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Revisiting the Empirical Distinction Between Hedonic and Eudaimonic Aspects of Well-Being Using Exploratory Structural Equation Modeling

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Abstract The distinction between hedonic (i.e., subjective well-being) and eudaimonic (i.e., psycho-social functioning) components of well-being is questioned by some researchers on the grounds that these two aspects of well-being are highly correlated. However, I argue that previous research has relied on confirmatory factor analysis (CFA), which is likely to overestimate interfactor correlations, because cross-loadings are constrained to be zero in CFA. In contrast, the new method of exploratory structural equation modeling (ESEM) does not constrain cross-ladings to zero, which results in more accurate factor intercorrelations. The present study used ESEM to reinvestigate the relationship between hedonic and eudaimonic aspects of well-being in a sample of 3986 American adults. The results showed that the ESEM model fitted the data better than the CFA model. As expected, interfactor correlations obtained with ESEM were substantially smaller than those obtained with CFA, indicating greater factor distinctiveness. These results suggest that hedonic and eudaimonic factors are correlated yet largely independent from each other. The results also suggest that ESEM is a more appropriate method than CFA in the study of multi-dimensional constructs, such as mental well-being.

Keywords Hedonic well-being · Eudaimonic well-being · Social well-being · Keyes' model · Factor analysis · ESEM · MIDUS

1 Introduction

Over the past few decades, psychologists have tried to identify important components of well-being. These components are selected and assembled differently in various well-being models. As understood by the majority of psychologists, all these models can be categorized as hedonic and/or eudaimonic (Deci and Ryan 2008). Hedonic models emphasize the

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presence of life satisfaction, the presence of positive feelings and sensations, and the absence of negative feelings and sensations (Kahneman et al. 1999). Eudaimonic models, on the other hand, regard optimal psycho-social functioning as the cornerstone of mental well-being (Keyes and Annas 2009). However, the hedonic/eudaimonic distinction has been criticized by some researchers as being arbitrary and unsupported by empirical data (e.g., Kashdan et al. 2008). This criticism is largely based on empirical evidence indicating strong correlations between hedonic and eudaimonic well-being.

In the present study, I argue that the high correlations found in prior studies between hedonic and eudaimonic factors partly result from using confirmatory factor analysis (CFA). Using the new method of exploratory structural equation modeling (ESEM) in a national American sample, I reinvestigated the factor structure of Keyes' comprehensive model of mental well-being, which measures this construct along the dimensions of hedonic and eudaimonic (i.e., psycho-social) well-being. I found factor correlations that are substantially lower than those reported in previous CFA studies. The use of ESEM also facilitated a deeper exploration of cross-loadings in the measurement model of mental well-being. Below, I provide a general sketch of the contemporary well-being models and their components.

1.1 The Structure of Mental Well-Being

A majority of well-being models in psychology conceptualize well-being based on the presence or absence of certain qualities. Some of these models focus exclusively on hedonic aspects of mental well-being, such as the presence of life satisfaction and positive emotions, and the absence of negative emotions (e.g., Diener et al. 1999). "The predominant view among hedonic psychologists is that well-being consists of subjective happiness and concerns the experience of pleasure versus displeasure broadly construed to include all judgments about the good/bad elements of life" (Ryan and Deci 2001, p. 144). From a hedonic perspective, a good life is identical to a pleasant life, and in conceptualizing mental well-being, "the experience of pleasure and the achievement of a subjective sense of well-being remains at the center of the story" (Kahneman et al. 1999, p. 10). In this line of theorizing and research, various aspects of positive functioning are normally considered to be predictors of well-being, rather than its components (e.g., Sheldon 2013). Accordingly, these models tend to leave out optimal functioning in the measurement of mental well-being. Nonetheless, this line of research argues that hedonic well-being both results from and leads to optimal functioning (e.g., Kashdan et al. 2008; King 2011; Lyubomirsky et al. 2005).

