Marriage and happiness: Providing evidence against a relationship between inequality and happiness in Oishi, Kesebir, and Diener (2011)

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Government 2001
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Spring 2014

ABSTRACT

Oishi, Kesebir, and Diener (2011) show a negative relationship between the Gini coefficient (a measure of income inequality) and Americans' reported happiness. They argue that exposure to inequality makes Americans less happy – but it is not clear whether the relationship between inequality and happiness is spurious to other factors known to affect happiness, especially race and marital status, which have shifted over time. Married people report a higher level of happiness, and the proportion of married population is decreasing over time, so we might expect a relationship between proportion of the population that is married and average levels of happiness. When controlling for individuals' marital status, there is no relationship between inequality and happiness – the originally reported effect is an artifact of the fact that many variables show a linear increase or decrease over the observed time period, including the proportion of married individuals in the population. We conclude with a methodological, not theoretical, critique to the paper, which lacks robust empirical specifications.

INTRODUCTION

As some measures of income inequality go up, public as well as academic work has been filled with discussions of its effects. Among those, the effect of inequality on subjective feeling has gained some traction. In an early study, Morawetz (1977) compared two Kibbutzes, one of which had income equality and the other, relative inequality. He found that the average happiness was higher in the equal income setting, but this data set is limited in its external validity. Alesina, Di Tella, and MacCulloch (2004) examine the question of how inequality affects the happiness of Europeans and Americans. Berg and Veenhoven (2010) use data from 119 countries and compare the country's average happiness with its Gini coefficient of income inequality. In this setting, they do not find a relationship between income inequality and happiness of citizens. Oishi, Kesebir, and Diener (2011) examine the question within the United States over time, arguing that a within-country comparison can control for cultural and

demographic differences between countries. (But as we will demonstrate, controlling for cultural differences between countries does not mean they control for demographic shifts over time *within* the United States.) They find that a higher level of inequality leads to a lower level of reported happiness. They further show that this relationship is mediated by (1) perceived trustworthiness of other people and (2) perceived fairness in society. Consequently, they conclude the higher level of inequality leads people to think that society is less trustworthy and less fair, leading to lower levels of reported happiness. This study seems to provide a powerful mechanism through which income inequality hurts Americans' happiness.

However, the authors do not closely examine why people come to perceive other people to be less trustworthy and society to be less fair when national-level income inequality is higher. In other words, if Massachusetts does not experience a growing inequality, how does the average Joe in Boston get affected by the growing national inequality? The proposed mechanism of Oishi, Kesebir, and Diener (2011) assumes that (1) people somehow come to know of the state of income inequality (either directly by hearing about it on the news or indirectly through interaction with other people) and (2) they react to this knowledge by perceiving society as less trustworthy and less fair. If these assumptions, and the authors' proposed mediation, are true, then the relationship between income inequality and reported happiness should hold even when we control for all the other factors that are known to affect the level of happiness.

We question whether the paper sufficiently controls for demographic variables that are known to affect the level of happiness. This insufficient condition is especially problematic given that the overall trend of income inequality during the examined time period resembles the trends of other demographic factors – especially the racial makeup of the country and proportion of

married population. (See Figure 1 for an overview of these trends.) When we already know that one's demographic characteristics can affect their reported level of happiness, it is necessary to test the effect on reported happiness only after controlling for those variables.

Therefore, we argue that the proposed relationship between the level of national income inequality and reported happiness is spurious, and arises in the data because of other demographic factors that have a similar pattern of change over time. We first show why it is theoretically important to control for those variables, by demonstrating that income, age, sex, race and marital status affects one's happiness. Then, we show the similar patterns of change for inequality and other demographic variables, justifying the need to control for those variables in testing the causal effect of inequality. Finally, we demonstrate that the effect of inequality is not present when those demographic variables are included in the model. We conclude by also pointing out that we should be careful in inferring causality from a mediation analysis, as mediation analysis is itself as vulnerable to spurious relationships as the direct effect.

