Abstract

We study the relationship between intelligence (IQ) and happiness inequality, measured by the standard deviation of life satisfaction, in a cross section of 81 countries. We find that higher levels of IQ are significantly correlated with lower levels of happiness inequality. This relationship is highly statistically significant even when we control for the level of economic development and a large set of control variables including economic freedom and social capital. We furthermore find suggestive evidence that economic development has a happiness equalizing effect, but this effect is, at least partially, mediated by the level of intelligence. Nations with higher levels of economic development and low IQ tend to experience less equal distribution of happiness compared to nations with higher levels of economic development and high IQ. The results are robust for a panel of 50 US states from 1972 to 2012 that uses alternative measure of intelligence from the US General Social Survey.

Keywords

Intelligence, Happiness Inequality, Economic Growth

Highlights

- We examined the association between intelligence and happiness inequality
- IQ is negatively correlated to happiness inequality after controlling for a number of control variables
- The effect of economic development on happiness inequality is mediated by intelligence
- The results are robust for a panel of 50 US states from 1972-2012

1. Introduction

In the past several decades, one of the most hotly debated topics in the development literature across disciplines has been the so-called Easterlin Paradox. According to Richard Easterlin (1974, 1995, 2010), even though income is one of the strongest determinants of happiness within and across countries in the short-run, it does not seem to correlate with subjective well-being (SWB)[1] in the long-run. This view is based on the empirical observation that although real incomes have substantially increased since the 1970s, there have been no corresponding increases in the reported level of happiness, at least in the developed world. The Easterlin Paradox has inspired a vast empirical and theoretical literature in psychology, economics, sociology, and political science on social comparison and adaptation (for a review see Frey & Stutzer, 2002) and has been one of the main objections to economic growth. Binswanger (2006 p. 369), for example, suggests that "income initially provides additional happiness as it enables people to buy more goods and services… people [however] tend to adapt to higher income by rising income aspirations. The rising aspirations, in turn, lower the happiness people derive from a certain level of income." Furthermore, on the macroeconomic level, GDP per capita does not account for (differences in) the income diffusion within society, even though a disproportionate income distribution may lead to uneven opportunities for individual development and thus more unequal distribution of happiness (Van den Bergh, 2009).

From the perspective of policy analysis, however, society may be interested not just in maximizing the average *level* of happiness, but also how happiness is *distributed* across individuals and over time. Several recent studies challenge the Easterlin paradox in this line of reasoning. For example, Stevenson and Wolfers (2008) and Dutta and Foster (2013) show that even though average happiness in the US has stayed relative flat since the 1970s, happiness inequality has significantly decreased for the same period of time, with a large number of people moving from the lowest happiness category "not too happy" to the middle category "pretty happy." A new study by Clark et al. (2015) also demonstrates that economic growth is systematically correlated with a more equitable distribution of happiness across nations. Similarly, Veenhoven (2005) finds that happiness inequality significantly decreased from 1973 to 2001, even though income inequality rapidly increased for the same period of time.

[1]Psychologists (Diener 1984) differentiate between three separate aspects of SWB: (1) life satisfaction (i.e., a person's overall life evaluation at a point in time), (2) the presence of positive feelings or affect (i.e., positive emotions such as feelings of joy or sense of vitality), and (3) the absence of negative feelings or affect (i.e., feelings of boredom, loneliness, etc.) In this study, we use interchangeably happiness, SWB, and life satisfaction. Our measure of happiness, however, is based on questions about people's overall life satisfaction and thus reflects a cognitive evaluation of one's life.

In this paper, we add to this emerging line of interdisciplinary research by investigating the relationship between intelligence and happiness inequality in a cross-section of 81 countries. While the relationship between IQ and happiness has been studied before at the national level (e.g., see Veenhoven & Choi, 2012; Lynn & Vanhanen, 2012a; Stolarski et al., 2015), there is little empirical evidence on how intelligence correlates with the distribution of happiness across countries. Our study contributes to this literature in three ways. First, to the best of our knowledge, this is the first study that examines the relationship between IQ and happiness inequality, which we measure by the standard deviation of life satisfaction in nations from the World Values Survey. Second, in addition to providing partial correlations, we control for a large number of control variables, which allows us to separate the effect of IQ from the influence of different socio-economic variables including economic development and social capital that may also influence happiness inequality. Finally, we examine to what extent the relationship between economic development and happiness inequality is dependent on the level of intelligence in a country.

Our results suggest that nations with higher level of IQ have a more equal distribution of happiness. This relationship is highly statistically significant (p=.01 in majority of our models) even when we control for economic growth, democracy, economic freedom, social capital, and different geographic and demographic controls. We furthermore find that economic development has a happiness equalizing effect, but the positive effect of economic development on happiness inequality is, at least partially, mediated by intelligence. In other words, nations with higher levels of economic development, but low IQ, tend to have less equal distribution of happiness compared to nations with higher levels of economic development and high IQ. This suggests that economic development is not a sufficient condition for achieving a more equal distribution of subjective well-being. On the other hand, intelligence, which can be seen as a proxy for human capital, is a necessary condition to achieve this social end. The results are robust for a panel of 50 US states from 1972 to 2012 that uses alternative measure of intelligence from the US General Social Survey.

