Does Education Contribute to Happiness? A Cross-Country Study

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ABSTRACT

Does education contribute to happiness? Education is considered an important component of human capital that leads to acquiring skills and knowledge needed for a productive life both financially and socially.

The United Nations Development Program (UNDG) produces the Human Development Index (HDI) which was created to assess the development of a country. The HDI measures three dimensions of a country's development: standard of living (income), healthy life, and knowledge. Numerous studies have established a positive relationship with income and life expectancy to happiness across countries. The relationship between measures of happiness and educational levels is less clear.

Using data and a base model for cross-country happiness from the World Happiness Report (2019), this study will explore potential relationships of the UNDG education index with happiness across countries.

Keywords: Happiness, Cross-country, Subjective Well-Being, Education Index, Cantril Ladder

INTRODUCTION

The Cantril Life Ladder is a common measure of happiness, subjective well-being (SWB), or life satisfaction.[1] It is collected from the Gallup World Poll (GWP) where respondents are asked to evaluate the quality of their life using the analogy of rungs on a ladder. The bottom rung is 0 (worst possible life) and the top rung is 10 (best possible life). This is the variable of interest in this study since it is considered to have the best international coverage (World Happiness Report, 2012).

The United Nations Development Program (UNDP) created the Human Development Index (HDI) to "emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone (Human Development Reports, Human Development Index, paragraph 1)." The HDI is a composite of three dimensions as measured through separate indexes: life expectancy index, education index, and gross national income (GNI) index. The United Nations states that the HDI can be used as "a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions (Human Development Reports, Human Development Index, paragraph 2)."

In 2012, the inaugural World Happiness Report (WHR) was released. In this report, a regression model was developed to explain average SWB, as measured by the Cantril Ladder, across 139 countries. The base model has six variables which can explain a large portion of the variation of happiness across countries. The six variables are log GDP per capita, healthy life expectancy, freedom to make life choices, absences of corruption (business and government), having a social support system, and generosity. The initial report included a measure of education (average education level among adults) but was found to be insignificant and subsequently dropped from the model. The authors contend that education may have an indirect impact on national levels of happiness through income and other variables already included in the model.

Have education levels across the world changed over the past decade? If so, have these educational levels had an impact on cross country SWB? In this study, using the data and base model from the World Happiness Report (2019), the UNDP's Education Index will be explored as a possible contributor to national happiness across countries.

LITERATURE REVIEW

The topic of happiness across countries has been studied extensively with numerous scholarly articles exploring this topic. Due to the vast expanse of the literature, a brief overview of the literature as it pertains to education and happiness are summarized in the following paragraphs.

In general, having more income would be expected to lead to more happiness or subjective well-being. However, Easterlin (1974, 1995) found that in the United States, substantial increases in income had little effect on happiness, which is essentially flat over the time period used in the study. This came to be known as the Easterlin Paradox. Since that time, the relationship between income and happiness has been comprehensively researched. The

[1] Happiness, subjective well-being (SWB) and life satisfaction are used interchangeably in this paper and in the literature.

majority of the evidence in cross-country studies finds that income is a positive determinant of happiness (Helliwell, 2003; Blanchflower and Oswald, 2004).

Higher levels of education tend to produce higher levels of income and potentially happiness. Blanchflower and Oswald (2004), Easterlin (2001), Frey and Stutzer (2002), Ferrer-i-Carbonell (2005) found a significant relationship between educational levels and happiness. With monetary and nonmonetary advantages to education, it would seem that a direct relationship between education and happiness would be likely. Yet, there are studies that have found a negative or no statistically significant relationship between happiness and education (Clark and Oswald, 1996; Helliwell, 2003; and Veenhoven, 2010). There are several possible reasons suggested for the mixed evidence on the relationship between education and happiness. On an individual level, higher education levels can lead to higher expectations for income and happiness that may be difficult to achieve. Being unable to achieve these higher levels of expectations can lead to lower levels of happiness (Clark and Oswald 1996). Alternatively, when statistical models of happiness utilize measures of income, health, education, and other determinants of happiness, the coefficient on the education variable may be difficult to interpret as income and health are outcomes of education (Powdthavee, Lekfuangfu, and Wooden 2015).