However, the hedonic approach to well-being has been criticized by many scholars across diverse fields as being incomplete. These scholars argue that mental well-being encompasses more than a positive affect balance and life satisfaction (e.g., Keyes and Annas 2009). These researchers emphasize positive functioning, worthwhile goals, and meaningful activities as key ingredients of mental well-being (Joshanloo 2014). This conceptualization of well-being is typically called eudaimonic well-being. Ryff's (1989) model of psychological well-being falls within the eudaimonic perspective. This model is premised on the idea that the core of wellness is not how pleasantly or unpleasantly one feels but how one functions in response to life challenges. Ryan et al. (2008) also recognize the importance of studying the contents and processes of living well in addition to pleasure and mental states. Ryan et al. define eudaimonic well-being in terms of "pursuing goals that are intrinsically valued and of processes that are characterized by autonomy and awareness" (p. 163).

Keyes has proposed a comprehensive model of mental well-being where both optimal functioning and hedonic well-being are taken into account (Keyes 2002, 2007, 2013). In this model, the degree of positive mental health is measured across the dimensions of hedonic, social, and psychological well-being. Hedonic well-being captures the presence of positive affect and satisfaction as well as the absence of negative affect (Diener et al. 1999). Psychological well-being captures six aspects of psychological functioning as conceptualized by Ryff (1989): autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Social well-being captures how well an individual functions in their social life as a member of a larger society, using six indicators as conceptualized by Keyes (1998): social integration, social contribution, social coherence, social actualization, and social acceptance. The psychological well-being scales measure largely private aspects of eudaimonic well-being, whereas the social well-being scales measure largely social aspects of eudaimonic well-being (Keyes 1998; Ryff 1989).

Factor analytic studies in various cultures, including the USA, have supported the tripartite model of mental well-being (e.g., Gallagher et al. 2009; Joshanloo et al. 2006; Joshanloo et al. 2013; Karaś et al. 2014; Keyes et al. 2008; Lamers et al. 2011; Robitschek and Keyes 2009). These studies have found that hedonic and eudaimonic aspects of well-being tend to load on separate yet highly correlated factors. Many researchers interpret these findings (in conjunction with other empirical evidence) as evidence of the existence of empirically separable hedonic and eudaimonic latent factors which merit separate conceptualization and measurement (Delle Fave and Bassi 2009; Keyes and Annas 2009; Ryan and Huta 2009; Waterman 2008).

However, some researchers criticize the hedonic/eudaimonic distinction on the grounds that the magnitude of the relationship between hedonic and eudaimonic well-being is repeatedly found to be very high. This concern is certainly warranted. For example, Keyes et al. (2002) report a latent correlation of .84 between hedonic and psychological well-being factors in the USA. Gallagher et al. (2009) find latent correlations of up to .92 between the three well-being dimensions in a sample of American undergraduates. Bobowik et al. (2015) report latent correlations of up to .81 between the three dimensions of well-being in Spain. Based on such empirical evidence attesting to substantial empirical overlap between hedonic and eudaimonic well-being, some researchers have concluded that the distinction between hedonic and eudaimonic well-being is not empirically justifiable (Kashdan et al. 2008; King 2011).

Therefore, the empirical distinction between hedonic and eudaimonic well-beings remains an open debate among well-being researchers. The main criticism of this distinction centers on the very high correlations between the hedonic and eudaimonic variables, which have been largely produced in CFA studies. However, as discussed below, CFA has been recently criticized for producing inflated inter-factor correlations. It may be the case that the very high correlations found in the previous studies between hedonic and eudaimonic factors result from using the CFA approach. With the emergence of the new technique of ESEM, as explained below, researchers are gaining a better understanding of the restrictive features of the traditional CFA approach. The advantages of using ESEM to investigate the factor structure of mental well-being, and its potential utility in revisiting the distinction of hedonic and eudaimonic aspects of well-being are discussed below.

