Eudaimonic Well-being Around the World: Cross-National Evidence from 166 Countries

Mohsen Joshanloo

Department of Psychology, Keimyung University, Daegu, South Korea

Correspondence concerning this article should be addressed to Mohsen Joshanloo, Department of Psychology, Keimyung University, 1095 Dalgubeol Boulevard, Dalseo-Gu, Daegu 42601, South Korea.

Email: mjoshanloo@hotmail.com

Phone: 0082-53-580-5416

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Abstract

As more and more people realize that wealth fails to fully capture the essence of human well-being, interest in non-monetary measures of well-being has intensified. Eudaimonic well-being (EWB; i.e., optimal psycho-social functioning) is a largely overlooked aspect of national well-being that has never been examined at the global level. The present study uses data from nearly 1,833,000 respondents recruited probabilistically from 166 countries

between the years of 2005 and 2017 to construct an index of EWB. EWB demonstrates moderate positive associations with other quality of life indicators (i.e., national life satisfaction, national prosperity, overall quality of life, and GDP), indicating that it captures information not reflected by them. The distribution of EWB at national, regional, and global levels, as well as its global trend, are explored. The study also examines the relationships between EWB and a number of theoretically related individual- and country-level variables. Presented are also the results of multi-level modeling including a wide range of predictors.

Keywords: eudaimonic well-being; psycho-social functioning; subjective well-being; prosperity; GDP

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In the effort to understand, measure, monitor, and improve human well-being, much attention has been devoted to Gross Domestic Product (GDP), which is an indicator of national economic welfare. In recent years, however, many researchers and policymakers have emphasized that GDP is an inadequate proxy measure for overall well-being, and that well-being can and should be measured in alternative ways (Anand, 2016). Some important aspects of human well-being recognized and measured over the past few decades include social progress, equality, social capital, and subjective well-being (e.g., Diener & Tay, 2015; Helliwell, Layard, & Sachs, 2017; Legatum Institute, 2017; Stern, Wares, & Epner, 2017). Research has generally suggested that the various domains of well-being, despite being interrelated, are empirically distinguishable from one another (Diener & Tay, 2015).

Therefore, these measures capture partly unique aspects of well-being, and thus, are all necessary for a comprehensive assessment of the well-being of individuals and nations.

Social scientists who study the psychological aspect of well-being tend to emphasize a general distinction between hedonic and eudaimonic well-being (Ryan & Deci, 2001; Joshanloo, 2016; Vittersø, 2016). Hedonic or subjective well-being is predominantly defined in terms of subjective experience of life satisfaction, positive affect, and infrequent negative affect (Diener, Oishi, & Lucas, 2003; Diener & Ryan, 2009). In contrast, eudaimonic well-being (EWB) refers to the type of well-being that stems from living a life of virtue (Vittersø, 2016). In the contemporary social sciences, this is translated into having optimal skills and qualities that contribute to success in facing the challenges of life. EWB involves both personal and social components (Keyes & Annas, 2009). Ryff's model of psychological well-being (Ryff, 1989) and self-determination theory (Ryan & Deci, 2001) are arguably the best known and most influential conceptualizations of the personal component of EWB (David, Boniwell, & Ayers, 2013; Heintzelman, 2018; Vittersø, 2016). These models describe EWB as an ongoing state of optimal functioning, characterized by high levels of self-acceptance, quality interpersonal relationships, autonomy, environmental mastery (competence), purpose in life, and personal growth. The social aspect of EWB concerns functioning in social tasks encountered by individuals in their public lives (Cicognani, 2014). Keyes's model of social well-being (Keyes, 1998) is the most widely recognized conceptualization of the social component of EWB. This model includes the five domains of social coherence, social integration, social acceptance, social contribution, and social actualization. Together, self-determination theory and the models of psychological and social well-being capture the most central aspects of EWB. Other psychological models that align with the eudaimonic research tradition also highlight similar markers of a fully functioning life (e.g., Diener et al., 2010; Ng, Tay, & Kuykendall, 2017; Seligman, 2011; Steger, 2016; Vittersø, 2003; Waterman, 1993).

The Current Measure of EWB

The present study set out to use a representative sample of the world to build a new index of EWB across 166 countries. The study used the Gallop World Poll (GWP) dataset collected between the years 2005 and 2017. The selection of items to measure EWB was dictated by the availability of the eudaimonic items in the GWP. Inspection of all of the items in the GWP suggested that seven items could be used to measure the personal and social aspects of EWB. The actual wordings of the items are provided in Table 2. As shown in

Table 1, the seven items measure important areas of EWB which are emphasized by the key theories of EWB reviewed above. It is noteworthy that some important components of EWB (e.g., meaning in life, self-esteem, social coherence, and social actualization) are not measured due to the lack of items related to these variables in the GWP. Therefore, the present EWB scale does not offer a perfect measurement of the complex and broad construct of EWB. Yet, the included domains have been found to be highly associated with the left-out domains in prior research (Joshanloo, 2016). Therefore, it is expected that the seven items used in this study capture important domains of the construct of EWB. In fact, it is common to use very short scales to measure country-level variables (Minkov, 2012) due to the difficulties involved in increasing the number of items in global surveys (e.g., increased respondent burden and administration time). Notably, national life satisfaction has been successfully measured with only a single item (Helliwell et al., 2017).