DATA

We obtained the same data as Oishi, Kesebir, and Diener (2011): Gini coefficients for income inequality from the U.S. Census Bureau, and the other variables from the General Social Survey. Besides the variables that the authors use – HAPPY (level of happiness), YEAR (year in which respondents participated in the survey), FAIR (how fair is society), TRUST (how trustworthy are other people) and Gini coefficients – we include other variables that they include in their multilevel multigroup analysis, but not in the main effect model or mediation analysis model: MARITAL (marital status), RACE (respondent's race), REALINC (reported income of the respondents in adjusted 1986 dollars), AGE (respondent's age), and SEX (respondent's

gender). Variables were recoded to appropriately indicate NAs according to the GSS Codebook. We recoded HAPPY so that the happier one is, the higher the variable becomes (3 being the happiest, 1 being the least happy). We also created dummy variables for being White (1=white; 0=others) and being married (1=married; 0=not married). We logged REALINC to normalize the highly skewed distribution. The number of people who responded to each variable are different, so models may vary in number of observations.

REPLICATION

First, we replicate the result from Oishi, Kesebir, and Diener (2011), to ensure that we are not wrongly accounting for the relationship and modeling choices of the original paper. Using a multilevel model as reported by the authors, allowing intercept to vary by year, we replicate the result that Gini coefficient negatively predicts Americans' reported happiness (B = -.345, 95% CI = [-0.765, -0.006], *SE* = 0.194). We report this as Model 1 in Table 2. We also run the same analysis with a different modeling choice, ordered logistic function, and obtain the same results.

$$\alpha_i \sim f(\mu, \sigma^2)$$

$$\mu = \gamma * YEAR$$

$$E(HAPPY|GINI) = \alpha + \beta_1 GINI$$

We also replicate the authors' mediation model. This is reported in Appendix Table 1. The authors' other figures are replicated and reported in Appendix Figures 1 and 2.

OUR ANALYSES + RESULTS

We run multilevel varying-intercept models including the previously mentioned control variables. This modeling choice is appropriate because the Gini coefficient does not vary within a year by individuals, so by letting the intercept vary, we can account for the within-year differences that depend on Gini coefficients that vary by year. The results of these regressions are reported in Table 1. Model 1 is the previously mentioned replication of the authors' first finding.

While it is easy to just throw in marital status and race – as well as other demographic variables – into the model and control for them, we will first demonstrate that it is important to do so because (1) there exist observed correlations in theory and the data between these variables and happiness, and (2) the the theoretical effects of race and marital status become more salient when we see similar trends in income inequality, race, and marital status over time during the observation period (see Figure 1). Thus, it becomes crucially important to take into account those variables before concluding that the relationship between inequality and happiness is not spurious. Therefore, we move onto test whether the level of inequality still has an effect on reported happiness, after accounting for those demographic variables that are known to affect happiness. We will discuss each of these variables in turn.

Income

While income's effect on happiness has been hotly contested: on the one hand, the national GDP is positively correlated with happiness, while Easterlin Paradox, on the other hand, tells us that happiness does not increase as the GNP per capital increases (for a review, see Easterlin 2001). Therefore, while we do not have a prior to the pattern of relationship between income and happiness, we include income as a variable.

In the data, we find that income is positively correlated with reported happiness (see Table 1). Controlling for the effects of individual income, there is still a significant effect of the Gini coefficient on reported happiness (Model 2, Table 2).

Age

Older adults report higher levels of happiness than younger adults (Witt et al. 1980; Frijters and Beatton 2012). Though this relationship is somewhat inconsistent in the literature, we do find it in our data (see Table 1). Controlling for the effects of individual age, there is still a significant effect of the Gini coefficient on reported happiness (Model 3, Table 2).

Sex

The literature is mixed on the effects of gender on reported happiness (Stevenson and Wolfers 2008), and in our data, we find no overall effect of gender (see Table 1). For completeness, we run a model controlling for the effects of sex, and there is still a significant effect of the Gini coefficient on reported happiness (Model 4, Table 2).