2. IQ and Happiness Inequality

Previous studies found a positive correlation between IQ and the average *level* of happiness across countries. For example, Veenhoven and Choi (2012) found a correlation of 0.6 (r=.60) in a sample of 143 nations. These results are similar to the findings of Lynn and Vanhanen (2012a) who showed that the correlation is close to 0.64 (r=.64) using an updated IQ dataset.

We propose four different channels through which IQ can theoretically influence the distribution of happiness in a nation: (1) economic growth, (2) institutions, (3) social networks, and (4) reduction of crime. First, previous studies found a strong link between IQ and economic development (e.g., for an excellent review see Lynn & Vanhanen, 2012a). In turn, economic development has been associated with systematically lower levels of happiness inequality *across* and *within* countries. For example, Clark et al. (2015) argued that modern growth has extended public services such as education, health, infrastructure, and social security to the vast majority of the least privileged people, thus reducing their daily anxieties and narrowing differences in SWB.

Second, intelligence is strongly correlated with the quality of a country's institutions. In particular, cross-country studies found that intelligence has a positive effect on government effectiveness (Kanayama, 2014), reduces market failures (Potrafke, 2012), and narrows gender inequalities (Salahodjaev & Azam, 2015). More recently, Salahodjaev (2015a) using data from 158 nations over the period 1999–2007, found that intelligence has a strong and robust negative effect on the size of the shadow economy. Several studies suggested that better quality institutions are linked to lower happiness inequality. Using an instrument that has been identified by a rich historical literature *a priori*, Nikolaev and Bennett (2015) found a strong and significant causal link between institutions consistent with the principles of economic freedom and happiness inequality. Similarly, Ott (2005, 2010) found a strong correlation between government effectiveness and democratic quality and the distribution of happiness across a large sample of countries. In this vein, intelligence may also have negative effect on happiness inequality since higher IQ is associated with improvements in "the quality of public services, the quality of the civil service and the degree of its independence from political pressures" (Rindermann et al., 2015 p. 100). Consequently, efficiently functioning institutions provide people with a sense that their choices matter even if they are at the bottom of the income distribution[2] (Rindermann et al., 2009). They further provide people with a greater sense of autonomy and freedom of choice and allow them through more inclusive markets to become competent and participate in the type of activities they value the most. In that sense, good quality institutions can narrow differences in happiness by being more inclusive.

In addition, intelligence promotes political participation (Carl, 2014a), and while educated agents have better control over national resources, a larger share of national income is directed towards education and health (Burhan et al., 2015). In this respect, Salahodjaev

[2] For a further evidence that intelligence predicts quality of political institutions see e.g. Rindermann (2008).

(2015b) reported positive association between intelligence and financial development. For example, moving from country with a mean IQ score (84.1) to the highest national IQ score (107.1) is associated with 3.6-fold increase in the size of the banking sector. Positive correlations were reported by Kodila-Tedika and Asongu (2015) for financial development, and Burhan et al. (2015) for health insurance expenditure. Making scarce resources available to a greater number of people may furthermore reduce differences in happiness inequality.

Third, apart from institutional mechanisms, we suggest that intelligence can influence the distribution of happiness in a country via the social capital channel. IQ has been previously found to increase interpersonal trust and cooperation (Jones, 2008). For example, Sturgis et al. (2010) showed that even after controlling for a set of individual characteristics, intelligence in childhood is a strong and robust determinant of generalized trust in adulthood. Similarly, Carl and Billari (2014) explored nationally representative sample of U.S. adults and reported that intelligence retains its significant effect on generalized trust even after they control for the influence of socio-economic background. Furthermore, Carl (2014b) suggested that the association between trust and economic development maybe explained by intelligence. The author utilized statistics on social capital, intelligence and GDP per capita for 15 Spanish regions, 20 Italian regions, 50 US states, and 107 countries. In all four regions, there is a statistically significant positive association between trust and intelligence (r = .74, r = .74, r = .72 and r = .50, respectively). Indeed, related literature found that social capital is a robust predictor of life satisfaction (Helliwell, 2003; Helliwell, 2006; Bjornikov et al., 2008). More importantly, however, social trust increases people's sense of relatedness and narrows differences in happiness as those at the bottom of the socio-economic distribution, or traditionally discriminated minorities, feel more connected to the rest of society.

The final channel through which intelligence may have an impact on the distribution of happiness is by influencing different risk-related behavioral tendencies. A substantial line of research documented statistically significant and negative link between intelligence and general crime rates (McDaniel, 2006; Pesta et al., 2010). Bartels et al. (2010), for example, revealed negative association between cognitive skills and nine different measures of crime: total violent crime rate, the homicide rate, the aggravated assault rate, the robbery rate, the total property crime rate, the burglary rate, the theft rate, and the motor vehicle theft rate. Other studies found that intelligence correlate negatively with anti-social behavior (Mõttus et al., 2012), serious assault (Rushton & Templer, 2009), and positively with risk aversion (Frederick, 2005) and moral behavior (Oesterdiekhoff, 2014). Thus, people in more intelligent societies will feel greater social protection and experience less crime, which is often found at the lower end of the economic distribution.

Data

In this section we describe the main variables in this study. Table 1 provides summary statistics and describes the sources for the main variables in our study. Figure 1 suggests that intelligence is positively correlated with the average level of happiness in our sample of 81 countries. The correlation is r=.51 and is highly statistically significant (p=.01), which is consistent with previous studies.