1.2 ESEM Versus CFA

The structure of many psychological instruments cannot be represented adequately within a simple CFA approach (Marsh et al. 2011; Marsh et al. 2014). This usually results from

the fact that the factor structures of these instruments are not consistent with the highly restrictive CFA models in which each item is allowed to load on only one factor, and its loadings on all other factors are constrained to be 0. This may result in a poor fit. Researchers tend to try to modify the poor-fitting model to compensate for the inadequacy of the CFA models. For example, they may use item parceling or post hoc modifications (Morin et al. 2013). Such strategies might be misleading, dubious, and inconsistent with the confirmatory nature of CFA. Constraining a majority of the factor loadings to 0 may also result in the overestimation of factor correlations, when the non-target loadings are not close to 0 (Marsh et al. 2014). That is, misspecification of cross-loadings may result in less distinct factors with inflated inter-factor correlations, which increases the risk of multi-collinearity when the factors are used as predictors of outcome variables.

Because of the overly restrictive assumptions of the CFA approach and the resulting inflation of factor intercorrelations, some researchers have recently recommended the use of ESEM to represent the factor structure of multi-dimensional constructs. This statistical procedure, developed by Asparouhov and Muthen (2009), is an integration of Exploratory Factor Analysis and CFA approaches. ESEM is argued to adequately address the limitations of CFA in capturing the structure of multi-dimensional constructs. ESEM posits less restrictive assumptions, i.e., all items are specified to load on all the factors. This enables the researcher to freely estimate cross-loadings, which tends to result in more accurate estimates, including more realistically estimated factor intercorrelations. These characteristics make ESEM a more appropriate approach in the study of multi-dimensional constructs, such as mental well-being.

1.3 The Present Study

Gallagher et al. (2009) investigated the tripartite factor structure of mental well-being using CFA in a national sample drawn from the second wave of the Midlife in the United States Project (MIDUS II). The tripartite model of mental well-being showed excellent fit to the data. However, the magnitude of the correlations between the three factors turned out to be very high (i.e., .78, .69, and .85). These high correlations reinforce the concern over empirical distinguishability of the hedonic and eudaimonic factors of well-being. Moreover, because all the cross-loadings are constrained to be 0 in CFA, Gallagher et al.'s study did not provide any information on cross-loadings in the measurement model of well-being.

In the present study, I subjected the same data used by Gallagher et al. (2009) to both CFA and ESEM. The study had two main goals. The first goal was to reinvestigate the factor correlations in the tripartite model of mental well-being using ESEM. ESEM is believed to produce more accurate and less inflated factor correlations than does CFA. Thus, the factor correlations in the present study are expected to be lower than those obtained in the previous research using CFA. This is of theoretical significance considering that the empirical distinction between hedonic and eudaimonic well-beings has provoked heated debates among social scientists.

The second goal of the study was to examine the cross-loadings in the tripartite model of well-being. This issue has not received enough attention in previous research, due to the fact that the commonly-used CFA approach requires constraining all the cross-loading to 0. In light of close conceptual connections between the hedonic and eudaimonic indicators of mental well-being, I expected non-zero cross-loadings to exist in the measurement model of mental well-being. Previous empirical studies lend support to this expectation. For example, modification indices have indicated the existence of cross-loadings in the Spanish

samples used by Bobowik et al. (2015), and the American sample used by Keyes et al.'s (2002). In particular, environmental mastery and self-acceptance, which are two aspects of psychological well-being, have shown a tendency to load on hedonic well-being as well (e.g., Bobowik et al. 2015; Joshanloo et al. 2006; Kafka and Kozma 2002; Keyes et al. 2002). Thus, cross-loadings are anticipated to exist, and requiring them to be 0 may result in inflated correlations between latent factors. Because ESEM allows all indicators to load on all factors, the present study is expected to provide a comprehensive analysis of these cross-loadings in the tripartite model of well-being.