Table 1

Seven Key Areas of EWB Assessed in the Present Study and Corresponding Theories

No.	Item content	Related EWB domain	Related theory
1	Learning	• Personal growth	• Ryff (1989)
		• Perceived development of one's potential	• Waterman et al. (2010)
2	Social support	• Relatedness	• Ryan and Deci (2001)
		• Positive relations	• Ryff
		• Relationships	• Seligman (2011)
3	Respect	• Relatedness	• Ryan and Deci
		• Positive relations	• Ryff
		• Social integration and social acceptance	• Keyes (1998)
4	Efficacy	• Self-efficacy	• Bandura (1977)
		• Competence	• Ryan and Deci
		• Environmental mastery	• Ryff
5	Freedom	• Autonomy	• Ryan and Deci and Ryff
6	Helping strangers	• Relatedness	• Ryan and Deci
		• Positive relations	• Ryff
		• Social contribution	• Keyes
7	Volunteering	• Relatedness	• Ryan and Deci
		• Positive relations	• Ryff
		• Social contribution	• Keyes

The Aims of the Present Study

Whereas the subjective well-being of nations has been extensively studied in recent years (Diener & Tay, 2015; Helliwell, Layard, & Sachs, 2017; Veenhoven, 2018), there has been a dearth of international studies on EWB. The only exception is Huppert and So's (2013) 29-nation study which provided a preliminary examination of EWB based on the data collected in the sixth round of the European Social Survey (ESS, 2012). As such, EWB remains a largely overlooked aspect of national well-being. The present study sought to construct a new index for measuring EWB at the national level and to provide information on the distribution of EWB in the whole sample as well as across demographic variables and global regions. The criterion and discriminant validity of EWB were also examined both at the individual and national levels. Criterion validity involves examination of the association between the new EWB measure and measures gathered from external variables theorized to assess similar constructs (Price, 2016). Discriminant validity (Brown, 2015) is indicated by results showing that EWB is not highly intercorrelated with other indicators of well-being.

In this study, purpose in life, life satisfaction, positive affect, and negative affect were used to establish the criterion validity of the new EWB index at the individual level. Having a sense of meaning and purpose in life has been considered to be among the most central components of eudaimonic well-being (Ryff & Singer, 2008). A binary question that measures this variable was included in the GWP between the years 2005 and 2007. The item was used only in a small number of countries between 2008 and 2011, and was excluded from the GWP after 2011. Given that this variable is not available for some countries and for later years, it was not used in constructing the EWB index. However, the available data can be used to examine the criterion validity of the new EWB index. A positive association between purpose in life and EWB was expected. Life satisfaction, the presence of positive affect, and the absence of negative affect are the components of subjective well-being (Diener, Inglehart, & Tay, 2013; Diener & Tay, 2015). Subjective well-being and EWB have been found to be positively correlated in prior research (for a review see, Joshanloo, 2016). Therefore, EWB was expected to demonstrate positive associations with the components of subjective well-being.

Several country-level variables were also obtained from various sources to examine the criterion validity of the new scale at the national level. As described in Table S4 in the supplementary material, these variables included freedom and general trust along with various indicators of mental well-being (such as resilience and self-efficacy) that are expected to be positively associated with EWB (Deci & Ryan, 2008; Harzer, 2016; Huppert & So, 2013). In addition, a comprehensive index of national prosperity (Legatum Institute, 2017) was used. The Legatum prosperity index assesses nations' flourishing across nine domains of economic quality, business environment, governance, education, health, safety/security, personal freedom, social capital, and natural environment. Diener and Tay's (2015) comprehensive index of quality of life was also included. This index measures material quality of life (e.g., not going hungry), physical health (e.g., longevity), social capital, environmental health (e.g., clean water), equality in income and life satisfaction, life satisfaction, and affective well-being. Finally, GDP per capita was obtained to examine the relationship between financial welfare and EWB. To determine whether EWB has enough unique variance and is not redundant along with life satisfaction, prosperity, overall quality of life, and GDP, the magnitude of the relationships between EWB and these variables was inspected. Moderate positive associations would indicate acceptable discriminant validity for the new EWB index, whereas very high associations (e.g., > .80 or .85) would indicate a lack of discriminant validity (e.g., Brown, 2015; Kline, 2011).

The study also used multi-level modeling to examine the individual- and country-level predictors of EWB in the entire sample, and separately for each gender. A large set of individual-level predictors was used which included psychological and demographic factors. Finally, the global trend in EWB over recent years was examined using latent growth modeling.

Methods

Participants

The whole GWP dataset (collected during the period between 2005 and 2017) was used to maximize the sample size for the analyses. Using randomly selected, nationally representative samples, GWP continually surveys residents in more than 160 countries, representing more than 99% of the world's adult population. The GWP has been translated into various languages using the method of back-translation. Gallup typically surveys 1,000 individuals over 15 years old in each country annually. Yet, in some countries, data have not

been collected in some years, and/or data collection has started later than 2005. In addition, sample sizes are larger in countries with very large populations (e.g., China and India).

The whole sample consisted of 1,833,709 participants across 166 countries. The names of the countries, gender ratios, average ages, average eudaimonic well-being scores, and national sample sizes are reported in the supplementary material (Tables S3 and S4). The average age for the whole sample was 40.94 (SD = 17.45). Given that the survey questions used in the present study have not been included in all years and countries, sample sizes differed for each analysis conducted in this study. Therefore, the sample size for each analysis is reported in the results section.

Measures

Eudaimonic well-being. Seven items were used to measure eudaimonic well-being. The items and their response format are reported in Table 2. All of the items have a binary response format. Principal component analysis was used to examine the factor structure of the items. Scree plots, both at the individual and national levels, suggested a single-factor solution. The factor loadings of the one-factor solutions are shown in Table 2. The loadings at the individual level were between .397 and .551 (eigenvalue = 1.631). The loadings at the national level (N = 165) ranged from .502 to .783 (eigenvalue = 3.037). An EWB score was calculated for individuals who have responded to at least four of the items. The total score of EWB for each individual was calculated by averaging the seven item's scores. Individual scores within each nation were then averaged to obtain a national score. The possible range of the EWB scores is between 0 and 1.