Figure 2 shows some preliminary cross-country evidence and suggests that IQ is negatively correlated with the distribution of happiness at the national level. The correlation is -0.54 and is statistically significant at the 1 percent level. Figure 3 goes a step further by showing the exact distribution of happiness at the individual level for four quartiles of IQ. The individual panels show the distribution of happiness at the individual level while each panel separates those observations by level of IQ. The patterns in this figure suggest that as countries become more intelligent, more people move from the lowest happiness categories to the upper middle ones, reducing happiness inequality. However, these patterns should be treated with caution since IQ is highly correlated with many socio-economic outcomes such as economic development that are also correlated with happiness inequality. In other words, the graphs may simply reflect spurious correlations. We explore the association between IQ and happiness inequality in more depth in section 4.

3.1 Happiness Inequality

Happiness data was collected from the latest aggregated release of the World Values Survey (WVS). Since 1981, the WVS has polled almost 100 societies, representing nearly 90% of the world's population. Our main sample represents a cross section of up to 81 countries. Specifically, data on life satisfaction were collected using the following question: "*All things considered, how satisfied are you with your life these days?*" The recoded scale of possible answers ranged from 1 (*not at all satisfied*) to 10 (*very satisfied*). Thus, our happiness measure is a reflective assessment involving evaluative judgment of one's life and requires an effort to remember and evaluate past experiences.

To create a measure of happiness inequality, we use the standard deviation of life satisfaction across citizens of each country and year survey data are available. Our choice of happiness inequality measure is based on the work of Kalmijn and Veenhoven (2005) who review a number of inequality descriptive statistics used to quantify inequality of happiness in nations and find that the best performing statistic is the standard deviation (with the worst performing statistic being the GINI coefficient).

Self-reported data, by their nature, cannot be validated. However, an extensive literature exists in psychology and economics that validates SWB data indirectly and shows that SWB metrics are valid, reliable, and psychometrically sound (Diener, Inglehart, & Tay 2013; Kahneman & Krueger 2006; OECD 2013). Moreover, subjective well-being metrics are commonly used in economic research and policy analysis (Di Tella, MacCulloch, & Oswald 2001; Diener et al. 2009).

3.2 Intelligence

As the measure of intelligence, we use national IQ data from Lynn and Vanhanen (2012b). Lynn and Vanhanen (2012b) is the updated dataset of cross-national IQ scores first published by Lynn and Vanhanen (2002). The IQ measure is computed from a collection of several hundred administered national intelligence tests. In addition, for countries without administered intelligence tests, national IQs have been estimated from tests of mathematics, science and reading literacy obtained by 13 to 15-year-old school students in international assessments known as the TIMSS (The International Math and Science Studies) and the PISA (Programme for International Student Assessment) studies. Lynn and Vanhanen (2012b) validate credibility of their IQs by illustrating that intelligence correlates significantly with school achievement scores ($r = .91$). Finally, for remaining nations IQ scores are recovered on mean IQs for adjacent countries with similar populations, culture and economic development. Overall, after discarding the missing countries IQ scores range from 69.7 in Ghana to 107.1 in Singapore. Figure 1 shows the link between IQ and life satisfaction.

3.2 Other Controls

We also control for the level of economic development using the real log of PPP-adjusted GDP per capita from the World Bank World Development Indicators. In addition, we include a measure of social capital, which is captured by the mean level of social trust in a country, and a variety of demographic and geographic controls, which are described in Table 1.

3. Empirical Results

In this section, we present our main empirical results which are based on the following model:

$$Happiness\ Inequality_c = \varphi IQ_c + \delta X_c + \varepsilon_c \quad (1)$$

where we model $Happiness\ Inequality$ as a function of a nation's intelligence (IQ), a vector of control variables X_c including log of GDP per capita, social trust, and variety of other geographic and demographic controls, and an i.d.d. error term. There are several potential problems with our specification above. First, it is likely that our data is heteroskedastic since majority of the missing observations in our sample are from less developed countries. To avoid reporting inflated standard errors, we use Huber-White robust standard errors. Since we use national averages, we also cluster our errors at the country level as it is common in the literature. All models are estimated with OLS regressions.

We present our main results in Table 2. We estimate a number of models in which we include additional controls in a step-wise fashion. Our first model presents a parsimonious specification with just the level of IQ. We do this because our theoretical section predicts that IQ is likely to influence the distribution of happiness in a country through variety of channels such as economic growth, social capital, etc. Thus, this first regression gives us a sense of the overall effect (both direct and indirect) of IQ on happiness inequality. The results from model (1) suggest that IQ is negatively and significantly associated with happiness inequality. Model (2) adds geographic controls and model (3) adds log of GDP per capita. The results remain unchanged: smarter nations are also more equal nation, at least when it comes to people's own evaluations about their lives. In addition, economic growth enters the regressions with a negative and significant sign, which is consistent with previous studies in the literature. In model (4) we add institutional controls such as the level of economic freedom in a country and an index for democracy, and in model (5) we add a proxy for social capital. In both models, IQ remains negative and statistically significant while social capital also enters the regression with a negative and high statistical significance. Furthermore, standardized coefficients in model 6 suggest that the effect of cognitive abilities on happiness inequality is the strongest comparative to conventional determinants of subjective well-being.