2 Methods

2.1 Participants

Data were obtained from the second wave of the National Study of Midlife in the United States (MIDUS II; Ryff et al. 2012), which was used by Gallagher et al. (2009) in their CFA study. Data collection took place in 2004–2006. The sample consisted of 4963 adults. However, 922 participants with missing values on all the variables, and 55 participants with missing values on more than 4 out of 14 well-being indicators were excluded, leaving a final sample of 3986. Females constituted 55.2 % of the sample. The mean age was 56.12 ($SD = 12.330$). Whites constituted 91.5 % of the sample.

2.2 Measure

2.2.1 Hedonic Well-Being

Mroczek and Kolarz's (1998) positive and negative affect scales were used to measure the affective aspect of hedonic well-being. Respondents indicated how much of the time—all, most, some, a little, or none of the time—during the past 30 days, they felt six positive (e.g., cheerful) and six negative (e.g., nervous) affective states. Life satisfaction was assessed using five items about satisfaction with overall life, work, health, relationship with spouse/partner, and relationship with children. Each item was coded from *the worst possible* (0) to *the best possible* (10).

2.2.2 Psychological Well-Being

A 42-item version of Ryff's (1989) psychological well-being scale was used to measure each of the six components of psychological well-being with seven items. Items are scored on a 7-point scale ranging from *strongly disagree* (1) to *strongly agree* (7).

2.2.3 Social Well-Being

A 15-item version of the Keyes (1998) social well-being scale was used to measure the five components of social well-being. Items are scored on a 7-point scale ranging from *strongly disagree* (1) to *strongly agree* (7).

2.3 Statistical Analysis

Model fit was assessed using CFA and ESEM, with Maximum Likelihood estimation in Mplus. In line with previous applications of ESEM (e.g., Marsh et al. 2010), an oblique geomin rotation was used. Full information maximum likelihood (FIML) was used for handling missing data. In addition to three-factor models, single-factor and two-factor models were tested. In the two-factor CFA model, subscales of psychological and social well-being were specified as indicators of a single eudaimonic well-being factor. Higher-order factor analysis (as conducted in CFA) is not available with the current operationalization of ESEM (Asparouhov and Muthen 2009; Marsh et al. 2014). Therefore, to enable comparison between the CFA and ESEM models, first-order models were specified with scale scores as indicators.

Prior research indicates that two aspects of psychological well-being, namely self-acceptance and environmental mastery are strongly related to hedonic well-being (Anglim and Grant in press; Compton 2001; Ryff and Keyes 1995). In exploratory factor analyses conducted by Compton (1998) and Kafka and Kozma (2002), the factor loadings of these two aspects on hedonic well-being were stronger than their factor loadings on psychological well-being. In view of these findings, a modified CFA model was also tested in which these two aspects were specified as indicators of hedonic well-being, whereas their factor loadings on psychological well-being were fixed at 0. Given that in some prior CFA studies, these two aspects cross-loaded on both hedonic and eudaimonic factors (e.g., Bobowik et al. 2015; Keyes et al. 2002; Joshanloo et al. 2006; Kafka and Kozma 2002), another modified CFA model was tested in which these two variables were specified to load on both psychological and hedonic well-being.

3 Results

Descriptive statistics, alphas, and intercorrelations between the 14 well-being scales are presented in Table 1. Fit indices for all the CFA and ESEM models are presented in Table 2. As can be seen in the table, the single- and two-factor models provided a worse fit to the data than did the three-factor models, and thus the single- and two-factor models will not be further discussed in the present article. As indicated in Table 2, the ESEM model fitted the data substantially better than did the CFA model. Whereas the fit of the CFA model was not acceptable, the ESEM model showed a decent fit. The CFI and SRMR values of the ESEM model are nearly excellent, and the RMSEA indicates mediocre fit. Because the upper bound of the confidence interval for RMSEA does not exceed the threshold of .10, and the other fit indices indicate very good fit, it is safe to conclude that the fit of the ESEM model is acceptable. Results, as presented in the table, also show that the two modified CFA models did not fit the data better than the three-factor ESEM model. It is noteworthy that the second modified CFA model in which self-acceptance and environmental mastery were specified as indicators of both hedonic and psychological well-being provided a better fit than all other CFA models. Altogether, these results indicate the superiority of the ESEM model over all the alternative models tested in this study.