Table 2

The Items Used to Measure Eudaimonic Well-Being and Factor Loadings

Content	Item wording	Factor loading	
		individual	national
Learning	Did you learn or do something interesting yesterday?	.551	.783
Social support	If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?	.397	.502
Respect	Were you treated with respect all day yesterday?	.484	.552
Efficacy	Can people in this country get ahead by working hard, or not?	.493	.670
Freedom	In (this country), are you satisfied or dissatisfied with your freedom	.537	.782

	to choose what you do with your life?		
Helping strangers	Have you helped a stranger or someone you didn't know who needed help?	.477	.638
Volunteering	Have you volunteered your time to an organization?	.419	.633

Note. Response options for freedom were "Satisfied" = 1 and "Dissatisfied" = 2. For all other items, response options were "yes" = 1 and "No" = 2. All items also had two other response options: "Don't know" and "Refuse to answer". All variables were dummy coded as 1 for "yes" or "satisfied" and 0 for "No", "Dissatisfied", "Don't know", and "Refused".

Individual-level demographic variables. Demographic variables of the study included age, gender (0 = Male, 1 = Female), employment status, educational level, location and marital status. The categories of the demographic variables are shown in the supplementary material (Table S2). These variables are used as the predictors of EWB in the multi-level analyses.

Other individual-level variables. All of the items and their response formats are presented in the supplementary material (Table S1). These variables were used as the predictors of EWB in multi-level models. As can be seen, life satisfaction, satisfaction with the city, satisfaction with standards of living, health problems, meaning in life, and religiosity were each measured by a single dichotomously-scored item. Positive and negative affect scales had multiple items. The positive affect scale ($\alpha = .60$, in the entire sample) consisted of two binary items (enjoyment and smile/laughter). The negative affect scale ($\alpha = .68$, in the entire sample) consisted of four binary items (worry, sadness, stress, and anger). These variables have been used for measuring affect in previous studies using the GWP dataset (e.g., Diener, Ng, Harter, & Arora, 2010; Diener & Tay, 2015; Diener, Tay, & Myers, 2011).

Country-level variables. Some country-level variables that are theoretically related to eudaimonic well-being were obtained from existing multi-national databases. Detailed information about these national variables is provided in the supplementary material (Table S5). Two items from the World Value Survey and European Values Studies (WVS, 2009) included general trust and a sense of freedom, which were expected to be positively correlated with the present eudaimonic well-being index. Eleven items from the European Social Survey (ESS, 2012) that were designed to measure aspects of mental well-being in European countries were also included. The national prosperity indices (Legatum Institute, 2017) from 2007 to 2017 were averaged to form a total prosperity index for each nation.

Diener and Tay's comprehensive index of quality of life was also included (Diener & Tay, 2015). The index is based on Gallup samples drawn from the years 2005 through 2013. Finally, Gross Domestic Product (GDP) Per Capita based on purchasing power parity (current international $, data.worldbank.org) was used to measure national wealth. This index is referred to hereafter simply as "GDP". The scores between 2007 and 2016 were averaged to form an overall GDP score for each nation. The variable was natural-log-transformed to be used in the present analyses.

Statistical Analysis

Considering the hierarchical nature of the dataset, multi-level modeling was used (Hox, 2010; Nezlek, 2010). All of the models were estimated with Restricted Maximum Likelihood (REML), which is the generally recommended estimation method in multi-level modeling (Brown & Prescott, 2015). In all of the analyses of the study, the intercept, as well as the slopes of the predictors, were treated as random effects (i.e., they were allowed to vary across nations). In the analyses with a large number of predictors, due to a large number of free parameters in the model, convergence would not be achieved using the unstructured covariance matrix (Hox, 2010). For model identification purposes the variance components (or diagonal) structure for random effects was used in these analyses. Specifying variance components estimates all of the variances for random effects, yet, it constrains the covariances between the random effects to be zero (Hox, 2010; West, Welch, & Galecki, 2014). The covariances between predictor random effects are not generally of interest to researchers (Nezlek, 2010), as is the case in the present analyses.

In multi-level modeling, the variance in the outcome variable is partitioned into individual- and group-level components. Therefore, a separate effect size estimate is reported for each level. Effect size in multi-level modeling is the proportional reduction in variance between the model that has no predictors (the baseline model) and a model that includes predictors (Brown & Prescott, 2015; Hox, 2010). Thus, effect sizes represent the percentage of variance explained at each level as a result of adding predictors (roughly similar to R^2 in simple regression).

In order to examine global trends in EWB, latent growth curve modeling (Duncan & Duncan, 2004; Preacher, 2008) was used. This analysis serves as a powerful tool for describing and summarizing the direction and amount of change in national EWB over time. Latent growth curve modeling develops a trajectory of change for each nation across the time points, aside from the nation's initial status on the variable. It defines the two higher-order

latent variables of initial status (intercept) and rate of change (slope). The mean and variance estimates for the rate of change factor are of particular interest in the present study. The mean estimate shows the magnitude and direction of average national change over time, whereas the variance estimate shows whether there are significant differences between nations on the rate of change.