In model (7), we test the interaction effect of IQ with GDP per capita. To present the results in a more visually appealing way, we create a dummy variable which is equal to 1 if a country has above the mean level of IQ in our sample. We then interact this dummy with our log of GDP per capita variable. The results suggest that economic development evens out happiness, but the positive effect of economic development on happiness inequality is mediated by intelligence. In other words, nations with higher levels of economic development, but low IQ, tend to have less equal distribution of happiness compared to nations with higher levels of economic development and high IQ. Figure 4 presents our results in a more visually appealing way by showing the predicted value of happiness inequality at different levels of economic growth for high and low IQ countries. The patterns in this figure suggest that

economic development has no effect on the distribution of happiness for low IQ countries. On the other hand, economic development is associated with a lower happiness inequality in high IQ countries. This suggests that intelligence, which could be seen as a proxy for human capital, plays an important mediating role in the development-happiness inequality relationship.

Finally, in model (8) we assess the effect of intelligence over and above the effects of the other control variables. To demonstrate that, we perform a stepwise multiple regression in which we exclude the intelligence variable and regress the dependent variable only on the set of control variables from our most complete model (5). Compared to model (5) the R-squared for this model decreases by 3.3 percent. This change in the R-squared value indicates the proportion of variance that can be uniquely attributed to intelligence once we control for a large set of independent variables. It is important to note, however, that IQ may affect happiness inequality through variety of other channels such as economic development. Some of these channels may also be correlated to happiness inequality. Controlling for economic development in the model, then, closes this channel via which IQ may affect happiness inequality. Therefore, model (1), which excludes any possible channels through which IQ may affect happiness inequality, suggests that IQ alone can explain close to 30 percent in the variation in the happiness inequality variable.

4. Robustness Tests

In this section, we conduct a series of robustness tests. In Table 3 and 4, we address one of the most important shortcomings of Lynn and Vanhanen (2012b) dataset – the reliability of IQ data. An important criticism of our findings is that the empirical estimates are based on an IQ dataset that may be biased because for nations with missing IQ scores, the intelligence quotient has been estimated using data from neighboring nations. To address this issue, we re-estimate our main econometric model leaving only observations with the genuine IQ data. The results reported in model 1 suggest that intelligence is negative and statistically significant. Moreover, the estimates for IQ are similar to the ones reported in Table 3 and are thus not sensitive to the use of IQ data that has been approximated from school achievement data

Similarly, Wicherts et al. (2010) systematically surveyed the empirical literature on national IQ tests administered in African countries. The authors compared their findings with the mean IQ scores from Lynn and Vanhanen (2006) and argued that "[Lynn and Vanhanen] underestimate of the true average IQ because it is based on (1) inaccurate (often ad hoc) IQ

norms or norms based on mental-age IQs, (2) IQ tests that were not administered according to official guidelines (e.g., adapted)" (Wicherts et al., 2010, p. 16). More recently, Rindermann (2013) tested the robustness of past findings by contrasting them with the results of two new intelligence test administered in East and South Africa. The author reported that predicted mean IQ for African countries is 75, greater than the one documented in Lynn and Vanhanen (2006), albeit below the predicted average IQ reported in Wicherts et al. (2010). Taking into account the heterogeneity of average IQ scores attributed to African countries, we re-estimate Eq. (1) excluding African countries from our sample (model 3). IQ preserves its negative association with cross-country differences in happiness inequality.

5. Evidence from the GSS

As an additional robustness test, we use data from the US General Social Survey (GSS) from 1972 to 2012 to estimate the effect of intelligence on happiness inequality. The GSS is a nationally representative survey conducted by the University of Chicago and with the exception of the US Census it is the most widely used source of information and research in the social sciences.[3] What makes the GSS dataset ideal for our analysis is that it includes data on both happiness and intelligence, although we see less variation in both of these variables compared to our cross-section analysis.

The happiness inequality variable is based on the following question: "*Taken all together, how would you say things are these days? Would you say that you are very happy, pretty happy, or not too happy?*" The data were recoded so that the answers correspond to the following numerical values: (1) `not too happy', (2) `pretty happy', and (3) `very happy'. Following our strategy from before, we then calculate the standard deviation of the recoded happiness variable by state and year.

The GSS also includes a measure of intelligence. Half of the respondents are chosen at random to take a ten-word vocabulary subtest from the Wechsler Adult Intelligence Scale (WAIS), a popular IQ test. The variable wordsum, which we use as an alternative measure of IQ, represents the number of correct answers to this vocabulary test. While wordsum is technically a test of knowledge, there is evidence that measures of vocabulary knowledge are strongly correlated with general tests of intelligence (e.g., see Zhu & Weiss, 2005 for a summary). For the purposes of our analysis, we use the wordsum individual scores to

[3] We use the sensitive GSS dataset which allows us to match individuals to their states and thus calculate state averages for happiness inequality and intelligence and merge these scores with state level controls such as the average level of personal income.

calculate averages for each state and year. Thus, our final dataset includes more than 600 observations for 50 states over the period 1972-2012.

Our supplemental results are reported in Table 4. As expected, we find a lot smaller variation in happiness inequality across US states than across countries and as a consequence our main model explains only 11 percent of the variation in the dependent variable. However, even here we find that IQ is negatively and significantly correlated with happiness inequality at conventional level. The results hold even after controlling for a number of additional variables including the log of average state income, the average level of social trust, the proportion of females in a state, the average age, and the proportion of people who report being religious. The standardized betas imply that intelligence is the strongest determinant of happiness inequality among these variables. Using the stepwise methodology employed earlier, we find that wordsum explains close to 12 percent of the variation in happiness inequality. However, when we control for the other variables in our model, wordsum explains only .2 percent of the variation in the dependent variable, which suggests that most likely intelligence works through the channels of income and social trust.