Many argue that education is important in numerous aspects of life other than just income, such as Brighouse (2006) and Michalos (2008). Oreopoulos and Salvanes (2011) researched the nonpecuniary benefits of education. They found that education was an important predictor of health, employment, and having a successful marriage, all of which can contribute to an individual's well-being. In addition to just income, Chen (2012), using data from four Asian countries, found that education impacted happiness by contributing to social networks and cosmopolitan experiences. In a study focused on Australia, Powdthavee, Lekfuangfu, and Wooden (2015) found that education is positively related to life satisfaction through health and income but, as a direct effect, the education variable is significant and negatively related to life satisfaction. In another study focused on Australia, Nikolaev (2018) looked at impact of higher education on different measures of SWB. The author finds that people with higher education are more likely to report higher levels of life satisfaction, more positive and less negative emotions (hedonic SWB), and more meaningful lives (eudaimonic SWB).

In the inaugural report of World Happiness (2012), the first model has GDP per capita (measure of income) as the sole determinant of the Cantril ladder (measure of happiness). While the relationship between happiness and GDP per capita is very strong, the authors conclude that material well-being is not the only determinant of subjective well-being. As a first look, other components of the human development index were considered. The model was estimated with healthy life expectancy from the World Health Organization (WHO) and average educational level among adults from UNDP. The report concluded that health was a significant additional factor in happiness across nations but the education variable was not significant at the 5% level. The education variable was subsequently dropped from their model. In each subsequent report for World Happiness, the base model of the six variables (log GDP per capita, healthy life, freedom to make life choices, absences of corruption (business and government), having a social support system, and generosity) has been repeated. While the education variable was not found to have a significant impact on happiness across countries, the authors' state "…but education is of course indirectly related to happiness through its effect on income: education increases income and income increases happiness (World Happiness Report, 2012, p. 78)."

The impact of education on happiness has mixed results and merits further investigation. This study examines the potential contribution of the UNDP education index to the model developed in the World Happiness Report.

METHODOLOGY

The most recent World Happiness Report (2019) uses data from 2005-2018, to estimate the Cantril Ladder, controlling for income, life expectancy, and Gallup World Poll (GWP) subjective measures. As stated earlier, a measure of education is not included the WHR, however, from 2007 to 2017 the HDI mean education index has trended upward, (see Figure 1, Appendix). With the change in cross-country education levels, the direct contribution of education to SWB should be reexamined.

All models are estimated using Seemingly Unrelated Regression (SUR), a generalization of feasible Generalized Least Squares (GLS). The assumption of SUR is that the error terms are independent across time but assumes random within period cross-equation heteroscedasticity (Zellner, 1962). SUR is applied to Model (1) and Model (2). Model (1), the WHR model, replicates the model specification reported in the World Happiness Report (2019). Model (2) adds the HDI education index to Model (1).

(1) $Y_{it} = \beta_0 + X\beta_{it} + \varepsilon_{it}$

where Y = n x 1 Cantril Ladder measures
X = n x k matrix of variables from the WHR model

(2) $Y_{it} = \beta_0 + X\beta_{it} + Z\beta_{it} + \varepsilon_{it}$

where Y = n x 1 Cantril Ladder measures
X = n x k matrix of variables from the WHR model
Z = n x 1 vector of HDI education index

From 2007-2017 time period, changes in global and country specific economic conditions and intra-county policy changes lend itself to revisiting the contribution of education to SWB. Model (2) allows for a direct effect of education on SWB.

DATA

Descriptive statistics are provided in Table 1 (Appendix) and are based on 154 countries for the time period 2007-2017. The time period and countries used in this study differ from WHR (2019) since this study only uses observations for which complete data was available. There are cases in the data where country level data for each consecutive year is not provided in the WHR data. As a result, the total number of observations for the data set used in this analysis is 1,299.

Apart from the education index, all data are obtained from the World Happiness Report 2019. The World Happiness data contains annual mean survey respondent (subjective) and mean objective data for 156 countries between 2005-2017 and is compiled from different sources

including the Gallup World Poll (GWP), World Health Organization (WHO), and World Development Indicators (WDI).