Factor loadings from both models are presented in Table 3. Examining the ESEM factor loadings revealed that there were three well-being factors corresponding to the three dimensions of the tripartite model: hedonic, psychological, and social well-being. As can be seen, in the ESEM model, all the variables had substantial factor loadings (>.3) on the

Table 1 Descriptive statistics, alphas, and intercorrelations between 14 well-being indicators

	α	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Positive affect	.90	3.42	.71												
2. Negative affect	.85	1.51	.58	−.60											
3. Life satisfaction	.65	7.76	1.24	.56	−.49										
4. Autonomy	.71	37.14	6.96	.30	−.31	.23									
5. Environmental mastery	.78	38.15	7.41	.58	−.57	.55	.51								
6. Personal growth	.75	38.40	6.93	.41	−.38	.39	.43	.58							
7. Positive relations	.78	40.57	6.96	.46	−.39	.46	.37	.62	.57						
8. Purpose in life	.70	38.40	6.98	.44	−.43	.44	.39	.63	.68	.59					
9. Self-acceptance	.84	38.12	8.20	.59	−.53	.57	.50	.75	.63	.65	.68				
10. Social coherence	.64	9.20	3.08	.22	−.29	.20	.31	.37	.38	.22	.37	.34			
11. Social integration	.75	14.72	3.98	.32	−.27	.35	.18	.40	.38	.49	.40	.45	.24		
12. Social acceptance	.41	14.04	3.30	.24	−.22	.27	.12	.29	.27	.33	.26	.29	.25	.39	
13. Social contribution	.70	15.66	3.66	.24	−.25	.26	.26	.35	.52	.38	.50	.43	.37	.49	.27
14. Social actualization	.66	12.65	3.97	.24	−.25	.28	.15	.33	.35	.25	.31	.33	.46	.34	.48	.34

All correlation coefficients are significant at $p < .01$

Table 2 Confirmatory and exploratory factor analyses

Model	χ^2	df	CFI	SRMR	AIC	Sample-size adjusted BIC	RMSEA	90 % CI for RMSEA	
								LL	UL
Single-factor									
ESEM/CFA	4990.9***	77	0.822	0.071	275436.9	275567.6	0.127	0.124	0.130
Two-factor									
ESEM	3055.7***	64	0.892	0.052	273527.6	273698.8	0.108	0.105	0.112
CFA	4135.8***	76	0.853	0.065	274583.8	274717.6	0.116	0.113	0.119
Three-factor									
ESEM	1689.3***	52	0.941	0.033	272185.2	272393.8	0.089	0.085	0.093
CFA	2951.4***	74	0.896	0.050	273403.3	273543.4	0.099	0.096	0.102
Modified CFA[a]	3185.7***	74	0.888	0.052	273637.6	273777.7	0.103	0.100	0.106
Modified CFA[b]	2478.1***	72	0.913	0.046	272934.1	273080.4	0.092	0.088	0.095

CI confidence intervals, *LL* lower limit, *UL* upper limit

[a] In the first modified CFA model, self-acceptance and environmental mastery were specified as indicators of hedonic well-being rather than psychological well-being

[b] In the second modified CFA model, self-acceptance and environmental mastery were specified as indicators of both hedonic well-being and psychological well-being

*** $p < .001$

factors they are designed to measure, with only one exception: The factor loading of social contribution on social well-being was .27, which is slightly lower than .3. This variable had a large factor loading on psychological well-being.

Three variables evidenced considerable (i.e., >.3) factor loadings on more than two factors: Environmental mastery and self-acceptance cross-loaded on psychological and hedonic well-being, and social integration cross-loaded on social and psychological well-being. With regard to factor intercorrelations, as can be seen in Table 4, the estimates were considerably smaller in the ESEM model ($M = .47$) than they were in the CFA model ($M = .71$), indicating a larger factor distinctiveness in the ESEM model. In summary, a better fit obtained with the ESEM model, the existence of cross-loadings, and less inflated factor correlations obtained with the ESEM model indicate that ESEM is superior to CFA in analyzing the multi-dimensional structure of mental well-being.

