Relative Verbal Intelligence and Happiness

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Abstract

Even though higher intelligence (IQ) is often associated with many positive outcomes in life, it has become a stylized fact in the happiness literature that smarter people are not happier than their less intelligent counterparts. In this paper, we examine how relative verbal intelligence correlates with happiness and present two main findings. First, our estimations from the General Social Survey for a large representative sample of Americans suggest a small, but positive and significant correlation between verbal intelligence and happiness. Second, we find that verbal intelligence has a strong positional effect on happiness, i.e., people who have greater verbal proficiency relative to their peers in their reference group are more likely to report higher levels of happiness. The positional effect of happiness holds even when we control for a large set of socio-economic characteristics as well as relative income.

Keywords: Verbal Intelligence, Social Comparison, Happiness

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"Happiness in intelligent people is the rarest thing I know"
Earnest Hemingway

1. Introduction

There persists a myth that intelligence is a necessary characteristic for success and happiness. In the United States enrollment in higher education programs, which aim to improve people's academic intelligence and cognitive abilities, have rapidly increased since the 1970s despite the unprecedented growth in the price of college tuition (Kena, 2015). Standardized tests of cognitive abilities, such as the Scholastic Aptitude Test (SAT), continue to be one of the best predictors of success in higher education as well as future success in job performance (Kuncel, Nathan R., & Hezlett, 2010) and a college degree is still one of the most important signals that companies use to assess employees' potential. In recent years, a multi-billion-dollar industry has emerged with the purpose of producing "smart drugs" and products that promise cognitive enhancement. Certainly, people's revealed preferences suggest that they value intelligence highly.

Yet, one of the most puzzling findings in the economics of happiness literature is that smarter people are not necessarily happier than their less intelligent counterparts. In a recent review of this literature, Veenhoven and Choi (2012) find no correlation between intelligence and happiness[2] at the micro-level in 23 studies from the World Database of Happiness. Intelligence, this literature concludes, may have a darker side after all. One explanation for this phenomenon is that smarter people may have higher expectations, but often may fail to live up to them. More intelligent people may be more likely to worry or ruminate over life events (Penney, Miedema, & Mazmanian, 2015). It is also likely that traditional intelligence tests, like the commonly used Standford-Binet Intelligence Scales and the Wechsler Adult Intelligence Scale, are only measuring one form of knowledge-based intelligence which has been shown to be heavily influenced by early education (Cici, 1991, Brinch & Galloway, 2012; Falch & Sandgren Massih, 2011; Winship & Korenman, 1997). Instead, people may have "multiple intelligences" and many IQ tests often omit other important types of cognitive skills such as emotional and social intelligence that appear to be essential for achieving a functional and happy life.

[2] Happiness in these studies is defined as a positive or negative affect or life satisfaction. Thus, previous studies find no correlation between IQ and emotional well-being or one's cognitive evaluation of their life.

In this paper, we extend this literature in two ways. First, using data from the General Social Study (GSS) from 1972-2012, we show that verbal IQ, which we proxy with a vocabulary test from the Wechsler Adult Intelligence Scale (WAIS), is significantly correlated with higher levels of happiness for a large representative sample of Americans. This association is small, but positive and significant even after controlling for a large number of socio-economic characteristics and family background variables including father and mother's education and family income. It is important to note that in this study we focus on the relationship between objectively assessed verbal IQ and happiness, not subjectively assessed intelligence (SAI) (Ackerman & Wolman, 2007). We note, however, that some previous studies find a significant association between SAI and happiness (Zajenkowski and Czerna, 2015).

Second, and more importantly, we find evidence for a strong positional effect of verbal intelligence on happiness—within their reference group, people who have relative higher verbal intelligence are happier than their less intelligent counterparts. Our estimations predict that more than 40 percent of the most verbally intelligent people in a reference group based on age, gender and geographical location, will report themselves in the highest happiness category "very happy" compared to only 24 percent of those at the bottom of the IQ distribution, holding socio-economic background constant.