Race

Given the historical and social institutions in the U.S., racial minorities, especially blacks, consistently report a lower level of happiness, even after controlling for socioeconomic status and other demographic factors (Davis 1984; Thomas and Hughes 1986; Hughes and Thomas 1988; Aldous and Ganey 1996). More recently, Yang (2008) reports that, while there are variations in the reported happiness depending on respondent's life circumstances, Black Americans consistently report a lower level of happiness than White Americans, despite the expectations that the racial inequality has declined in the recent years.

We find this relationship in our data: Figure 2 shows the correlational relationships between proportion of respondents who are White, and reported happiness. Figure 3 shows the

patterns of happiness for reported happiness for different racial groups, attesting to the fact that the change in reported happiness would be driven by the change in racial makeup of the population, in addition to changes in happiness within racial groups. We use a dummy variable for whether an individual is White or not, and controlling for this variable, there is no effect of the Gini coefficient on reported happiness (Model 5, Table 2).

Marriage

A long line of research has identified different demographic factors that affect one's reported happiness. Marital status is one of them. Married people are more likely to have a higher level of reported happiness (Lee et al. 1991; Marks and Lambert 1998; Stack and Eshleman 1998; Coombs 1991 for a review) especially for long-term happiness (Lucas et al. 2003) and for their sense of belonging and emotional well-being (Marks 1996). While the effect declines over time as the institution of marriage becomes weaker or less valuable (Glenn and Weaver 1988), and while the role structure mediates the relationship (Lueptow et al. 1989), across different cultures and races, married couples consistently report higher levels of well-being (Wood et al. 1989; Diener et al. 2000; Corra et al. 2009). While marital status of course explains one's level of happiness only partially (Lykken and Tellegen 1996), the effect of marital status on happiness holds robust over a long period of time and for a diverse array of cultures and role structures.

We confirm this relationship in our data: Figure 1 shows that the proportion of married individuals has decreased over the observed time period, and Figure 4 shows the correlation between the proportion of people who are married and mean reported happiness in a given year. Controlling for whether an individual is married, there is no effect of the Gini coeffient on reported happiness (Model 6, Table 2).

DISCUSSION AND CONCLUSION

In this paper, we replicate Oishi, Kesebir, and Diener (2011) and report that inequality does not have an effect on reported happiness when controlling for other demographic variables that are widely known to affect the level of happiness. And we argue that that is because the patterns of change for those demographic factors strikingly resemble the patterns of change for inequality and happiness. From 1972, there is a decline in the proportion of the married people in the population, and given that the married people are reported to be happier than unmarried people, the decline in the reported happiness may be attributable to the decline in the married population. Similarly, as well known in the public sphere as well as academia, the U.S. has become racially more heterogeneous, with the declining white population and increasing minority population. When white people are reported to be happier, the decline in the reported happiness may also be attributable to the decline in the white population. Note that in this paper, we are not making any causal claim as of what variable determines one's level of happiness, and the demographic factors we include in the models are already well-theorized in relation to the level of happiness people report, by the studies that use the same dataset. We simply make an argument that, without specifying the theoretical mechanism and including the sufficient controls, a causal claim cannot be made.

Like any other study, our study has several limitations. First is that we use Gini coefficient as the only measure of inequality, while Gini coefficient is only one of many measures of income inequality and in some cases it does not change when the income inequality actually changes. However, this is the measure used by Oishi, Kesebir, and Diener (2011), and our argument can only stand viable if we use the same measure as the original paper.

Second is that happiness is an elusive concept that can be affected by a whole host of different variables. This issue is both theoretical and empirical. Theoretically, it is difficult to conceptualize what happiness is, when respondents self-reported the value based on their own conceptualization. Empirically, there can be other variables in the dataset that are also correlated with happiness that make Gini coefficient more significant and thus suggesting that inequality has an effect on happiness. Yet, knowing these limitations, we decided to include (only) the above control variables for two reasons. First is that those variables are the most well-theorized variables to have an effect on happiness, providing theoretical basis for challenging the effect of inequality on happiness. Second is, more importantly, that the authors include those control variables in multilevel multigroup models where they check the effect of inequality on happiness, but not in the main effect and mediation analysis model. To ensure robustness of main effect and mediation models (which are most important results from the paper), we argue that these controls should be consistently included throughout the analyses.

