWB from the perspective of Model 2 (given the absence of a higher-order latent SWB factor) or Model 3 (given the absence of PA and NA as controls for predictive effects on LS). It also likely overestimates the magnitude and diversity of unique predictive associations involving LS, PA, and NA—as demonstrated in the present work by the differing conclusions concerning the predictors of SWB derived from Model 1 versus Model 2 and Model 3. Thus, a critical next step is for researchers to adopt a more comprehensive approach to studying and synthesizing the correlates and predictors of SWB in a manner that addresses (rather than ignores) the joint relatedness/independence of the components.

Paralleling the need to address these empirical issues, resolution at the conceptual level will also be valuable. One issue to be decided is whether LS, PA, and NA are all required in order to fully understand SWB. From Diener's (1984) perspective, all three components are essential to SWB (see also Diener, 2008). Accordingly, both the review by Busseri and Sadava (2011) and the present work focused on SWB as a *tripartite* concept, comprising LS, PA, and NA. However, in some studies, PA and NA have been conceptualized as valuable predictors of LS but not necessary ingredients or core components of well-being (e.g., Kim, Schimmack, & Oishi, 2012; Zhou, Schimmack, & Gere, 2013). Further, satisfaction within particular life domains, in addition to one's life as a whole, are sometimes treated as additional components of SWB, alongside LS (e.g., Davern et al., 2007; Zhou et al., 2013). More generally, although the SWB perspective is highly prominent, there are other popular approaches to conceptualizing and studying well-being (e.g., Huta & Waterman, in press; Keyes, 2007; Ryff, 2014). Thus, further conceptual and empirical research is needed in order to better understand these various approaches, and to determine which elements are necessary and sufficient for conceptualizing and studying SWB.

LIMITATIONS

Although the MIDUS sample at Wave 1 was very large in size and representative of middle-aged American adults, given participant attrition over time it is unclear whether the present findings are representative of the American population. The generalizability of the present findings to other populations, societies, or nations also needs to be determined through additional research. Further, whereas the interval between Wave 1 and Wave 2 provided an opportunity to assess SWB over an extended period of time, findings (e.g., the cross-component longitudinal predictive effects) may have differed had shorter-term assessments (e.g., weekly, monthly, annual) been included. Future studies are needed to extend the present findings to short-term longitudinal intervals; inclusion of multiple follow-up assessments in such work would also permit more nuanced assessments of change in SWB over time.

With respect to the SWB variables, LS was assessed in the present work using a single-item rating. Although the psychometric properties of this approach are well established (e.g., Diener et al., 2013; Lucas & Donnellan, 2007; Schimmack et al., 2010), whether all results would be consistent had a multi-item measure (e.g., Diener, Emmons, Larsen, & Griffin, 1985) been employed remains an important issue for future research. Furthermore, assessment of PA and NA were based on a time frame of "the past 30 days," making this assessment more similar to trait-like measures (e.g., affective experiences "in general"), rather than state-like measures (e.g., present mood or short-term affect)—consistent with the conceptualization of SWB as pertaining to longer-term experiences of PA and NA, rather than mood-like states (Diener, 1984; Schimmack, 2008). Future research should seek to more clearly operationalize PA and NA using measures that more clearly assess the frequency of longer-term affective experiences. Further, the LS rating was based on one's life "these days"; the extent to which this difference in temporal anchors compared to PA and NA impacted the results is unknown.

Another caveat is that the predictor variables were chosen based on previous research for illustrative purposes; they do not compose a comprehensive set of SWB predictors. Further, although the operationalization of intentional living was based on Lyubomirsky and colleagues' (2005) conceptualization of intentional activities, the measure used in the present work has not been compared to other measures of intentional activities and measures that address other aspects of positive activities beyond intentionality (for a recent review, see Lyubomirsky & Layous, 2013). Thus, estimates of predictive associations on SWB or unique associations involving LS, PA, and NA may not generalize to other sets of predictors or more complex multivariate models.

SUMMARY AND CONCLUSIONS

Extending the conceptual review of the tripartite structure of SWB provided by Busseri and Sadava (2011), the present study evaluated empirically four competing structural conceptualizations in order to inform the implications of treating SWB as three separate components (Model 1), a hierarchical construct (Model 2), a causal system (Model 3), and a composite (Model 4). Findings clearly demonstrated the extent to which the choice of structural model has important consequences for conclusions concerning several fundamental issues, including the joint relatedness/independence of the three SWB components and predictive effects on SWB.