Thus, our paper makes two important contributions to the literature. First, a large body of empirical research suggests that happiness depends not only on how people are doing in absolute terms, but even more importantly on how they fair relative to others. Much of the social comparison literature, however, has focused on the effect of relative income on happiness and far less is known about the positional effect on happiness of other factors such as intelligence, leisure, or marriage. Similarly, previous IQ studies have mainly examined the correlation between the absolutely level of IQ and happiness. There are compelling reasons to believe, however, that intelligence is, at least to some extent, a positional good. From an evolutionary standpoint, the pursuit of status is motivated by sexual selection: to make sure that their genes spread across the population, sexual species need to appear more attractive than their same sex competitors (Darwin, 1871). In that context, verbal intelligence may signal many desirable characteristics such as creativity, ability to adapt to new environments and overcome obstacles, or the capacity to quickly learn from various types of experiences. Previous research, for example, finds intelligence

to be one of the most desirable traits in a partner (Boxer, Noonan, & Whelan, 2015) and more verbally proficient people are more likely to leave an impression as more intelligent. Similarly, people with higher verbal IQ may have a comparative advantage on the job market as their proficient verbal skills signal higher overall intelligence. The advantage people get from their intelligence, however, whether in the labor or marriage market, diminishes with the number of people who have the same level of verbal intelligence.

Second, previous research is based on sample sizes as small as 17 observations and as large as a few thousand people (Veenhoven and Choi, 2012). These studies largely rely on partial correlation analysis. In this paper, we use a large representative sample of US citizens of up to 25,257 individuals and offer an alternative estimation method. In their 2012 review, Veenhoven and Choi (2012) considered multiple measurements of IQ in their analysis, including verbal proficiency. In one paper, early life verbal proficiency positively correlated with happiness in middle age (Hartog and Oosterbeek, 1998), but the majority of papers relating verbal proficiency and happiness found no significant correlations (Vennhoven & Choi, 2012). Thus, our results challenge majority of studies in verbal IQ-happiness literature that smarter people are not necessarily happier, at least when it comes to their verbal intelligence. Moreover, intelligence is a strong predictor of many socio-economic factors such as future income, job and marital status that are all positively correlated with happiness. But even after controlling for many of these variables, we show that verbal IQ has a positive and significant effect on happiness. Furthermore, in the realm of social interactions smarter people may experience more respect, which can contribute to feelings of power, control, acceptance, and superiority, which in turn can also lead to higher levels of happiness.

2. Social Comparison and Happiness

Traditional economic models assume that individuals derive utility solely from their own consumption. Yet, a large theoretical and empirical literature in the social sciences suggests that people care, perhaps even more importantly, how they do relative to others.[3] Although this point seems fairly obvious, the processes that lead to social comparison and

[3] For an extensive review of the social comparison theory in the context of economics, please see Clark et al (2008).

their implications for social welfare and individual well-being are still highly debated in the literature (Easterlin, 1995; Frank, 2005).

One of the most hotly debated puzzles in the economics of happiness literature, for example, is the so-called Easterlin Paradox (Easterlin, 1974, 1995, 2001). The paradox is based on the empirical observation that although income is one of the strongest determinants of happiness within and across countries, it does not seem to affect happiness over time. Thus, while material standards of living have significantly improved in the past century, happiness levels have stayed relatively constant.[4] The explanation of this paradox is the idea of social comparisons—individuals derive happiness from income, but only by comparing their consumption to that of others. Over time, incomes grow, but material aspirations adjust and hedonic adaptation sets in. Within a point in time, however, richer individuals report higher levels of happiness, largely because their wealth and consumption sets them above their peers.

The theory of social comparison has its origins in the work of Leon Festinger (1954) who proposed that individuals compare themselves to one another in order to assess their abilities and attitudes. People compare themselves to other people, for example, in order to assess how attractive, educated, rich, athletic or intelligent they are. According to Frank (1999) this comparison is deeply wired in human nature and is sociological and external. The group of people that is used as a benchmark for social comparison is called the social reference group. This group can be highly contextual and can be influenced by cultural values and social standards.

The empirical research on social comparison is still in its infancy. Studies in the context of the Easterlin paradox find almost uniformly that higher reference group income leads to lower levels of subjective well-being (Clark & Oswald, 1996; Ferrer-i-Carbonell, 2005; McBride, 2001; Stutzer, 2004). One explanation for these empirical findings is the theory of relative deprivation. Individuals who are worse off relative to others experience feelings of deprivation, envy, jealousy, or unfairness when they compare themselves to those who are better off. This theory has its origins in the works of Karl Marx, Thorstein Veblen, and more recently has become the foundation of what the philosopher Alain de Botton (2004) describes as status anxiety.

[4] The findings of the Easterlin Paradox have been challenged by a number of studies (Veenhoven and Hagerty, 2006; Stevenson and Wolfers, 2008) although Easterlin (2010) provides counter evidence to these recent critiques.

A methodological challenge in the social comparison literature, which remains largely unanswered, is understanding how people chose their reference group. The most common answer has been that people compare to the so called "similar others." This reference group of similar others can include people of similar age, gender, income, education, occupational status, etc. Individual comparison may furthermore be influenced by cultural values and norms. When individuals don't meet cultural standards they can feel bad about themselves and experience low self-esteem (Cross & Gore, 2003). Gilbert Giesler, and Morris (1995), for example, suggests that individuals initially compare to everyone in society.