Results

Distribution of Eudaimonic Well-Being

Across the entire sample (N = 1,726,763), the EWB scores at the individual level ranged between 0 to 1, with an average of .619 (SD = .214). The standard deviation of EWB is nearly identical to that of life satisfaction (= .229), when life satisfaction scores are rescaled to range between 0 and 1. Figure 1 shows the distribution of EWB by age and gender. As shown, EWB generally declines with age. The graph shows that some groups of individuals with advanced ages have relatively high levels of EWB. Yet, it should be noted that the sample sizes are much smaller at the right end of the age distribution. Men generally scored higher than women.
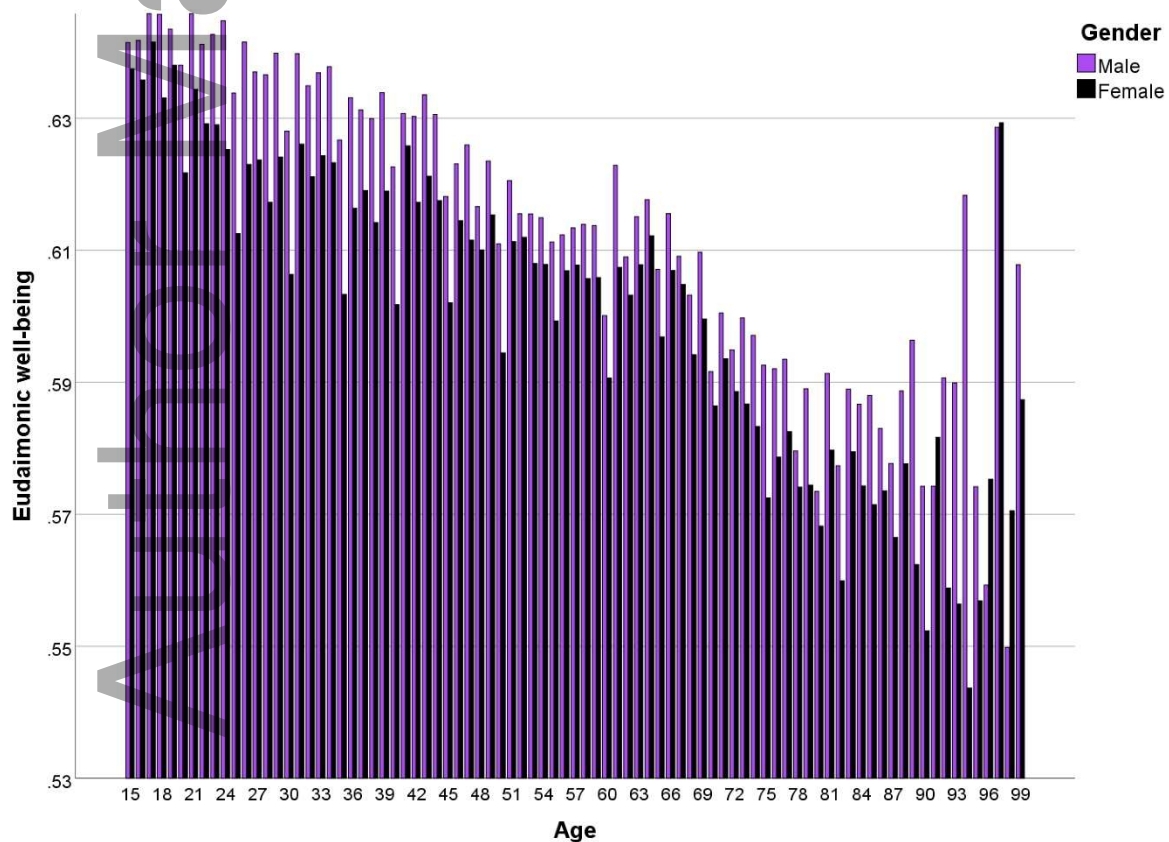

Figure 1

Eudaimonic well-being by age and gender

Table 3 reports the average eudaimonic well-being scores for each nation. Canada and Norway have the highest national scores (.78), whereas Lithuania, Burundi, and Serbia had the lowest scores (.45). The world average is .62. Figure 2 shows the EWB scores for 12 global regions. Australia, New Zealand, and the North American countries had the highest scores, whereas European countries that are not members of the European Union, the commonwealth of independent states, along with South Asian and East Asian countries had relatively low scores.

Table 3

Eudaimonic Well-Being Scores and Ranking

country	score	country	score	country	score	country	score	country	score
1. Canada	.78	35. Germany	.70	69. Argentina	.65	103. Laos	.60	137. Kosovo	.54
2. Norway	.78	36. Nigeria	.70	70. Turkmenistan	.65	104. N. Cyprus	.60	138. China	.54
3. Australia	.77	37. Ghana	.70	71. Uruguay	.65	105. Congo Bra.	.60	139. Albania	.54
4. United States	.77	38. Namibia	.70	72. Malaysia	.65	106. Tajikistan	.60	140. Latvia	.53
5. New Zealand	.77	39. Zambia	.69	73. Sudan	.65	107. Kyrgyzstan	.60	141. South Korea	.53
6. Ireland	.75	40. Mauritius	.69	74. Somaliland	.65	108. Taiwan	.60	142. Nepal	.53
7. Philippines	.74	41. Malta	.69	75. Cameroon	.65	109. Burkina Faso	.59	143. Russia	.53
8. United Ar. Em.	.74	42. Kenya	.69	76. El Salvador	.65	110. Comoros	.59	144. Slovakia	.53
9. Kuwait	.74	43. Spain	.69	77. Saudi Arab.	.64	111. Kazakhstan	.58	145. Romania	.53
10. Switzerland	.74	44. Bahrain	.69	78. Myanmar	.64	112. Cuba	.58	146. Haiti	.52
11. Iceland	.74	45. Swaziland	.69	79. Cyprus	.64	113. South Sudan	.58	147. Belarus	.52
12. Denmark	.74	46. Bhutan	.68	80. Guinea	.63	114. Lebanon	.58	148. Hungary	.52
13. Costa Rica	.74	47. Nicaragua	.68	81. Rwanda	.63	115. Nagorno-Kar	.58	149. Afghanistan	.52
14. Netherlands	.73	48. France	.68	82. Belize	.63	116. Ethiopia	.58	150. Greece	.52
15. Trinidad Tobago	.72	49. Botswana	.68	83. Hong Kong	.63	117. Cambodia	.58	151. Syria	.52
16. Oman	.72	50. S. Africa	.68	84. Tanzania	.63	118. Japan	.58	152. Turkey	.52
17. Liberia	.72	51. Venezuela	.68	85. Niger	.63	119. Cent. Afr. Rep.	.58	153. Macedonia	.51
18. Colombia	.72	52. Guyana	.68	86. Mali	.63	120. Tunisia	.58	154. Moldova	.51
19. Finland	.72	53. Bolivia	.68	87. Algeria	.63	121. Egypt	.58	155. Togo	.50
20. Panama	.72	54. Honduras	.68	88. Thailand	.62	122. Congo Kin.	.57	156. Montenegro	.50
21. United Kingdom	.72	55. Uganda	.67	89. Ivory Coast	.62	123. Poland	.57	157. Pakistan	.50