Critical consideration of the competing structural models based on the conceptual and empirical issues investigated in the present work suggests that both Model 1 (SWB as three separate components) and Model 4 (SWB as a composite) are inadequate. In contrast, Model 2 (SWB as a hierarchical construct) was identified as a viable structural conceptualization, as this model was found to fully account for the joint relatedness/independence of all three SWB components, accommodate the difference in this relatedness/independence observed in the cross-sectional versus longitudinal findings, and fully address these issues when evaluating predictors of SWB. Further, Model 3 (SWB as a causal system) accounted for the joint relatedness/independence among SWB components and addressed this duality with respect to evaluating predictors of LS, but findings concerning the longitudinal associations among SWB components were not consistent with this model. Researchers are thus urged to undertake further evaluation of these latter two models (including meta-analysis of associations among LS, PA, and NA; experimental manipulation of individual components; and longitudinal modeling of the associations among changes in the components) in order to develop a more complete understanding of the implications and empirical viability of Model 2 and Model 3 as conceptualizations of the tripartite structure of SWB. Ultimately, such research will provide further advances to understanding how LS, PA, and NA may together define, compose, reflect, or create SWB.

Notes

1. Although this model assumes causal links from PA and NA to LS, most studies examining Model 3 employ cross-sectional or correlational designs. Thus, the naming of this model by Busseri and Sadava (2011) as a "causal system" refers to the *theoretical* connections among the SWB components.
2. A fifth structural framework was identified by Busseri and Sadava (2011) in which SWB is conceptualized as a system of components (LS, PA, and NA) configured within individuals in distinct ways (e.g., Shmotkin, 2005). Studying SWB from this perspective requires identifying distinct and reliable types of SWB configurations and then classifying each individual into a particular configuration. From this perspective, knowledge concerning SWB accrues based on identification and evaluation of the different SWB configurations. Whereas in the other four structural conceptualizations SWB and its components are assumed to be dimensional in nature, Model 5 is unique in assuming an underlying categorical structure to SWB. The testing of this latter assumption is beyond the scope of the present work, given the complexities and statistical ambiguities involved with identifying reliable types of SWB configurations (e.g., Bergman & Daukantaite, 2009; Busseri & Sadava, 2013; Busseri, Sadava, Molnar, & DeCourville, 2009). Note also that although other structural approaches to SWB could be conceived of, those addressed in the present work represent the most commonly used approaches (as reviewed by Busseri & Sadava, 2011) and thus provide a reasonable starting point for working toward a resolution concerning the current ambiguity in the literature.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

Wave 1 of the MIDUS was supported by the John D. and Catherine T. MacArthur Foundation Research Network on Successful Midlife Development. Wave 2 was supported by a grant from the National Institute on Aging (P01-AG020166). M.A.B. was supported by a Standard Research Grant from the Social Sciences and Humanities Research Council of Canada.

References

Arthaud-Day, M. L., Rode, J. C., Mooney, C. H., & Near, J. P. (2005). The subjective well-being construct: A test of its convergent, discriminant, and factorial validity. *Social Indicators Research*, **74**, 445–476.

Bergman, L. R., & Daukantaite, D. (2009). Stability of typical patterns of subjective well-being in middle-aged Swedish women. *Journal of Happiness Studies*, **10**, 293–311.

Bollen, K. (2002). Latent variables in psychology and the social sciences. *Annual Review of Psychology*, **53**, 605–634.

Brim, O. G., Ryff, C. D., & Kessler, R. C. (2004). *How healthy are we? A national study of well-being in midlife*. Chicago: University of Chicago Press.

Brunner, M., Nagy, G., & Wilhelm, O. (2012). A tutorial on hierarchically structured constructs. *Journal of Personality*, **80**, 796–846.

Busseri, M. A., & Sadava, S. (2011). A review of the tripartite structure of subjective well-being: Implications for conceptualization, operationalization, analysis, and synthesis. *Personality and Social Psychology Review*, **15**, 290–314.