Finally, our findings on the effect of race and martial status may well be subject to the same criticism that we have brought against the original paper – another variable that covaries with ours, and would prove the relationship between declining White and married populations to be itself spurious.

Consequently, we call for a more careful approach to the claim reported Oishi, Kesebir, and Diener (2011) in the relationship between inequality and happiness. While we appreciate the mechanism proposed by the mediation analysis, mediation analysis guarantees neither the theoretical validity of mechanism nor the empirical validity of the relationship. We subsequently report that the reported relationship between inequality and happiness does not exist when controlling for other variables that are theorized by other scholars to affect happiness and that are

included in the authors' multilevel multigroup models in the original paper. While the current scientific institution often discounts such findings, we believe that scientific rigor is not only in showing a new mechanism but also in testing the known mechanism with a more careful analysis.

See attached files for Tables and Figures.

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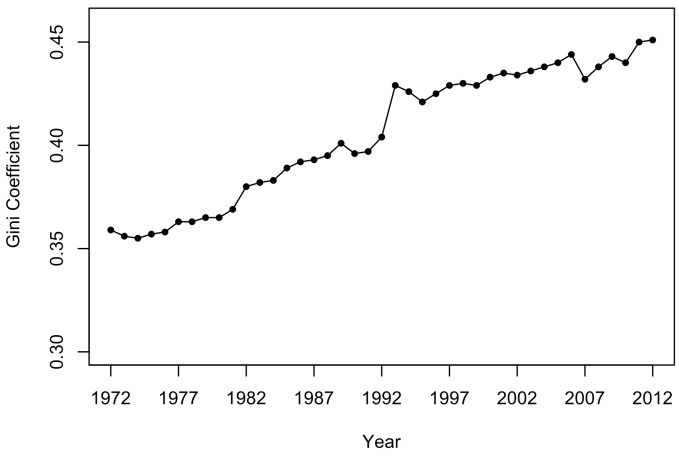

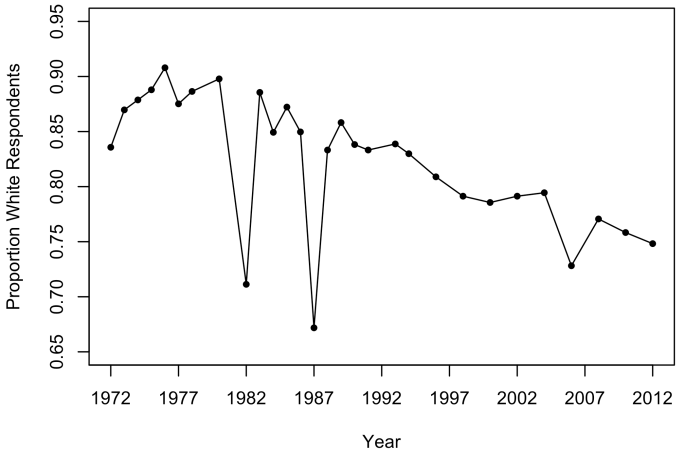

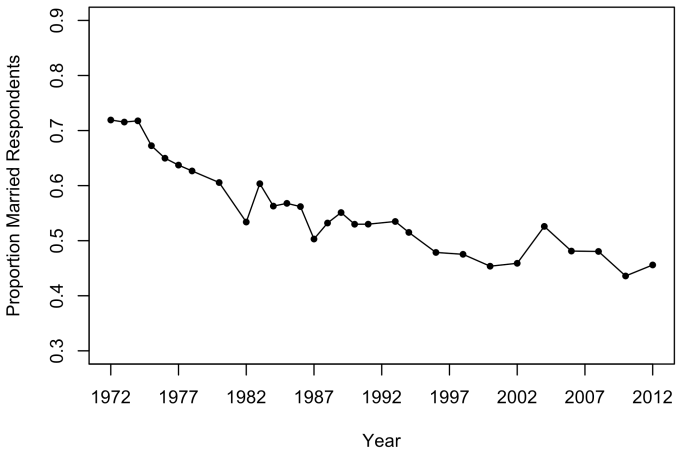

Figure 1. Demographic trends in the United States from 1972 to 2012.