Unfortunately, data on people's social networks is largely unavailable in the social sciences. Thus, the most common method of calculating reference group outcomes from survey data is the so called cell averages approach (e.g., average income by age group, sex, and region). However, definitions of reference group have varied in the literature. In his seminar work, Easterlin (1974) argued that individuals compare to all other citizens in their country. Persky and Tam (1990) and Blanchflower and Oswald (2004) define reference group based on region of residence and McBribe (2001) calculates cell averages based on age group. Firebaugh and Tach (2009) create reference groups based on age and year the survey was conducted. Ferrer-i-Carbonnel (2005) combines different criteria so that people in a reference group are defined as having similar education, age, and live in the same region (West or East Germany).

All of these studies, however, assume that the reference group is given. One exception to this literature is Pérez-Asenjo (2011) who, using data from the GSS, investigates the most important characteristics of a reference group. According to his study, age is the most important feature that people use in social comparisons, but other socio-demographic factors such as sex, race and religion may also play an important role. Another exception is the work of Knight, Lina, and Gunatilaka (2009) in which the authors ask 9,200 rural Chinese households to whom they compare themselves. Most people in their study (40 percent) report that they compare themselves to other people in their region (village).

Based on these studies, we define reference group by age group, sex, and region. We do this because according to Darwin (1871), the pursuit for status is largely driven by sexual selection, which is localized and highly contextual. While inevitably people compare

themselves to other people based on many other features, these three characteristics seem to be fundamental and are consistent with previous studies in the literature. We furthermore assume that reference group is exogenously determined in our model as it is common in the literature.

Although majority of previous studies are done in the context of income, there is empirical evidence that social comparison matters in other realms of life as well. For example, Wodsworth (2014) finds that social comparison exists in the domain of sexual life and Oswald and Powdthavee (2007) study the social context of obesity. Nikolaev (2016) finds that as reference group education increases, people report lower level of life satisfaction. In a series of papers based on the Framingham Heart Study, Christakis & Fowler (2009) find that social networks play an important role in influencing people's thoughts, feelings, and moods. The authors find that a number of phenomenon including innovation, cooperation, trust, happiness, and even obesity can spread within the social network in a predictable way. In this study, we extend this line of research by empirically testing the correlation between relative IQ and happiness. Based on the findings in the social comparison literature, we hypothesize that, within their reference group, smarter people will report higher levels of happiness.

3. Data

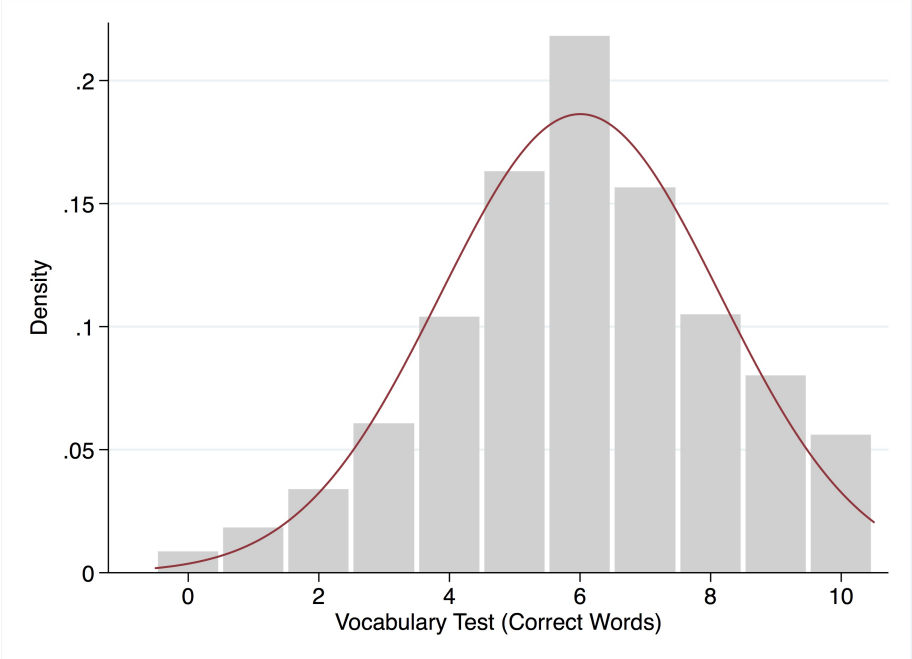
We collected data from the General Social Survey (GSS) conducted by the National Opinion Research Center at the University of Chicago. The GSS is a nationally representative survey and is one of the most widely used sources of data for research in the social sciences. We chose the GSS dataset because it includes data on both happiness and intelligence as well as a rich set of socio-demographic controls.