Busseri, M. A., & Sadava, S. W. (2013). Subjective well-being is a dynamic and agentic system: Evidence from a longitudinal study. *Journal of Happiness Studies*, **14**, 1085–1112.

Busseri, M. A., Sadava, S. W., & DeCourville, N. (2007). A hybrid model for research on subjective well-being: Examining common- and component-specific sources of variance in life satisfaction, positive affect, and negative affect. *Social Indicators Research*, **83**, 413–445.

Busseri, M. A., Sadava, S. W., Molnar, D. S., & DeCourville, N. (2009). A person-centered approach to subjective well-being. *Journal of Happiness Studies*, **10**, 161–181.

Cooper, A., & Maddocks, S. (2011, October 2). Happiness goes global. *The Toronto Star*. Retrieved from http://www.torontostar.com

Cummins, R. A. (2010). Subjective well-being, homeostatically protected mood and depression: A synthesis. *Journal of Happiness Studies*, **11**, 1–17.

Cummins, R. A., Eckersley, R., Pallant, J., Van Vugt, J., & Misajon, R. (2003). Developing a national index of subjective well-being: The Australian Unity Well-being Index. *Social Indicators Research*, **64**, 159–190.

Davern, M., Cummins, R. A., & Stokes, M. A. (2007). Subjective well-being as an affective-cognitive construct. *Journal of Happiness Studies*, **8**, 429–449.

DeNeve, K. M., & Cooper, H. (1998). The happy personality: A meta-analysis of 137 personality traits and subjective well-being. *Psychological Bulletin*, **124**, 197–229.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, **95**, 542–575.

Diener, E. (2008). Myths in the science of happiness, and directions for future research. In M. Eid, & R. J. Larsen (Eds.), *The science of subjective well-being* (pp. 493–514). New York: Guilford.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, **49**, 71–75.

Diener, E., Inglehart, R., & Tay, L. (2013). Theory and validity of life satisfaction scales. *Social Indicators Research*, **112**, 497–527.

Diener, E., Kesebir, P., & Lucas, R. (2008). Benefits of accounts of well-being—For societies and for psychological science. *Applied Psychology: An International Review*, **57**, 37–53.

Diener, E., & Lucas, R. E. (2000). Explaining differences in societal levels of happiness: Relative standards, need fulfillment, culture, and evaluation theory. *Journal of Happiness Studies*, **1**, 41–78.

Diener, E., Lucas, R., Schimmack, U., & Helliwell, J. F. (2009). *Well-being for public policy*. New York: Oxford University Press.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, **125**, 276–302.

Diener, E., & Tov, W. (2007). Subjective well-being and peace. *Journal of Social Issues*, **63**, 421–440.

Dolan, P., & White, M. (2006). Dynamic well-being: Connecting indicators of what people anticipate with indicators of what they experience. *Social Indicators Research*, **75**, 303–333.

Eid, M., & Larsen, R. J. (2008). *The science of subjective well-being*. New York: Guilford Press.

Howell, R. T., & Howell, C. J. (2008). The relation of economic status to subjective well-being in developing countries: A meta-analysis. *Psychological Bulletin*, **134**, 536–560.

Huta, V., & Waterman, A. S. (in press). Eudaimonia and its distinction from hedonia: Developing a classification and terminology for understanding conceptual and operational definitions. *Journal of Happiness Studies*.

Keyes, C. M. (2007) Promoting and protecting mental health as flourishing. *American Psychologist*, **62**, 95–108.

Kilpatrick, F. P., & Cantril, H. (1960). Self-anchoring scaling: A measure of individuals' unique reality worlds. *Journal of Individual Psychology*, **16**, 158–173.

Kim, H., Schimmack, U., & Oishi, S. (2012). Cultural differences in self- and other-evaluations and well-being: A study of European and Asian Canadians. *Journal of Personality and Social Psychology*, **102**, 856–873.

Kline, R. (2011). *Principles and practices of structural equation modeling* (3rd ed.). New York: Guilford Press.

Kuppens, P., Realo, A., & Diener, E. (2008). The role of positive and negative emotions in life satisfaction judgments across nations. *Journal of Personality and Social Psychology*, **95**, 66–75.

Linley, P. A., Maltby, J., Wood, A. M., Osborne, G., & Hurling, R. (2009). Measuring happiness: The higher-order factor structure of subjective and psychological well-being measures. *Personality and Individual Differences*, **47**, 878–884.