| 22. Austria	.72	56. Slovenia	.67	90. Gabon	.62	124. Mongolia	.57	158. Ukraine	.49
23. Dominican Rep.	.71	57. Chile	.67	91. Mozambique	.62	125. Czech Rep.	.57	159. Bulgaria	.49
24. Sweden	.71	58. Ecuador	.66	92. Portugal	.62	126. India	.57	160. Croatia	.48
25. Libya	.71	59. Peru	.66	93. Mauritania	.61	127. Chad	.56	161. Georgia	.47
26. Luxembourg	.71	60. Paraguay	.66	94. Morocco	.61	128. Angola	.56	162. Armenia	.47
27. Belgium	.71	61. Mexico	.66	95. Israel	.61	129. Palestine	.56	163. Bosnia Herz.	.46
28. Qatar	.71	62. Lesotho	.66	96. Jordan	.61	130. Yemen	.56	164. Lithuania	.45
29. Uzbekistan	.71	63. Suriname	.66	97. Zimbabwe	.61	131. Benin	.56	165. Burundi	.45
30. Guatemala	.71	64. Brazil	.66	98. Vietnam	.61	132. Bangladesh	.56	166. Serbia	.45
31. Sri Lanka	.70	65. Somalia	.66	99. Singapore	.61	133. Estonia	.56	Total	.62
32. Puerto Rico	.70	66. Indonesia	.66	100. Djibouti	.61	134. Azerbaijan	.55		
33. Jamaica	.70	67. Malawi	.66	101. Iran	.61	135. Iraq	.55		
34. Sierra Leone	.70	68. Senegal	.66	102. Italy	.61	136. Madagascar	.55		
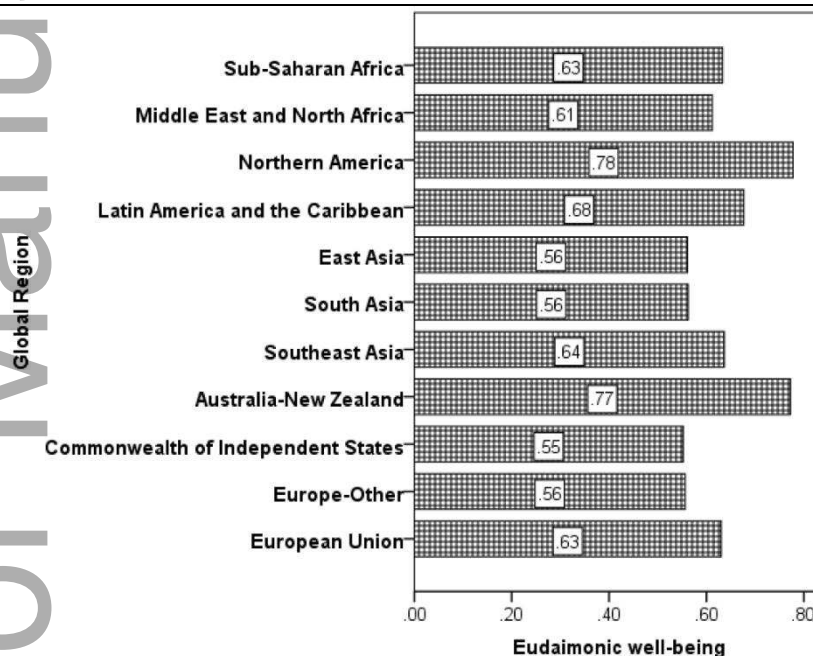
Figure 2

Eudaimonic well-being across global regions

Random effects for EWB and life satisfaction for the whole available sample are shown in Table 4. These are from two separate multi-level models without predictors. The variance estimates in the table can be used to calculate an intra-class correlation coefficient for each variable. This coefficient reveals the proportion of variance in the variable that occurs between groups (i.e., nations), rather than within groups (Bickel, 2007). The intra-class correlation for EWB was about 0.14, indicating that 14% of the variance in EWB is

attributable to country-level conditions. The correlation is smaller than the intra-class correlation for life satisfaction which was about .21. Therefore, satisfaction with life is more affected than EWB by country-level conditions.

Table 4

Random Effects for EWB and Life Satisfaction

	Variance	Wald Z	p	95% CI	
				Low	Up
EWB (N = 1726763)					
Residual	.0398	929.139	.000	.040	.040
Intercept	.0063	9.075	.000	.005	.008
Life satisfaction (N = 1801417)					
Residual	4.1675	949.013	.000	4.159	4.176
Intercept	1.1223	9.078	.000	.904	1.393

Validity at the Individual Level

EWB was expected to be higher among the individuals who reported having a sense of meaning and purpose in life. The results of a multi-level modeling with a sample of 254,914 individuals across 132 countries showed that meaning in life positively predicted EWB (unstandardized estimate = .114, $t = 28.753$, $p < .001$). The correlations between EWB and life satisfaction, positive affect, and negative affect were .276, .373, and -.163, respectively (Ns > 1,700,000, ps < .001)[1]. In a multi-level analysis, life satisfaction was found to be a significant and positive predictor of EWB in the entire sample (unstandardized estimate = .022, $t = 33.410$, $p < .001$, N = 1,704,809). Positive and negative affect were also significant predictors of EWB in multi-level analyses as shown in Table 8. These moderate associations in the expected direction with purpose in life and subjective well-being

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[1] A spearman's correlation analysis was also performed for positive affect given its rather limited score range. The analysis resulted in a highly similar correlation between EWB and positive affect ($r_s = .366$, $p < .001$).

are indicative of acceptable criterion and discriminant validity for the EWB index at the individual level.

Validity at the National Level

The correlations between EWB and other indicators of national well-being are presented in Table 5. EWB demonstrated moderate associations with the other well-being indicators, suggesting a large portion of nonshared variance. These results support acceptable discriminant and criterion validity for EWB at the national level. The relationships between EWB, life satisfaction, prosperity, comprehensive quality of life, and GDP are displayed in Figures S1-S4 in the supplementary material. What stands out in the figures is that nations with similar degrees of life satisfaction, prosperity, quality of life, or GDP can have varying levels of EWB.