The Cantril Ladder will be the variable of interest in this analysis. The two objective measures are expected to be favorable to individual happiness, with log GDP as a proxy for economic well-being and health as measured through life expectancy. Corruption perception, which captures individual's judgement of business and government corruption, is the country average of response on a 0 or 1 scale. Higher values of corruption perception lower subjective well-being. Perceptions of generosity is another subjective variable. For generosity, positive values indicate greater levels of country generosity and, conversely, negative values indicate relatively less generous countries. Freedom to make life choices and social support, two other subjective measures, are constrained to take on values between 0 and 1, with values closer to 1 positively related to happiness.[2]

Separately, to account for the effect of education on country happiness, the education index, a component of the Human Development Indicators, is added to the model. The education index is a scaled composite statistic which captures the mean years of adult schooling and expected years of child schooling. Not surprisingly, higher values of the education index are significantly greater for economic world powers, with indices less than 0.45 concentrated in Africa, the Middle East, and less developed South American countries. During the 2007-2017 time period, the mean educational index for the top world economies showed a mean increase of 0.01 in the educational index. In contrast, countries reporting an education index of 0.55 or lower in 2007 have shown marked increases by 2017, with the index increasing by as much as 0.10. As shown in Figure 1, in 2007 the mean education index was 0.6214 and by 2017 index had increased to 0.6708; a statistically significant difference.[3] With the larger number of time periods, changes to educational attainment can be more readily observed and, more importantly, provide an opportunity to reexamine the relationship between education and subjective well-being.

RESULTS

Results for Model (1) and Model (2) are provided in Table 2 (Appendix). The estimates are based on 154 countries over 11 time periods, 2007-2017. As not all not all countries report data for each time period, estimates are based on a sample size of 1,299. Differences in coefficients between Model (1) and WDR (2019) reported estimates is attributed to differences in methodologies and observations.

The objective measures of GDP and life expectancy are significant in both models, with income having a relatively larger contribution. The contribution of GDP to happiness is critical if one considers that SWB, through income, lends itself to within country contentment and political and economic stability. Life expectancy, as proxy for health, is an important contributor to happiness across countries and indicates that countries should give consideration to the state of its health care systems and programs.

Subjective measures also contribute to happiness. Lower levels of perceived corruption, significant in both models, augments SWB. This result implies that national regulations and laws, adopted and implemented fairly, are likely to enhance SWB by lessening perceptions of

[2] Variable definitions are available at https://s3.amazonaws.com/happiness-report/2019/WHR19_Ch2A_Appendix1.pdf

[3] Statistically significant at 0.05 using t-test with hypothesized mean difference of zero.

corruption. Freedom to make life choices is positive and significant in both models. A country's culture of being generous also contributes positively to happiness. For the subjective measures, social support has the largest relative effect on SWB, with the size of the effect similar across both models. The importance of social human support directly contributes to positive mental and physical health. At the individual level, and therefore, for countries, as a whole, social support is likely to reinforce cultural norms of belonging and community.

Previous research has found mixed results related to education and happiness across countries. Model (2) results show that at the 0.10 level of significance, education contributes positively to happiness across countries. For nearly all countries, mean education levels increase markedly between 2008 and 2010 and increases incrementally for each time period after 2012, (See Figure 1). The steady rise in in mean educational attainment from 2012-2017, indicates that investment in education has a direct effect on SWB and not strictly through an income effect.

While educational attainment is not as important, relative to the other variables, it does directly contribute to SWB across countries. Individual perceptions of SWB are likely to be state dependent with the immediate present having greater influence on individual survey response. Education benefits are not accrued in the immediate present but are accrued over several periods. As such, individual valuations of the contribution of education to SWB may be heavily discounted, lessening the immediate contribution of education on the state of happiness.

CONCLUSIONS

The World Happiness Report provides a model that can explain the majority of differences in happiness across countries. The WHR model does not include a variable for education. Previous research has indicated the direct relationship between education and subjective well-being is mixed.

In this study, the relationship between cross-country happiness and education has been explored. During the 2007-2017 time period across 154 countries, the education index from Human Development Index has increased as shown in Figure 1. Global economic events such as USA Great Recession (2007-2009), Eurozone Crisis (2010-2012), and growth in emerging markets, may have shifted individual's perception of investment in education and its importance in SWB.