4 Discussion

Although the tripartite structure of mental well-being has received much support in previous CFA studies, the correlations between the well-being factors have been found to be quite high. Moreover, previous research indicates that there are cross-loadings in the measurement model of mental well-being that are typically ignored. These concerns necessitate the use of ESEM in the study of the factor structure of mental well-being. The present study used ESEM to investigate the tripartite structure of mental well-being in the USA. The main goals of the study were to reinvestigate the correlations between the latent

Table 3 Factor loadings

	ESEM				CFA	
	Standardized factor loading			R^2	Standardized factor loading	R^2
	Hedonic	Psychological	Social			
Hedonic						
Positive affect	**0.778*****	−0.015	0.032	0.609	**0.798*****	0.638
Negative affect	**−0.692*****	−0.003	−0.062*	0.515	**−0.734*****	0.539
Life satisfaction	**0.646*****	0.028	0.107***	0.504	**0.717*****	0.515
Psychological						
Autonomy	0.191***	**0.466*****	−0.108***	0.312	**0.548*****	0.301
Environmental mastery	**0.557*****	**0.390*****	0.002	0.724	**0.843*****	0.711
Personal growth	0.009	**0.776*****	0.069**	0.663	**0.745*****	0.555
Positive relations	0.283***	**0.535*****	0.001	0.549	**0.744*****	0.553
Purpose in life	0.124***	**0.741*****	0.006	0.680	**0.784*****	0.615
Self-acceptance	**0.476*****	**0.513*****	−0.011	0.774	**0.886*****	0.785
Social						
Social coherence	−0.010	0.263***	**0.405*****	0.323	**0.550*****	0.302
Social integration	0.092***	**0.313*****	**0.318*****	0.353	**0.658*****	0.432
Social acceptance	0.109***	−0.008	**0.570*****	0.376	**0.545*****	0.296
Social contribution	−0.178***	**0.597*****	0.276***	0.449	**0.660*****	0.436
Social actualization	0.028	0.007	**0.766*****	0.608	**0.614*****	0.377

Factor loadings larger than .3 are shown in boldface

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4 Factor correlations

	Hedonic	Social	Psychological
Hedonic	–	0.58	0.82
Social	0.36	–	0.74
Psychological	0.60	0.45	–

All correlations are significant at $p < .001$. CFA and ESEM correlations are presented above and below the diagonal, respectively

factors of mental well-being, and to thoroughly explore cross-loadings. The results showed that the ESEM model provided an acceptable fit, which was better than the fit provided by the CFA model. ESEM resulted in much lower interfactor correlations, and unveiled a few considerable cross-loadings in the measurement model of well-being. Below, these results are discussed in detail.

The factor intercorrelations produced in the ESEM model were substantially smaller than those produced in the CFA models specified in the present study and in previous research. Researchers argue that ESEM results in more accurate and realistic factor correlations than does traditional CFA. This is because cross-loadings are constrained to 0 in CFA models, which results in an inflation of factor intercorrelations. Therefore, the results

of the present study indicates that the correlations between hedonic and eudaimonic components of mental well-being may have been overestimated in the previous research. Based on these overestimated correlations between hedonic and eudaimonic well-being factors, some well-being researchers (e.g., Kashdan et al. 2008; King 2011) have drawn an important conclusion with profound theoretical implications. They conclude that the distinction between hedonia and eudaimonia is not empirically tenable. This conclusion may provide the basis for excluding the functional aspect of mental well-being in the conceptualization and measurement of mental well-being.