6. Conclusion

The extent to which people feel satisfied with their lives has important implications for socio-economic behavior. Higher levels of life dissatisfaction, for example, have been previously linked to immigration (Otrachshenko & Popova, 2014), alcohol consumption (Levy et al., 1980) and reduction in effort (Mangione & Quinn, 1975). Therefore, investigating the causes and correlated of subjective well-being has been the focus of an emerging literature in the last couple of decades. While earlier studies linked life satisfaction to relative income (Easterlin, 1995), religion (Greene & Yoon, 2004) and social capital (Bjornikov, 2003), more recent studies have offered novel causes of life satisfaction such as homeownership (Zumbro, 2014), internet use (Penard et al., 2013), coastal proximity (Wheeler et al., 2012) and membership in labor unions (Flavin et al., 2010). In this paper, we extend this literature by testing the hypothesis that intelligence has a negative effect on happiness inequality, measured by the standard deviation of life satisfaction.

The empirical results in our study suggest that intelligence is a powerful tool in reducing happiness inequality. These findings are robust to the inclusion of a vector of conventional antecedents of life satisfaction such as democratic quality, demographic structure and geographic controls. Indeed, our results are partially confirmed by recent articles published in this journal showing that intelligence has a positive effect on gender equality in developing

countries (Salahodjaev & Azam, 2015) and on economic growth in countries with weak democratic institutions (Salahodajev, 2015c). Another novel finding is that part of the association between economic development and happiness inequality appears to operate via the intelligence channel.

Our analysis and discussion emphasize the promising benefits to societies of higher intelligence levels. One avenue for increasing intelligence is investing in human capital, much in the way Korea, Singapore and a group of other less developed countries have done in past several decades (Heckman, 2003). Empirical evidence suggests that cross-national differences in per capita wealth are an increasing function of endowed human capital stock and improvements in health care may be responsible for the reduction in cross-national differences in poverty and returns to higher education (Castello-Climent & Domenech, 2008). In this study, we argue that investment in human capital is also significantly correlated with reduction in happiness inequality. Of course, much remains to be done in this area of multi-disciplinary research, but our results offer promising avenue for future research.

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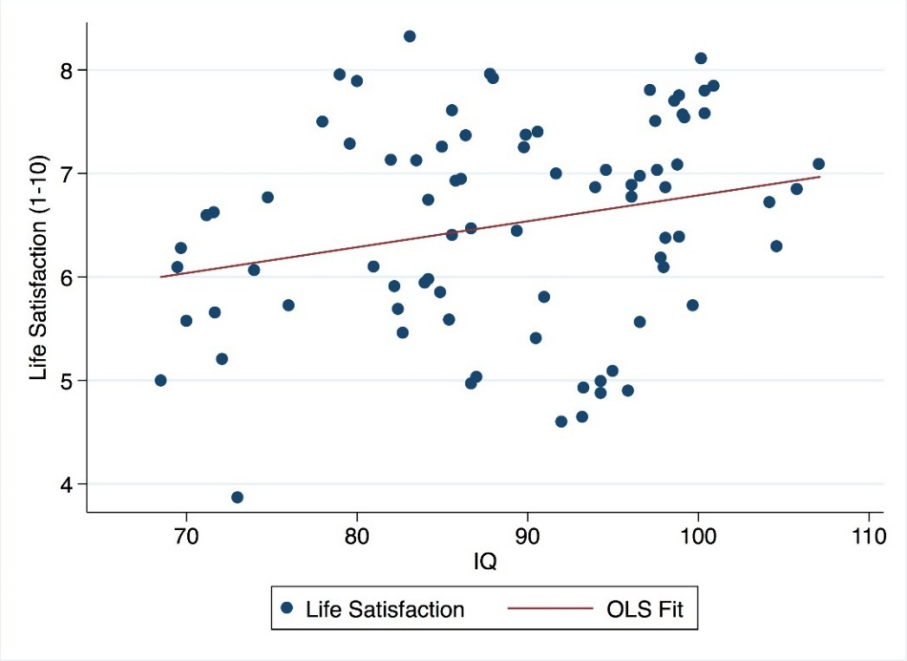
Appendix