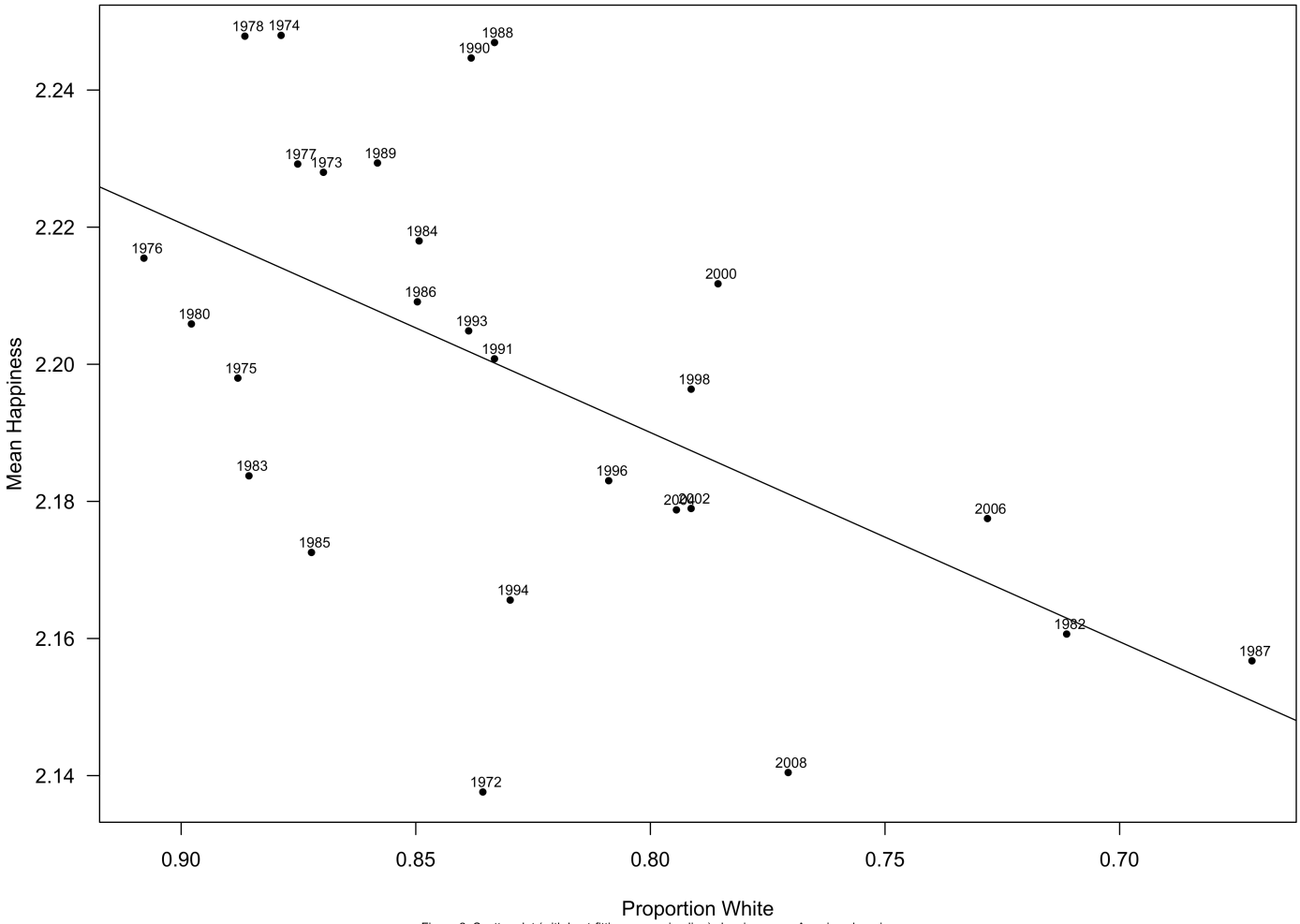

Figure 2. Scatter plot (with best-fitting regression line) showing mean American happiness scores as a function of proportion White respondents, from 1972 to 2008