The happiness 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: (0) `not too happy', (1) `pretty happy', and (2) `very happy'. In that sense, our happiness variable reflects a cognitive assessment of one's life rather than a measure of one's momentary positive and negative affect.

The GSS also includes a measure of verbal intelligence. Half of the respondents are chosen at random to take a ten-word vocabulary subtest from the Wechsler Adult

Intelligence Scale (WAIS), which is a popular IQ test. The variable *wordsum*, which we use as a proxy for verbal IQ, represents the number of correct answers to this vocabulary test. Fig.1 shows the distribution of scores and suggests that answers are normally distributed with the average person answering 6 correct words. While *wordsum* is technically a test of knowledge, there is strong empirical evidence that measures of vocabulary knowledge are significantly correlated with general tests of intelligence (e.g., see Zhu & Weiss, 2005 for a summary).

Fig. 1: Distribution of Correct Answers, WAIS Vocabulary Test



We use individual scores from *wordsum* to calculate relative verbal intelligence. To do this, we calculate cell averages, which is the most common approach in the social comparison literature. First, we calculate the mean level of IQ by age group, gender, and state. We then subtract individual IQ scores from the mean of their reference group to arrive at our measure of relative IQ, which ranges from -6 to 6 and measures the distance of the respondents IQ to the average IQ score in their reference group.

The GSS dataset also provides a number of background variables on the individual level. The ones that are used as controls in this study are well known in the happiness literature to affect the individual level of happiness and include: age as a quadratic

function, gender, race, marital status, employment status, religion and income. Since IQ and income are strongly correlated to each other and are both important predictors of happiness in pooled cross-sectional regressions, we use the residuals from an IQ and log of income regression instead of the actual income variable. In this way, we only capture variation in income that is not due to higher intelligence. Table 1 provides summary statistics of all variables used in the analysis.

Table 1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Happiness	52,321	1.19	0.64	0	2
IQ	26,916	6.00	2.14	0	10
Relative IQ	26,916	0.00	2.03	-6.83	6
Relative Income	49,758	0.00	2.66	-10.26	7.33
Age	56,859	45.70	17.47	18	89
Age Squared	56,859	2.39	1.76	0.32	7.92
Female	57,061	0.56	0.50	0	1
Race					
Black	57,061	0.14	0.35	0	1
Other Race	57,061	0.05	0.22	0	1
Employment Status					
Part Time	57,047	0.10	0.30	0	1
Temp Not Working	57,047	0.02	0.14	0	1
Unemployed	57,047	0.03	0.18	0	1
Retired	57,047	0.13	0.34	0	1
School	57,047	0.03	0.17	0	1
Keeping House	57,047	0.16	0.37	0	1
Other	57,047	0.02	0.14	0	1
Marital Status					
Widowed	57,041	0.10	0.30	0	1
Divorced	57,041	0.12	0.33	0	1
Separated	57,041	0.03	0.18	0	1
Never Married	57,041	0.20	0.40	0	1
Religion					
Protestant	56,828	0.59	0.49	0	1
Catholic	56,828	0.25	0.43	0	1
Jewish	56,828	0.02	0.14	0	1
Other	56,828	0.04	0.19	0	1
Father's Education	40,173	10.55	4.35	0	20
Mother's Education	46,929	10.71	3.74	0	20
Log Income Residuals	24,335	0.00	0.96	-4.79	2.71