Table 1: Description and Summary Statistics of Variables

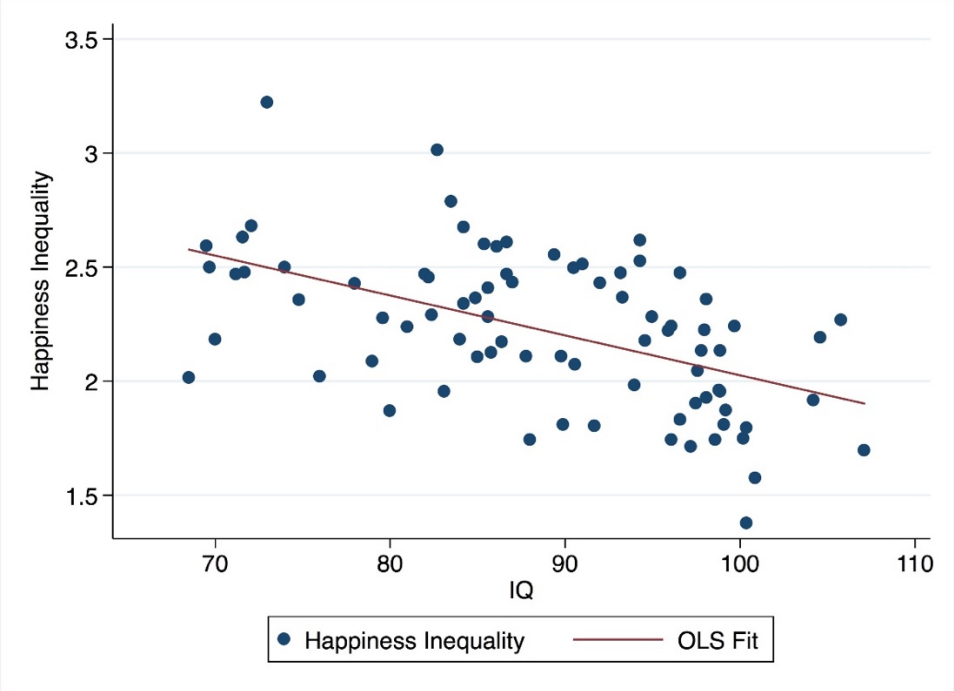
Variable	Description	Obs.	Mean	Std. Dev.	Min	Max
Happiness Inequality	Standard deviation of life satisfaction in each country of sample. Data on life satisfaction are collected with the question "*All things considered, how satisfied are you with your life these days?*" The recoded scale of possible answers ranged from 1 (*not at all satisfied*) to 10 (*very satisfied*). *Source:* World Values Survey, 1981-2012	81	2.22	0.32	1.38	3.22
Average Happiness	Life satisfaction measured with the following question "*All things considered, how satisfied are you with your life these days?*" The recoded scale of possible answers ranged from 1 (*not at all satisfied*) to 10 (*very satisfied*). *Source:* World Values Survey, 1981-2012	81	6.18	1.32	2.60	8.50
IQ	Average national IQ scores. Source: Lynn and Vanhanen (2012b)	81	84.10	10.85	60.10	107.10
Log GDP per capita	Log GDP per capita in PPP. *Source:* World Bank Development Indicators	81	9.25	1.07	6.74	11.75
Economic Freedom	Economic Freedom of the World index. Values on a 0-10 scale. Average over period 1985-2005. *Source*: Fraser Institute, Gwartney et al. (2013).	81	0.45	2.6	0	9.3
Democracy Index	Average of political rights and civil liberties	81	3.88	2.00	1.00	7.00
Pop100km	The proportion of the population in 1994 within 100 km. of the coastline. *Source:* Gallup et al. (1999).	81	0.42	0.36	0.00	1.00
Ex-Communist	=1 if former Communist nation	81	0.15	0.36	0.00	1.00
Age-Dependency Ratio	The ratio of dependents-people younger than 15 or older than 64-to the working-age population--those ages 15-64. *Source:* World Bank Development Indicators	81	65.75	18.47	31.02	106.09
Tropics	The proportion of the country's land area within the geographical tropics. *Source:* Gallup et al. (1999).	81	0.48	0.48	0.00	1.00
Social Trust	Average national level of social trust. *Source:* World Values Survey, 1981-2012	81	0.25	0.14	0.04	0.70

Fig. 1: IQ and Average Happiness



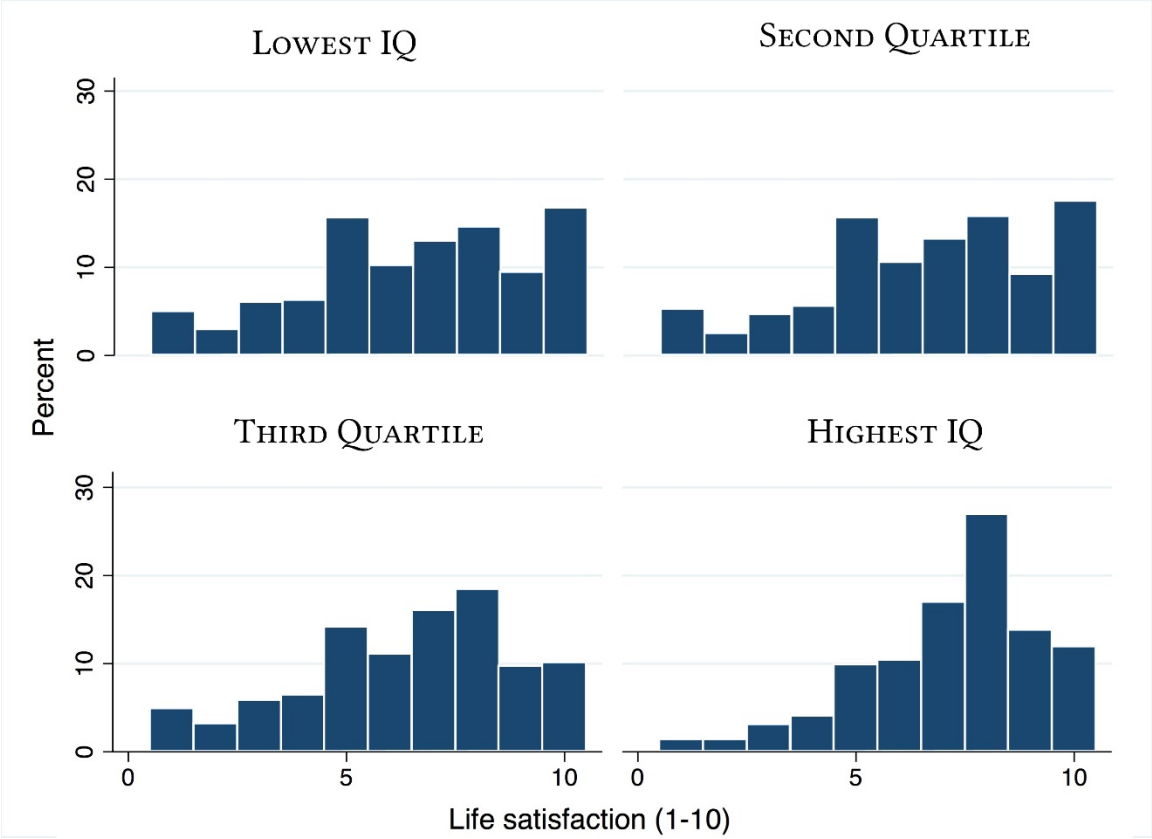
Note: Data on life satisfaction are collected with the question "*All things considered, how satisfied are you with your life these days?*" The recoded scale of possible answers ranged from 1 (*not at all satisfied*) to 10 (*very satisfied*). Correlation coefficient: r=.54
Source: World Values Survey, 1981-2012; Lynn and Vanhanen (2012b)