EWB demonstrated correlations of .59 ($p < .001$, N = 94) and .29 ($p < .01$, N = 95) with freedom and trust (from the world value survey), respectively. The correlations between EWB and country-level variables originating from European Social Survey are reported in Table 6. As expected, EWB was positively and significantly correlated with all of the ESS variables, except the item related to "a sense of direction". However, the latter correlation is in the expected direction and moderate in size ($r = .30$), and the non-significance is due to the small sample size (N = 29).

Table 5

Correlations at the National Level

	EWB	Life satisfaction	Prosperity index	GDP	Quality of life
EWB	1				
Life satisfaction	.550*** (166)	1			
Prosperity index	.456*** (149)	.829*** (149)	1		
GDP	.310*** (158)	.826*** (158)	.796*** (149)	1	
Quality of life	.479** (157)	.872** (157)	.897** (147)	.820** (154)	1

Note. Numbers in the parentheses are sample sizes for each correlation analysis.

***p < .001.

Table 6

Correlations of ESS variables and EWB at the National Level (N = 29)

	accomplishment	freedom	worthwhile activity	capability	self-efficacy	learning
r	.60**	.65***	.64***	.69***	.49**	.74***
	helping	received social support	direction	respect	resilience	
r	.51**	.64***	.30	.60**	.74***	

Note. All variables were recoded, such that higher scores indicate higher levels of well-being. ESS = European Social

Survey.

**p < .01. ***p < .001.

Predictors of Eudaimonic Well-Being

In separate multi-level analyses, 21 individual-level and one country-level predictors were used to predict EWB. A total of 1,022,973 individuals across 149 nations have responded to all of the variables included in this series of analyses. In the first multi-level model, all of the 21 predictors of the study were added as the predictors of EWB. This included demographic variables (i.e., age, gender, employment status, educational level, location, and marital status) along with negative and positive affect, health problems, satisfaction with standards of living, satisfaction with the city, and religiosity. The random and fixed effects are reported in Tables 7 and 8, respectively. Based on the random effects presented in Table 7, effect sizes can be calculated. Adding the individual-level predictors, explained about 21% of the individual-level variance in EWB. The predictors collectively explained about 9% of the country-level variance in EWB. Except location (i.e., rural area/small town), all other variables were significant predictors. In a separate multi-level model, national prosperity index (grand-mean centered) was also added to the model. This

index provides a comprehensive assessment of objective conditions of life in nations, and therefore, was used as a proxy measure for general conditions of life. The results are reported in Tables 7 and 8. Adding prosperity increased the explained variance at the national level to 20%. Prosperity index was a significant but weak predictor of the individual-level EWB. Therefore, individual-level variables seem to play a more significant role than national conditions in predicting individual-level EWB.

Table 7

Random Effects

	Variance	Wald z	p	95% CI	
				Low	Up
Baseline model (no predictors)					
Residual	.0382	715.133	.000	.038	.038
Intercept	.0065	8.445	.000	.005	.008
Individual-level predictors					
Residual	.0301	714.086	.000	.030	.030
Intercept	.0059	8.149	.000	.005	.007
Individual- and national- level predictors					
Residual	.0301	714.086	.000	.030	.030
Intercept	.0052	8.102	.000	.004	.007

Note. All of the variance for the individual-level predictors were significant. Given that these estimates are not of interest here, they are not reported for the sake of brevity.

Table 8

Fixed Effects

	Estimate	t	p	95% CI	
				Low	Up
With individual-level predictors					
Intercept	.426	65.224	.000	.413	.439
Female	-.006	-6.646	.000	-.008	-.004
Age	.000	-2.906	.004	.000	.000
Negative affect	-.020	-10.001	.000	-.024	-.016
Positive affect	.133	59.402	.000	.129	.137
Employed part time do not want full time	-.003	-2.271	.025	-.006	.000
Unemployed	-.021	-13.225	.000	-.024	-.018
Employed part time want full time	.003	2.153	.033	.000	.006
Out of workforce	-.029	-17.231	.000	-.033	-.026
Secondary education	.035	26.495	.000	.033	.038
Tertiary education	.070	38.852	.000	.066	.074
A rural area or on a farm	-.001	-.934	.352	-.004	.002
A small town or village	.001	1.001	.319	-.001	.003
Single	.005	4.531	.000	.003	.007
Widowed	-.005	-4.423	.000	-.007	-.003
Separated	-.009	-6.049	.000	-.012	-.006
Divorced	-.003	-2.192	.031	-.006	.000
Domestic partner	-.010	-6.542	.000	-.013	-.007
Health problems	-.007	-7.761	.000	-.009	-.005
Satisfaction with standards of living	.062	42.064	.000	.059	.065

Satisfaction with city	.046	31.205	.000	.043	.049
Religiosity	.052	23.921	.000	.048	.056
With individual and country-level predictors					
Prosperity index	.003	4.191	.000	.001	.004

Note. The estimates for individual-level predictors are not shown for the second model, because they are virtually identical to those in the first model.

Gender Differences in Predictors of Eudaimonic Well-Being

In two separate multi-level models, the final model of the study was tested for each gender group (excluding gender as a predictor). The fixed effects are shown in Table 9. The results are largely similar across gender. Yet, there were also some gender differences. Age, being "Employed part-time do not want full-time", and being divorced were not significant predictors of EWB in women, whereas they were significant predictors in men. In contrast, being "Employed part-time want full-time", living in "A rural area or on a farm", and being single were significant predictors of EWB in women, but not in men.