Granted, the three components of well-being are conceptually and empirically related, and the impression that they are not empirically distinguishable is far from baseless in light of the available CFA evidence. Yet the present study contributes the novel insight that the intercorrelations between well-being factors may have been overestimated in the previous research due to the inherent limitations of traditional CFA. As shown in the present study, these limitations may be addressed using the new method of ESEM which results in more accurate factor correlations. The results of ESEM conducted in the present study indicate that the average correlation between the well-being components is .47 (see Table 4). The highest correlation found ($r = .6$) is between psychological and hedonic well-being factors, which is expected when the two factors are theoretically related. In sum, the present results indicate that the hedonic and eudaimonic factors are correlated yet distinct factors, with considerable unshared variance. Thus regarding them as three separate factors is consistent with empirical evidence, at least that produced in the present study using ESEM. The notion that these factors are not distinct enough to be regarded separate factors is not supported when we base our conclusion on the results of ESEM rather than CFA.

The ESEM analysis run in the present study also uncovered a number of cross-loadings in the measurement model of mental well-being. In traditional CFA, all cross-loadings are initially constrained to be 0. This may be unproblematic when there are no substantial cross-loadings in a model. However, when CFA is used to examine the factor structure of correlated constructs, where cross-loadings are expected to exist, this restriction posed by traditional CFA becomes problematic. In a few prior CFA studies, researchers have tried to sidestep this limitation through specifying a number of cross-loadings as a post hoc remedy. For example, Bobowik et al. (2015) modified the initial CFA model by allowing three indicators of well-being to load on more than one latent factor in the tripartite model of mental well-being in Spain. Keyes et al. (2002) allowed two indicators to cross-load in the two-factor model of hedonic and psychological well-being in the USA. Joshanloo et al. (2006) specified three cross-loadings in the tripartite model of mental well-being in Iran. In all these cases, the modified model with cross-loadings provided a better fit with the data than the model without cross-loadings. Thus cross-loadings do exist in the measurement models of mental well-being, and may be ignored in traditional CFA models. In the present study, the application of ESEM facilitated a thorough inspection of all cross-loadings. The three remarkable cross-loadings (i.e., indicators with two loadings larger than .3) found in the present study are discussed below.

Environmental mastery cross-loaded on hedonic and psychological well-being. Environmental mastery has been found to cross-load on these two factors in three Spanish samples (Bobowik et al. 2015) and an American national sample (Keyes et al. 2002). Self-acceptance also cross-loaded on hedonic and psychological well-being. This finding is in keeping with the results of a study using an American national sample (Keyes et al. 2002), and a study using an Iranian university student sample (Joshanloo et al. 2006). Therefore, it seems that environmental mastery and self-acceptance are two aspects of psychological

well-being with the strongest associations with hedonic well-being. The tendency of these two scales to load on hedonic well-being may be partially caused by the fact that these two aspects of psychological well-being capture how individuals *feel* about themselves and their environments. This is well reflected in the content of some the items of these scales. Take for example this item related to self-acceptance: "In general, I feel confident and positive about myself", which asks about the respondent's feelings. Yet, it should be kept in mind that although some of the items in the eudaimonic well-being scales have affective content, unlike the items of affect scales, they do not measure merely the frequency of positive or negative affective experience irrespective of context. Instead, they measure an individual's affective experience arising from certain psychological virtues. For example, these items measure positive feelings arising from managing one's responsibilities successfully or positive feelings arising from coming to terms with one's weaknesses. This is what distinguishes these items from the items of affect scales that merely ask about the frequency of experienced emotions in a given period of time.

The CFA models in which environmental mastery and self-acceptance were specified as indicators of either psychological or hedonic well-being did not provide an acceptable fit. Yet, the ESEM model and the second modified CFA model in which these two aspects were allowed to load on both hedonic and psychological well-being provided a better fit to the data (see Table 2). These results indicate that self-acceptance and environmental mastery have both eudaimonic and hedonic aspects to them, which should not be ignored in future research and theorizing. These cross-loadings seems to suggest that one's sense of competence in managing the external environment, as well as a positive attitude toward the self, is rather strongly associated with higher levels of positive affect and lower levels of negative affect. Self-acceptance and environmental mastery also seem to be two of the life domains that people consider when evaluating their lives. In line with this reasoning, a large international study by Diener et al. (2010) indicates that daily affective experience is in fact more influenced by the fulfillment of one's psychological needs, than by external factors, such as income.