Fig. 2: IQ and Happiness Inequality



Note: Happiness inequality is measured by the standard deviation of life satisfaction for each country in our sample.
Correlation coefficient: r-0.50.
Source: World Values Survey, 1981-2012; Lynn and Vanhanen (2012b).

Fig. 3: Distribution of Life Satisfaction by IQ Quartile



Note: Data on life satisfaction are collected with the question "*All things considered, how satisfied are you with your life these days?*" The recoded scale of possible answers ranged from 1 (*not at all satisfied*) to 10 (*very satisfied*). The figures above represent the distribution of answers to the life satisfaction question at the individual level by IQ quartiles (at the country level).
Source: World Values Survey, 1981-2012; Lynn and Vanhanen (2012b)

Table 2: Main Results, IQ and Happiness Inequality

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	OLS	OLS	OLS	OLS	OLS Standardized betas	OLS	OLS Stepwise
IQ	-0.017***	-0.024***	-0.019***	-0.020***	-0.014**	-0.414***		
	(0.003)	(0.005)	(0.005)	(0.006)	(0.006)			
Log GDP per capita			-0.112**	-0.092*	-0.056	-0.179	0.021	-0.081
			(0.047)	(0.051)	(0.053)		(0.073)	(0.054)
Economic Freedom				-0.146	-0.173	-0.121		-0.092
				(0.172)	(0.170)			(0.172)
Democracy				0.026	0.039*	0.210		0.048**
				(0.020)	(0.022)			(0.024)
Social Trust					-0.709***	-0.311***		-0.860***
					(0.220)			(0.216)
Population 100 km		-0.054	-0.027	-0.041	-0.022	-0.022		-0.035
		(0.101)	(0.098)	(0.107)	(0.099)			(0.105)
Ex-Communist		0.121	0.032	0.009	0.017	0.023		-0.009
		(0.096)	(0.106)	(0.111)	(0.101)			(0.095)
Age-Dependency Ratio		-0.003	-0.006	-0.007*	-0.004	-0.212		-0.001
		(0.004)	(0.004)	(0.004)	(0.003)			(0.003)
Tropics		-0.046	-0.071	-0.056	-0.098	-0.134		-0.084
		(0.104)	(0.107)	(0.115)	(0.112)			(0.118)
High IQ							2.521***	
							(0.732)	
High IQ*log GDP							-0.293***	
							(0.083)	
Constant	3.775***	4.559***	5.325***	5.226***	4.398***	-	2.241***	3.140***
	(0.305)	(0.591)	(0.629)	(0.735)	(0.802)		(0.614)	(0.625)
Observations	81	81	81	81	81	81	81	81
R-squared	0.267	0.331	0.368	0.384	0.445	0.445	0.425	0.412