Source: GSS, Authors' calculations

4. Empirical Results

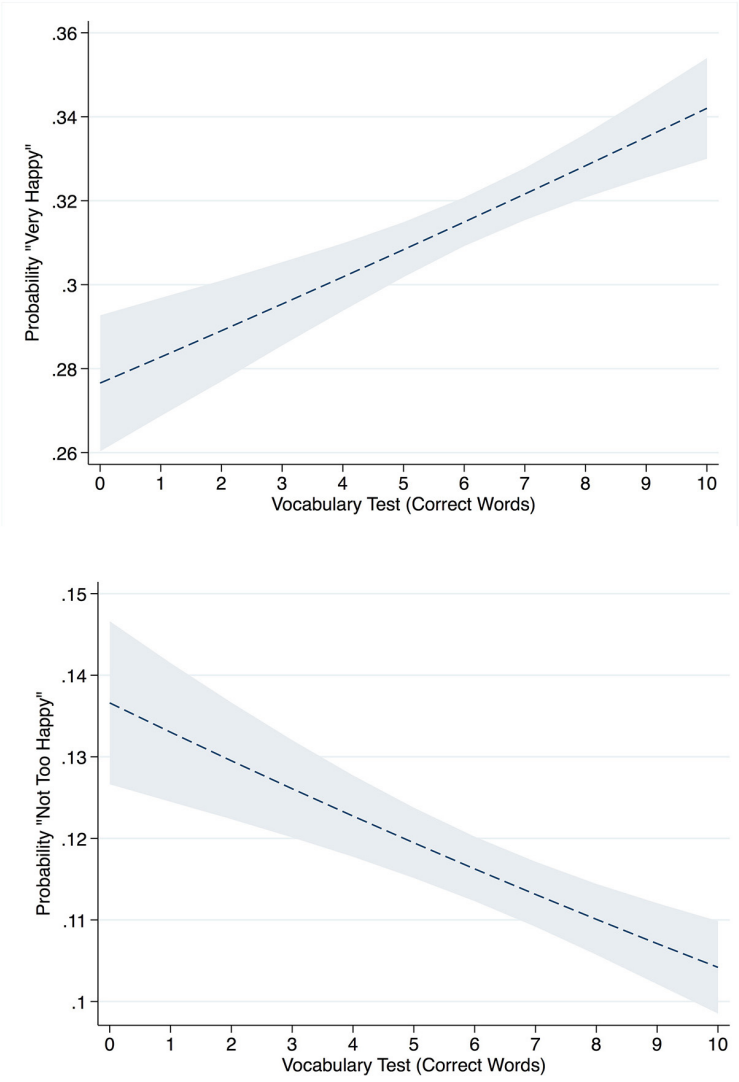
We start the empirical analysis in Table 2 where we estimate the relationship between IQ and happiness. All models use pooled cross-sectional data from the GSS. Since our dependent variable, happiness, is a categorical one, we use an ordered logit model for all estimations. We present four different models which control for additional variables in a stepwise fashion. Because intelligence can potentially affect happiness through many

Table 2: IQ and Happiness, Ordered Logit Estimations (GSS, 1972-2012)

	(1)		(2)		(3)		(4)	
IQ	0.0310***	(0.00630)	0.0284***	(0.00649)	0.0168**	(0.00841)	0.0347***	(0.00894)
Age	0.00645	(0.00408)	-0.0302***	(0.00496)	-0.0375***	(0.00637)	-0.0531***	(0.00684)
Age Squared	-0.0346	(0.0411)	0.357***	(0.0520)	0.445***	(0.0675)	0.599***	(0.0730)
Female	0.0698***	(0.0250)	0.170***	(0.0279)	0.184***	(0.0338)	0.194***	(0.0354)
Race (Base=White)								
Black	-0.664***	(0.0387)	-0.489***	(0.0408)	-0.458***	(0.0581)	-0.427***	(0.0607)
Other Race	-0.0779	(0.0616)	0.0269	(0.0639)	0.0352	(0.0801)	0.00240	(0.0847)
Employment Status (Base=Full Time)								
Part Time			-0.0910**	(0.0423)	-0.116**	(0.0506)	-0.0445	(0.0535)
Temp Not Working			-0.218**	(0.0890)	-0.283***	(0.108)	-0.233**	(0.113)
Unemployed			-0.847***	(0.0798)	-0.954***	(0.103)	-0.862***	(0.107)
Retired			-0.116**	(0.0563)	-0.0878	(0.0732)	-0.00546	(0.0787)
School			0.0533	(0.0777)	0.0775	(0.0898)	0.181*	(0.0975)
Keeping House			-0.226***	(0.0416)	-0.155***	(0.0523)	-0.0612	(0.0550)
Other			-0.787***	(0.110)	-0.805***	(0.150)	-0.709***	(0.150)
Marital Status (Base =Married)								
Widowed			-1.145***	(0.0565)	-1.092***	(0.0749)	-0.926***	(0.0800)
Divorced			-0.974***	(0.0400)	-0.996***	(0.0495)	-0.813***	(0.0531)
Separated			-1.197***	(0.0765)	-1.230***	(0.100)	-1.025***	(0.106)
Never Married			-0.809***	(0.0377)	-0.845***	(0.0460)	-0.705***	(0.0489)
Religion (Base=Atheist)								
Protestant			0.288***	(0.0426)	0.261***	(0.0523)	0.267***	(0.0548)
Catholic			0.133***	(0.0462)	0.128**	(0.0564)	0.116**	(0.0592)
Jewish			0.0614	(0.104)	0.104	(0.120)	-0.0104	(0.129)
Other			0.187**	(0.0766)	0.0808	(0.0966)	0.0827	(0.102)
Father's Education					0.0100**	(0.00509)	0.00569	(0.00534)
Mother's Education					0.0303***	(0.00614)	0.0263***	(0.00645)
Log Income							0.253***	(0.0215)
Constant cut1	-1.715***	(0.0977)	-2.820***	(0.125)	-2.689***	(0.171)	-2.882***	(0.181)
Constant cut2	1.127***	(0.0971)	0.178	(0.123)	0.387**	(0.169)	0.226	(0.179)
Pseudo R-Squared	0.0094		0.0444		0.0443		0.0494	
Observations	25,257		25,173		17,127		15,770	