The present study also showed that social integration cross-loaded on psychological and social well-being factors. In interpreting this finding, one should keep in mind that, as can be established, this finding seems to be unprecedented. Thus this link may not be replicated in future studies. However, given the size of the present sample, one could be confident that social integration is an aspect of social well-being with the strongest connection to psychological well-being at least in the USA. This may indicate that a feeling of belonging to one' society and a healthy relationship with it are well needed for optimal psychological functioning. This also indicates that to have a healthy relationship to one's society, an individual needs certain psychological skills. These are in line with Keyes' general reasoning that individual functioning occurs necessarily in the context of social challenges (Keyes 1998).

Another finding that merits attention is that social contribution loaded strongly on psychological well-being, whereas its loading on social well-being was relatively low. Social contribution has been found to load on psychological well-being in addition to social well-being in three Spanish samples (Bobowik et al. 2015), and in Iranian university students (Joshanloo et al. 2006). It seems that this aspect of social well-being is closely tied with various psychological skills. In other worlds, optimal psychological skills are highly expected to come with the belief that one is a vital member of one's society, and has something valuable to give to the world. Based on their findings in Spain, Bobowik et al. conclude that social contribution is "the most private aspect" of social well-being because it refers to an individual's "feeling of usefulness" (p. 10).

Although the sample used in the present study is large enough, and the findings are promising, the findings should be considered preliminary. The present study is the first to use ESEM in the field of mental well-being, and for firmer conclusions, more studies are definitely required. The findings should not be generalized to other cultures before further analyses are undertaken. Researchers in various national/cultural contexts are invited to use ESEM to study the multi-dimensional construct of well-being. This needs to be done to build a wider body of evidence in support of the hedonic/eudaimonic distinction. Moreover, researchers who have used CFA to investigate the factor structure of well-being in previous research are encouraged to reanalyze their data using ESEM.

Researchers have presented widely diverse conceptualizations of mental well-being and its components (Huta and Waterman 2014). Whereas, there seems to be a fair amount of agreement concerning the components of hedonic well-being (Schimmack 2008), to date no broad consensus has been reached regarding the conceptualization of eudaimonic well-being (Huta and Waterman 2014; Kashdan et al. 2008; Ryan and Deci 2001; Waterman 2008). Competing models emphasize and de-emphasize certain components of eudaimonic well-being. For example, whereas having positive relations with others is a central component of eudaimonic well-being in Ryff's model, some researchers (e.g., Kashdan et al. 2008; Waterman 2008) believe that having positive relations is not a defining element of well-being. Rather, it is best to be regarded as a predictor of well-being. Given these differences, it should be acknowledged that using other scales of well-being may result in different findings from those presented here. Future research using ESEM in the field of mental well-being would need to acknowledge the diversity in the concepts and components of well-being. This can be achieved by using alternative well-being scales developed within other theoretical perspectives.

In summary, the present study shed fresh light on the issue of hedonic/eudaimonic demarcation in well-being research. I argued that the factor correlations have been overestimated in prior research, which is a side effect of traditional CFA. Using ESEM in the present study resulted in larger factor distinctiveness, backing up the notion that well-being factors are empirically distinguishable. The present findings also lend support to Keyes' tripartite model of well-being in the USA. This model has proved to be viable in various cultures as well (for a short review see Joshanloo et al. 2013), and shows promise in providing a framework for the conceptualization and measurement of various components of mental well-being. Finally, the ESEM analysis conducted in the present study offered elaborate information concerning the cross-loadings in the tripartite model of well-being. All in all, these results pose a challenge to the reductionist accounts of well-being that reduce mental well-being to its subjective aspect, excluding psycho-social functioning.

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