Table 9

Fixed Effects for Gender Groups

	Women					Men				
				95% CI					95% CI	
	Estimate	t	p	Low	Up	Estimate	t	p	Low	Up
Intercept	.415	69.026	.000	.403	.427	.431	69.567	.000	.419	.443
Age	.000	-.943	.347	.000	.000	.000	-5.452	.000	.000	.000
Negative affect	-.020	-9.240	.000	-.024	-.015	-.020	-9.183	.000	-.025	-.016
Positive affect	.133	59.780	.000	.128	.137	.134	57.390	.000	.130	.139
Part-time do not want full-time	-.001	-.862	.391	-.004	.002	-.004	-2.572	.011	-.007	-.001
Unemployed	-.017	-10.244	.000	-.020	-.014	-.024	-13.289	.000	-.028	-.021
Part-time want full-time	.005	3.505	.001	.002	.009	.001	.671	.503	-.002	.004
Out of workforce	-.027	-16.730	.000	-.030	-.024	-.030	-16.047	.000	-.033	-.026
Secondary education	.036	25.920	.000	.033	.038	.035	23.449	.000	.032	.038
Tertiary education	.070	37.747	.000	.066	.074	.069	36.679	.000	.066	.073
A rural area or on a farm	-.004	-2.281	.024	-.007	.000	.001	.425	.671	-.002	.004

A small town or village	.000	.115	.909	-.002	.003	.002	1.870	.064	.000	.004
Single	.008	6.601	.000	.006	.011	.000	.226	.822	-.002	.003
Widow	-.004	-3.453	.001	-.007	-.002	-.010	-5.384	.000	-.014	-.006
Separated	-.007	-3.883	.000	-.011	-.003	-.013	-5.367	.000	-.017	-.008
Divorced	.000	.338	.736	-.002	.003	-.012	-5.297	.000	-.016	-.007
Domestic partnership	-.010	-5.725	.000	-.013	-.006	-.009	-5.296	.000	-.013	-.006
Health problems	-.006	-6.412	.000	-.008	-.004	-.008	-7.143	.000	-.010	-.006
Satisfaction with standards of living	.062	40.930	.000	.059	.065	.063	38.769	.000	.059	.066
Satisfaction with city	.043	28.219	.000	.040	.046	.050	31.327	.000	.047	.053
Religiosity	.053	22.285	.000	.048	.058	.051	23.812	.000	.047	.055
Prosperity index	.003	5.380	.000	.002	.004	.002	3.613	.000	.001	.003

Trends: Changes from 2011 to 2016

This country-level analysis focused on the period between 2011 and 2016 during which annual EWB scores are available for a maximum number of countries (Table S4, in the supplementary material). Countries that had valid scores for at least four out of six years were included (N = 147) in a latent growth curve modeling. The growth model is shown in Figure S5 in the supplementary material. Mplus 8 (Muthen & Muthen, 2017) was used for data analysis. The model was estimated with Robust Maximum Likelihood (MLR) estimation and Full Information Maximum Likelihood for handling missing data. A minimum cutoff of .95 for Comparative Fit Index (CFI) and a maximum cutoff of .08 for Root Mean Square Error of Approximation (RMSEA) were considered as indicative of acceptable fit (Brown, 2015).

A linear growth model provided satisfactory fit (χ^2 (11) = 19.599, p = 0.0511; RMSEA = 0.073, CFI = 0.989). The initial level of national EWB was estimated to be 0.620. There were significant differences in the average initial levels of EWB between nations (variance = 0.008, p < .001). During the six-year period, the global rate of change of EWB was very small but positive and significant (= 0.003, p < .003). The rates of change significantly varied among the nations (variance = 0.000, p = 0.015). These results are suggestive of a slight upward global trend for EWB over the past recent years. The sample and estimated means for national EWB are shown in Figure 3.
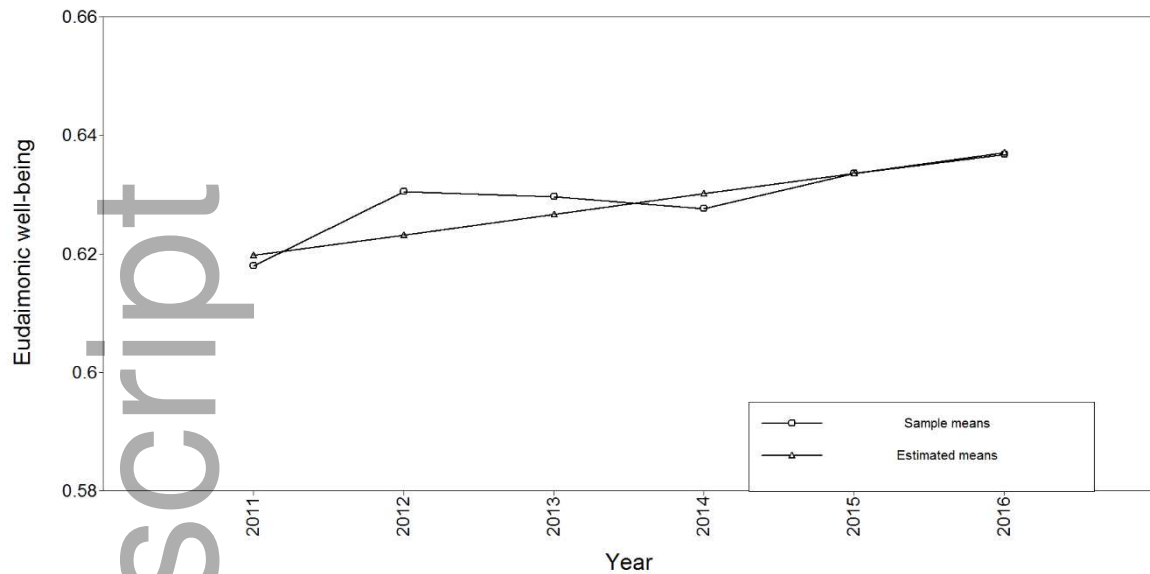
Figure 3

Sample and estimated means for national EWB over six years (N = 147)

Discussion

EWB is theoretically distinct from the existing measures of well-being, in that it is concerned with the acquisition of psycho-social skills that make life worth living and which facilitate optimal functioning. The present study developed and initially validated a global measure of EWB using comparable survey data from a large number of nations. The evidence provided in this study indicate that EWB is an informative measure for interpersonal and international comparisons and it measures that which it is intended. The results showed that EWB was correlated with theoretically relevant individual and national variables in the expected direction, and that its associations with other well-being indicators (i.e., life satisfaction, prosperity, quality of life, and GDP) were modest. In particular, making a distinction between EWB and subjective well-being has been criticized on the grounds that these two concepts are highly correlated (e.g., Kashdan, Biswas-Diener, & King, 2008; King, 2011). Yet, the present study showed that the correlations between the EWB index and the components of subjective well-being are far below the level that would potentially indicate

multicollinearity or empirical redundancy[2]. Furthermore, as shown in Table 5, EWB and life satisfaction showed differential associations with the other national indicators of well-being. These patterns of correlations reflect favorable criterion and discriminant validity for EWB. Therefore, EWB can be jointly used with the other well-being indicators for a more comprehensive assessment of human well-being.