Source: GSS. Dependent variable in all regressions is happiness. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Fig. 2: Predictive Margins with 95 percent Confidence Intervals (Model 1, Table 2)



outcomes in life including employment and marital status, or one's level of income, we start the analysis with a parsimonious model, which includes only IQ, age, gender and race as explanatory variables. The results, which are presented in column (1), suggest that IQ is positively and significantly correlated with happiness. One can think of this effect as the overall (direct and indirect) effect of IQ on happiness through these channels.

Table 3: Relative IQ and Happiness, Ordered Logit Estimations (GSS, 1972-2012)

	(1)		(2)		(3)		(4)		(5)	
IQ	-0.0288	(0.0200)	-0.0126	(0.0207)	-0.0449	(0.0262)	-0.0360	(0.0277)	-0.0364	(0.0277)
Relative IQ	0.0654***	(0.0208)	0.0447**	(0.0214)	0.0665**	(0.0268)	0.0760***	(0.0282)	0.0793***	(0.0284)
Relative Income									-0.00983	(0.0109)
Age	0.0117***	(0.00440)	-0.0266***	(0.00521)	-0.0320***	(0.00670)	-0.0467***	(0.00718)	-0.0481***	(0.00739)
Age Squared	-0.0846*	(0.0440)	0.323***	(0.0542)	0.392***	(0.0703)	0.539***	(0.0758)	0.555***	(0.0783)
Female	0.0765***	(0.0251)	0.175***	(0.0279)	0.191***	(0.0339)	0.202***	(0.0354)	0.208***	(0.0363)
Race										
Black	-0.672***	(0.0387)	-0.493***	(0.0408)	-0.463***	(0.0582)	-0.433***	(0.0607)	-0.433***	(0.0608)
Other Race	-0.0725	(0.0616)	0.0285	(0.0639)	0.0389	(0.0800)	0.00611	(0.0847)	0.0109	(0.0848)
Employment Status										
Part Time			-0.0903**	(0.0423)	-0.114**	(0.0506)	-0.0425	(0.0534)	-0.0441	(0.0535)
Temp Not			-0.218**	(0.0891)	-0.284***	(0.108)	-0.234**	(0.113)	-0.236**	(0.113)
Working										
Unemployed			-0.847***	(0.0797)	-0.953***	(0.103)	-0.861***	(0.107)	-0.863***	(0.107)
Retired			-0.116**	(0.0563)	-0.0860	(0.0732)	-0.00345	(0.0786)	-0.00276	(0.0786)
School			0.0521	(0.0777)	0.0766	(0.0897)	0.180*	(0.0975)	0.175*	(0.0977)
Keeping House			-0.226***	(0.0416)	-0.155***	(0.0523)	-0.0610	(0.0549)	-0.0662	(0.0553)
Other			-0.788***	(0.110)	-0.806***	(0.150)	-0.712***	(0.151)	-0.716***	(0.151)
Marital Status										
Widowed			-1.145***	(0.0565)	-1.092***	(0.0749)	-0.927***	(0.0800)	-0.929***	(0.0801)
Divorced			-0.974***	(0.0400)	-0.997***	(0.0496)	-0.814***	(0.0532)	-0.811***	(0.0533)
Separated			-1.194***	(0.0766)	-1.228***	(0.100)	-1.024***	(0.106)	-1.025***	(0.106)
Never Married			-0.810***	(0.0377)	-0.847***	(0.0461)	-0.707***	(0.0489)	-0.704***	(0.0491)
Religion										
Protestant			0.282***	(0.0426)	0.253***	(0.0523)	0.257***	(0.0549)	0.257***	(0.0549)
Catholic			0.135***	(0.0462)	0.130**	(0.0564)	0.119**	(0.0592)	0.118**	(0.0592)
Jewish			0.0634	(0.104)	0.105	(0.120)	-0.0109	(0.129)	-0.0149	(0.129)
Other			0.187**	(0.0766)	0.0797	(0.0966)	0.0806	(0.102)	0.0824	(0.102)
Father's Education					0.0104**	(0.00510)	0.00610	(0.00534)	0.00622	(0.00535)
Mother's Education					0.0307***	(0.00615)	0.0268***	(0.00646)	0.0271***	(0.00646)
Log Income							0.253***	(0.0215)	0.273***	(0.0305)
Constant cut1	-1.952***	(0.124)	-2.986***	(0.149)	-2.926***	(0.198)	-3.153***	(0.209)	-3.172***	(0.211)
Constant cut2	0.890***	(0.123)	0.0127	(0.148)	0.150	(0.196)	-0.0433	(0.207)	-0.0631	(0.209)
Pseudo R-Squared	0.0096		0.0445		0.0445		0.0497		0.0497	
Observations	25,257		25,173		17,127		15,770		15,770	