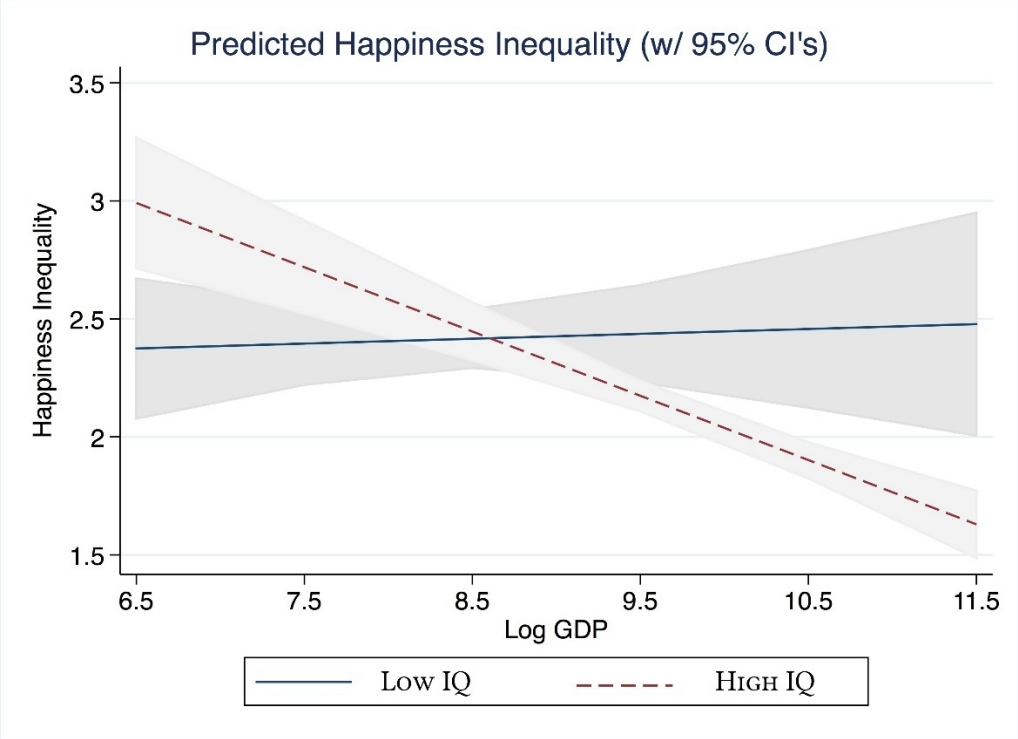
Notes: The dependent variable in all regressions is the standard deviation of life satisfaction from the World Values Survey. All models are estimated using OLS regressions with robust Huber-White standard errors clustered at the country level (reported in parenthesis). The categories low IQ (in model 6) and Non-Ex-Communist (in models 2-5) are omitted to avoid the dummy variable trap. Significance at the 1% level is denoted by ***; ** denotes significance at the 5% level; and * significance at the 10% level.

Table 3: Robustness Tests, IQ and Happiness Inequality

	(1)	(2)	(3)	(4)
	OLS	OLS Standardized betas	OLS	OLS Standardized betas
IQ	-0.016**	-0.479**	-0.019**	-0.423***
	(0.006)		(0.009)	
Log GDP per capita	-0.065	-0.211	-0.0494	-0.138
	(0.060)		(0.059)	
Economic Freedom	-0.009	-0.007	0.002	0.001
	(0.157)		(0.172)	
Democracy	0.035	0.191	0.027	0.150
	(0.021)		(0.024)	
Social Trust	-0.723***	-0.325***	-0.586***	-0.290***
	(0.231)		(0.215)	
Population 100 km	0.022	0.022	0.021	0.022
	(0.098)		(0.106)	
Ex-Communist	0.122	0.142	0.261***	0.352***
	(0.128)		(0.091)	
Age-Dependency Ratio	-0.003	-0.153	0.000	0.014
	(0.003)		(0.005)	
Tropics	-0.237**	-0.319***	-0.210*	-0.281*
	(0.101)		(0.112)	
Constant	4.553***	-	4.392***	-
	(0.764)		(0.980)	
Observations	67	67	53	53
R-squared	0.483	0.483	0.517	0.517

Notes: The dependent variable in all regressions is the standard deviation of life satisfaction from the World Values Survey. All models are estimated using OLS regressions with robust Huber-White standard errors clustered at the country level (reported in parenthesis). Significance at the 1% level is denoted by ***; ** denotes significance at the 5% level; and * significance at the 10% level.

Fig. 4: Economic and Happiness Inequality—the Role of Intelligence



Predicted values are based on model (6) from Table 2. *Note:* Happiness inequality is measured by the standard deviation of life satisfaction for each country in our sample.
Source: World Values Survey, 1981-2012; Lynn and Vanhanen (2012b)

Table 4: Evidence from the General Social Survey

	(1)		(2)		(3)		(4)		(5)	
	OLS		OLS		OLS		OLS Standardized betas		OLS Stepwise	
Wordsum	-0.032***	(0.011)	-0.029**	(0.013)	-0.020**	(0.009)	-0.432***	(0.007)		
Log Income			-0.015	(0.013)	-0.021*	(0.012)	-0.131	(0.014)	-0.034***	(0.010)
Mean Age					0.001	(0.001)	0.011	(0.001)	0.001	(0.001)
Prop of Females					0.051	(0.035)	0.001	(0.039)	0.043	(0.035)
Social Trust					-0.004	(0.042)	-0.132	(0.033)	-0.062**	(0.029)
Religiosity					0.012	(0.016)	0.221	(0.018)	0.016	(0.014)
Constant	0.850***	(0.068)	0.981***	(0.097)	0.845***	(0.125)	0.345***	(0.158)	0.937***	(0.111)
Year Effects	YES		YES		YES		YES		YES	
State Effects	YES		YES		YES		YES		YES	
Observations	761		761		693		693		907	
R-squared	0.119		0.121		0.088		0.088		0.086	

Notes: The dependent variable in all regressions is the standard deviation of happiness from the General Social Survey. All models are estimated using OLS regressions with robust Huber-White standard errors clustered at the state level (reported in parenthesis). Significance at the 1% level is denoted by ***; ** denotes significance at the 5% level; and * significance at the 10% level.