EWB was found to be less strongly correlated with economic factors than was life satisfaction (Diener & Tay, 2015). Thus, national EWB is largely independent from national wealth, and GDP does not adequately capture national EWB. EWB seems to be more dependent on non-economic conditions. That EWB was found to be higher in wealthier regions (Figure 2) can be explained by the fact that wealthier nations enjoy higher levels of overall national functioning as measured by the prosperity index. The results of latent growth modeling indicated that EWB has slightly improved over recent years, which is consistent with the general upward trend in basic need satisfaction, subjective well-being, quality of life, and national prosperity (Diener & Tay, 2015; Legatum Institute, 2017). Therefore, despite the many problems that the world is facing, the conditions of life are improving at a leisurely pace.

EWB scores showed about 14% variation amongst countries, whereas life satisfaction displayed a higher variation of nearly 21% amongst countries. This may be due to the fact that life satisfaction is more strongly associated with national wealth, which is highly unequally distributed among countries (Helliwell et al., 2017). There were also remarkable differences in the predictors of EWB and subjective well-being. For example, men scored higher than women on EWB, which is in contrast to the general pattern observed for life satisfaction (Fortin, Helliwell, & Wang, 2015). Whereas religiosity is not a significant predictor of life satisfaction in the GWP (e.g., Joshanloo, 2018), it predicted EWB significantly and positively. Education is a generally weaker predictor of life satisfaction (Clark, Layard, & Senik, 2012) than EWB. Another difference is in the predictive power of positive and negative affect. In sum, there are important differences between the predictors of subjective well-being and EWB, which attests to the discriminant validity of the two concepts.

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[2] For example, Brown (2015) and Kline (2011) suggest a correlation of .80 or .85 as an indicator of potential multicollinearity issues.

In some countries or regions, a reverse U-shaped pattern for life satisfaction has been reported across the adult lifespan (Fortin et al., 2015). Researchers have attributed this pattern to age-related changes in attention and memory, better emotional regulation skills in late adulthood, and the tendency of older adults to focus on goals that promote subjective well-being (Charles & Carstensen, 2014; Lansford, 2018). The present results suggest that EWB slightly but steadily declines with age. Previous research with American samples has also shown a decline with age in the sense of personal growth and purpose in life (Ryff & Singer, 2002). In addition, research reveals that the frequency of volunteer work drops off at the older ages (Van Willigen, 2000). Thus, aging may be associated with limited venues for keeping life engaged and purposeful as well as with diminished opportunities of continued development and prosocial activities (Ryff & Singer, 2002). The present findings are consistent with the previous findings by highlighting some challenges for the EWB in late adulthood. The results reveal a decline in the frequencies of learning experiences and helping and volunteering behaviors in older ages. In addition, older people are less likely to have high levels of education (a positive predictor of EWB) and more likely to be out of the workforce (a negative predictor of EWB) than younger people. In sum, it seems that it is more challenging to maintain a high level of EWB in late adulthood than in earlier stages of adulthood. Given the cross-sectional character of the data, however, the findings on the age trajectory of EWB need to be interpreted with caution. Cross-sectional data cannot clarify whether the observed patterns represent aging/maturational changes or simply cohort differences (Ryff & Singer, 2002). Thus, it remains for future longitudinal research on EWB to disentangle cohort differences from the effects of maturation.

The most important individual-level predictors of EWB turned out to be positive affect, satisfaction with standards of living, and tertiary education. Yet, many other factors contributed significantly to the prediction of EWB. The results also showed that the predictors of EWB were largely similar across gender, with only small gender differences. The national level of prosperity was not a strong predictor of personal EWB. This, of course, does not mean that national context is not important in determining EWB. Instead, the role of national context in predicting the EWB of a given individual seems to be largely mediated by individual-level variables (e.g., education, health, and standards of living). Furthermore, national prosperity did explain about 10% of the country-level variance in the EWB scores. It can be concluded that the national level of prosperity is much more important in determining a certain nation's average level of EWB than a certain individual's level of EWB.

A consensus has been reached among many researchers and policymakers that using economic indicators is not and should not be the only way to evaluate the quality of life and well-being (Anand, 2016; Diener & Tay, 2015). The present study used a large and harmonized cross-national survey, representing all global regions, to introduce a new index of psycho-social functioning that captures information about well-being not contained in the other established well-being indicators. There seems to be no guarantee that more national wealth translates into more EWB. A few examples are Ethiopia, Tajikistan, Lebanon, Japan, and Singapore which have very similar levels of EWB, yet wide-ranging GDPs (Figure S4 in the supplementary material). This by no means discounts the importance of national wealth as a crucial component of well-being. However, the emerging patterns in the present study intensify the concern over ignoring the psychological and social elements of well-being. Thus, researchers, policymakers, and anyone attempting to understand and improve human well-being are encouraged to pay due attention to the psycho-social element of human well-being. A comprehensive understanding of human well-being that includes EWB will facilitate the design and evaluation of more efficient policies, both domestic and international. This study was a first attempt at exploring EWB at the global level. Clearly, additional studies are needed to expand upon these observations.

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Author/s:
Joshanloo, M

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