Source: GSS. Dependent variable in all regressions is happiness. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In model 2, we add additional controls for employment and marital status as well as religion. In model 3, we also control for parental education. Finally, in model 4 we include a variable that captures the unexplained portion of the variation in income in a regression of IQ and log of income. In all of these additional specifications, the coefficient on IQ has a positive and statistically significant sign. The coefficients on all of the other explanatory variables have the expected signs and are consistent with findings in the literature. For example, happiness is a quadratic function of age; blacks, the traditionally discriminated minority in the US, report lower levels of happiness, and employed, married, and richer people are more likely to report higher levels of happiness.

Fig. 2 shows predictive margins with 95% confidence intervals for model (1) in Table 2 and provides a sense of the magnitude of this relationship. The figure suggests that people with higher IQ are more likely to report themselves in the highest happiness category "very happy" and less likely to report themselves in the lowest happiness category "not too happy." The correlation between IQ and happiness appears to be relatively small. For example, keeping the other explanatory variables at their means, the smartest respondents are only 6% more likely to report themselves in the highest happiness category "very happy" compared to the least intelligent ones.

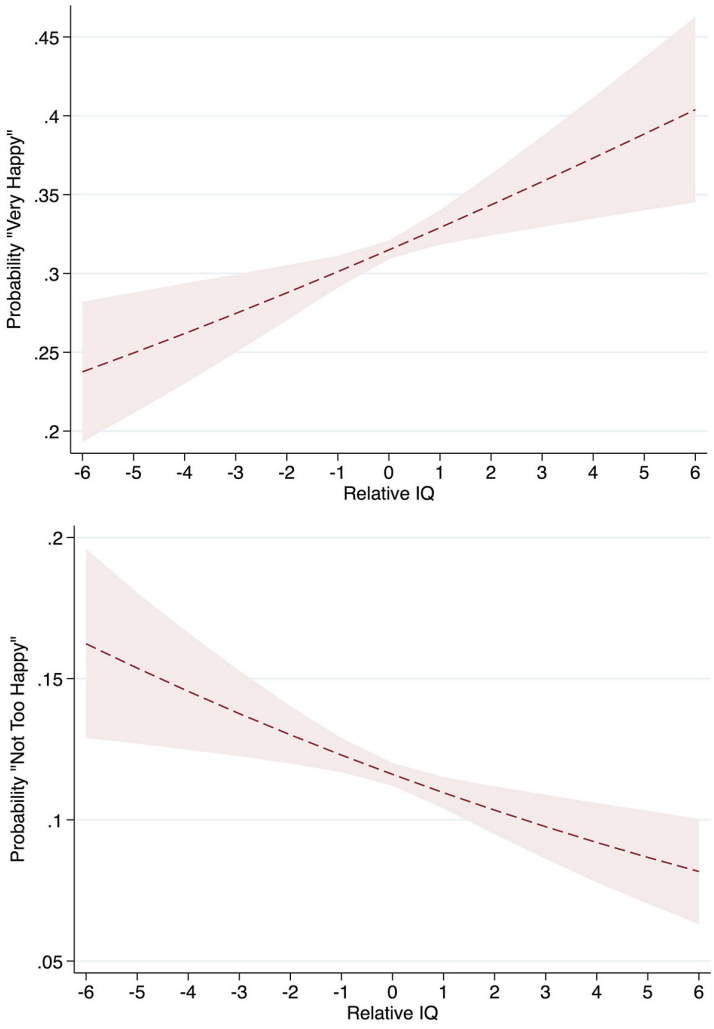
Next, Table 3 presents our main results which test for the relationship between relative IQ and happiness. We follow a similar design as Table 2 and include additional variables in a stepwise fashion in consecutive models. The main result from this table is that relative IQ is positively and significantly correlated with happiness. In all regressions, the coefficient on relative IQ enters with a positive and significant sign. Within their reference group, more intelligent people are significantly more likely to report higher levels of happiness. Furthermore, once we include the relative IQ variable in the regression, the coefficient on the absolute level of IQ loses its significance. This suggests that most of the happiness benefits from intelligent are associated with its positional effect. The results hold when we control for a rich set of socio-economic covariates.