Lucas, R. E. (2007). Adaptation and the set-point model of subjective well-being. *Current Directions in Psychological Science*, **16**, 75–79.

Lucas, R. E., & Donnellan, M. B. (2007). How stable is happiness? Using the STARTS model to estimate the stability of life satisfaction. *Journal of Research in Personality*, **41**, 1091–1098.

Lucas, R. E., & Donnellan, M. B. (2012). Estimating the reliability of single-item life satisfaction measures: Results from four national panel studies. *Social Indicators Research*, **105**, 323–331.

Luhmann, M., Hofmann, W., Eid, M., & Lucas, R. E. (2012). Subjective well-being and adaptation to life events: A meta-analysis. *Journal of Personality and Social Psychology*, **102**, 592–615.

Lykken, D., & Tellegen, A. (1996). Happiness is a stochastic phenomenon. *Psychological Science*, **7**, 186–189.

Lyubomirsky, S., & Layous, K. (2013). How do simple positive activities increase well-being? *Current Directions in Psychological Science*, **22**, 57–62.

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, **9**, 111–131.

MacKinnon, D. P., Krull, J. L., & Lockwood, C. W. (2000). Equivalence of the mediation, confounding and suppression effect. *Prevention Science*, **1**, 173–181.

Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology*, **75**, 1333–1349.

Pavot, W. (2008). The assessment of subjective well-being: Successes and shortfalls. In M. Eid & R. J. Larsen (Eds.), *The science of subjective well-being* (pp. 124–140). New York: Guilford Press.

Pressman, S. D., & Cohen, S. (2005). Does positive affect influence health? *Psychological Bulletin*, **131**, 925–971.

Ryff, C. D. (2014). Psychological well-being revisited: Advances in the science and practice of eudaimonia. *Psychotherapy and Psychosomatics*, **83**, 10–28.

Schimmack, U. (2008). The structure of subjective well-being. In M. Eid & R. J. Larsen (Eds.), *The science of subjective well-being* (pp. 97–123). New York: Guilford Press.

Schimmack, U., & Crites, S. L. (2005). The structure of affect. In D. Albarracin, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 397–435). Mahwah, NJ: Erlbaum.

Schimmack, U., Diener, E., & Oishi, S. (2002). Life-satisfaction is a momentary judgment and a stable personality characteristic: The use of chronically accessible and stable sources. *Journal of Personality*, **70**, 345–384.

Schimmack, U., Krause, P., Wagner, G. G., & Schupp, J. (2010). Stability and change of well-being: An experimentally enhanced latent state-trait-error analysis. *Social Indicators Research*, **95**, 19–31.

Schimmack, U., & Oishi, S. (2005). The influence of chronically and temporarily-accessible information on life satisfaction judgments. *Journal of Personality and Social Psychology*, **89**, 395–406.

Schimmack, U., Radhakrishnan, P., Oishi, S., Dzokoto, V., & Ahadi, S. (2002). Culture, personality, and subjective well-being: Integrating process models of life satisfaction. *Journal of Personality and Social Psychology*, **82**, 582–593.

Schimmack, U., Schupp, J., & Wagner, G. G. (2008). The influence of environment and personality on the affective and cognitive components of subjective well-being. *Social Indicators Research*, **89**, 41–60.

Sheldon, K. M., & Hoon, T. H. (2007). The multiple determination of well-being: Independent effects of positive traits, needs, goals, selves, social supports, and cultural contexts. *Journal of Happiness Studies*, **8**, 565–592.

Sheldon, K. M., & Lyubomirsky, S. (2012). The challenge of staying happier: Testing the hedonic adaptation prevention model. *Personality and Social Psychology Bulletin*, **38**, 670–680.

Shmotkin, D. (2005). Happiness in the face of adversity: Reformulating the dynamic and modular bases of subjective well-being. *Review of General Psychology*, **9**, 291–325.

Steel, P., Schmidt, J., & Schulz, J. (2008). Refining the relationship between personality and subjective well-being. *Psychological Bulletin*, **134**, 138–161.

Zhou, C., Schimmack, Y., & Gere, J. (2013). The validity of well-being measures: A multiple-indicator-multiple-rater model. *Psychological Assessment*, **25**, 1247–1254.