Has this increase in education been important for happiness across countries? Using the WHR data and model, the education index was added as a potential explanatory variable. Model (2) results indicate that overtime the shift in educational attainment may be directly contributing to SWB. This study has furthered the research by finding a positive and significant, at the 10 percent level, relationship between education and cross-country happiness after controlling for income, life expectancy, perceptions of corruption, freedom to make life choices, social support, and generosity.

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Appendix

Figure 1
Education Index: 2007-2017

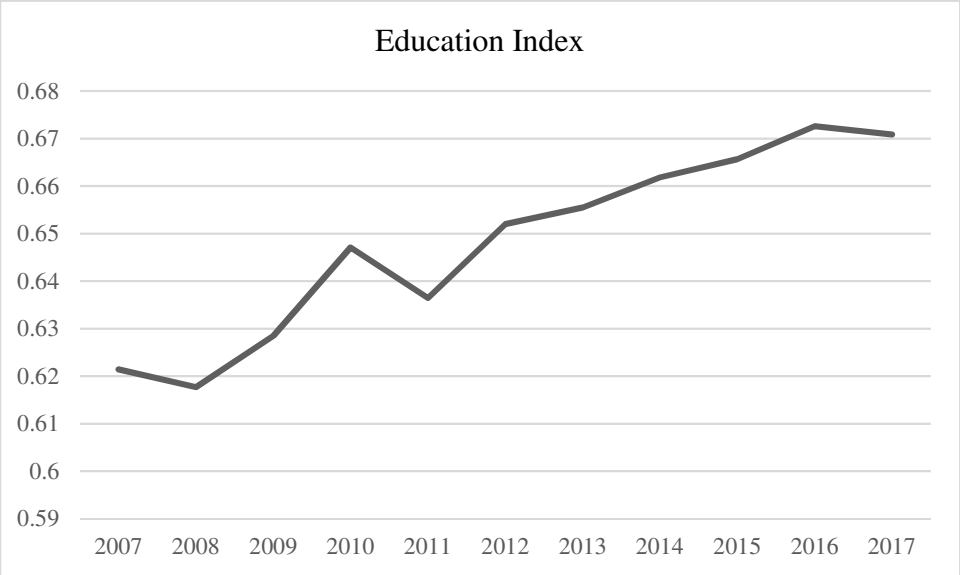

Table 1
Descriptive Statistics

	Life Ladder	Freedom to Make Life Choices	Corruption	Education Index	Generosity	Life Expectancy	Log GDP	Social Support
Mean	5.4116	0.7268	0.7542	0.6496	0.0035	62.9177	9.1704	0.8063
Standard Deviation	1.1455	0.1468	0.1870	0.1835	0.1642	7.7652	1.187	0.1228
Maximum	7.9708	0.9851	0.9832	0.9410	0.6691	76.5	9.3708	0.9873
Minimum	2.6617	0.2575	0.0351	0.1540	-0.3178	32.3	6.4572	0.2901
Observations	1299	1299	1299	1299	1299	1299	1299	1299

Table 2
Model Comparison

	WHR Model (1)		**WHR with Education Index Model (2)**	
	Dependent Variable: Cantril Ladder		Dependent Variable: Cantril Ladder	
Variable	Coefficient	SE	Coefficient	SE
Constant	-1.4176	0.2544	-1.1248	0.3009
Log GDP	0.4086*	0.0360	0.3800*	0.0398
Life Expectancy	0.0163*	0.0052	0.0119*	0.0058
Freedom to Make Life Choices	1.0171*	0.1428	0.9946*	0.1435
Corruption	-0.5608*	0.1278	-0.5851*	0.1288
Generosity	0.5209*	0.1238	0.5312*	0.1241
Social Support	2.1219*	0.1906	2.1192*	0.1912
Education Index			0.4376**	0.2612
	Weighted Statistics			
R-squared	0.6059		0.6058	
F-statistic*	331.0908*		283.5222*	
Durbin-Watson	1.5058		1.5011	

Number of observations=1299
*Significant at .05
**Significant at .10