One possible objection to our analysis is that the relative level of IQ merely reflects the relative level of income. Therefore, in model 5 we control for relative income as well. The results remain unchanged.

To further help visualize the relationship, Fig. 3 shows predictive margins with 95% confidence intervals. The magnitude of the effect is substantial relative to the effect

of the effect of the absolute level of IQ. The figure implies that, keeping other variables in the model at their means, more than 40 percent of the smartest people in the social reference group will report themselves in the highest happiness category “very happy” compared to only 24% of the least intelligent ones.

Fig. 3: Predictive Margins with 95 percent Confidence Intervals (Model 1, Table 3)



5. Discussion

Even though higher intelligence (IQ) is often associated with many positive outcomes in life, it has become a stylized fact in the happiness literature that smarter people are not necessarily happier. In this paper, we examine how relative verbal intelligence relates to

happiness and present two main findings. First, our estimations from the General Social Survey for a large representative sample of Americans suggest a small, but positive and significant correlation between verbal IQ and happiness. Second, we find that verbal IQ has a strong positional effect on happiness, i.e., people who are more verbally proficient relative to their peers are more likely to report higher levels of happiness. The positional effect of happiness holds even when we control for a large set of socio-economic characteristics as well as relative income.

Our results should be treated with caution due to a number of methodological challenges that make causal inference in the context of happiness research still problematic. First, it is possible that the direction of causality runs in the opposite direction, i.e., happier people are more likely to develop better cognitive abilities and to report higher levels of verbal intelligence. A large literature, for example, supports the view that positive mood can improve creativity, productivity, health, and can lead to many other positive outcomes in life (for a summary, see Lyubomirsky, King, and Diener, 2005). Specifically, happier people may be more likely to develop social relationships (Diener, & Seligman, 2002), which in turn can help them foster greater verbal proficiency through more frequent social interactions. It is also possible that less happy people spend more time alone, often in activities such as reading books or studying, that can increase their verbal proficiency. Unfortunately, it is impossible for us to control for these underlying mechanisms with our dataset and methodology. In the context of our study, however, these issues are more of a concern for the direct effect of IQ on happiness, and less of a concern when it comes to the relative effect of verbal intelligence. This is because in our main model we are holding individual verbal IQ constant (i.e., we control for the individual level of verbal intelligence). In that sense, the variation in our model to estimate the effect of relative IQ on happiness comes from changes in the mean level of verbal IQ of the individual reference group. It is highly unlikely, after all, that the happier disposition of a one person will have an effect on the average IQ of his or her reference group.

Another concern could be that of unobserved heterogeneity. For example, unobserved personality traits associated with neuroticism have been previously shown to correlate to both IQ and happiness. In Ackerman and Heggestad's (1997) meta-analysis of the associations between IQ and personality, negative correlations across ability traits were observed with variables that are often associated with neuroticism such as stress reaction,

alienation, and psychoticism. Since there is evidence that people with personality traits associated with neuroticism are less likely to be happy (Costa & McCrae, 1980; Diener & Seligman, 2002; Hayes & Joseph, 2003), it is possible that a third variable drives these results. Additionally, the relationship between subjective well-being and intelligence could also be moderated by cultural values such as individualism-collectivism (Stolarski, Jasielska, & Zajenkowski, 2015). Again, these concerns are primarily for our findings that examine the effect of the absolutely level of verbal IQ on happiness. In the case above, it is less likely that the mean IQ of a person's social comparison group is correlated with some personal unobserved traits such as neuroticism.

A more important criticism of our work, however, is that we are not able to measure the processes through which people make social comparisons. We are also unable to assess whether people have enough information to make such comparisons. However, one of the most important contributions of happiness research has been to find patterns across different groups of the population (Stiglitz, Sen, & Fitoussi, 2009). Therefore, our findings should be viewed not as causal, but as promising highlights for future research. They do, however, highlight the important of social comparisons in the domain of verbal intelligence.

6. References

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