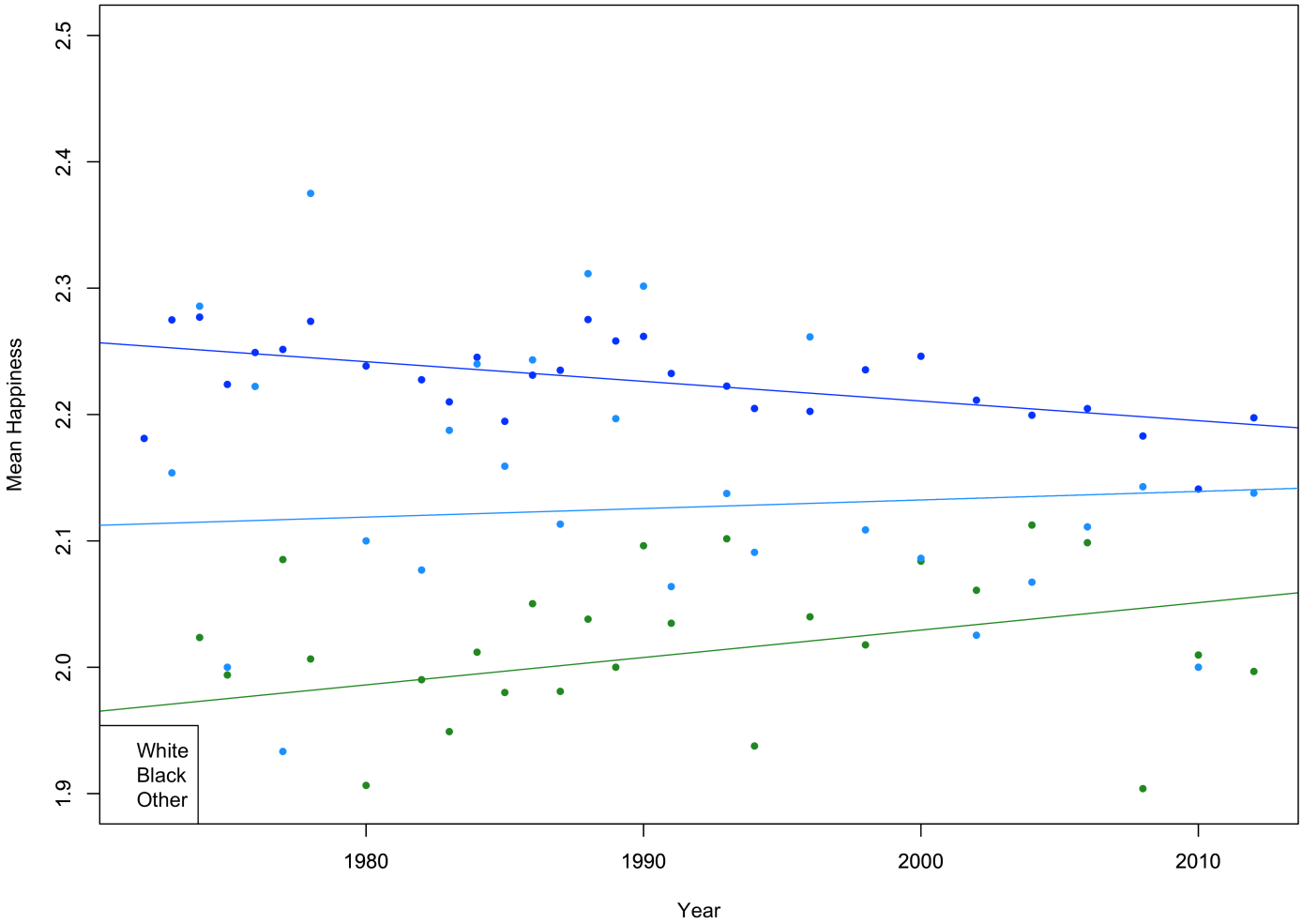

Figure 3. Scatter plot (with best-fitting regression lines) showing mean happiness scores for respondents identified as White, Black, or another race, from 1972 to 2008

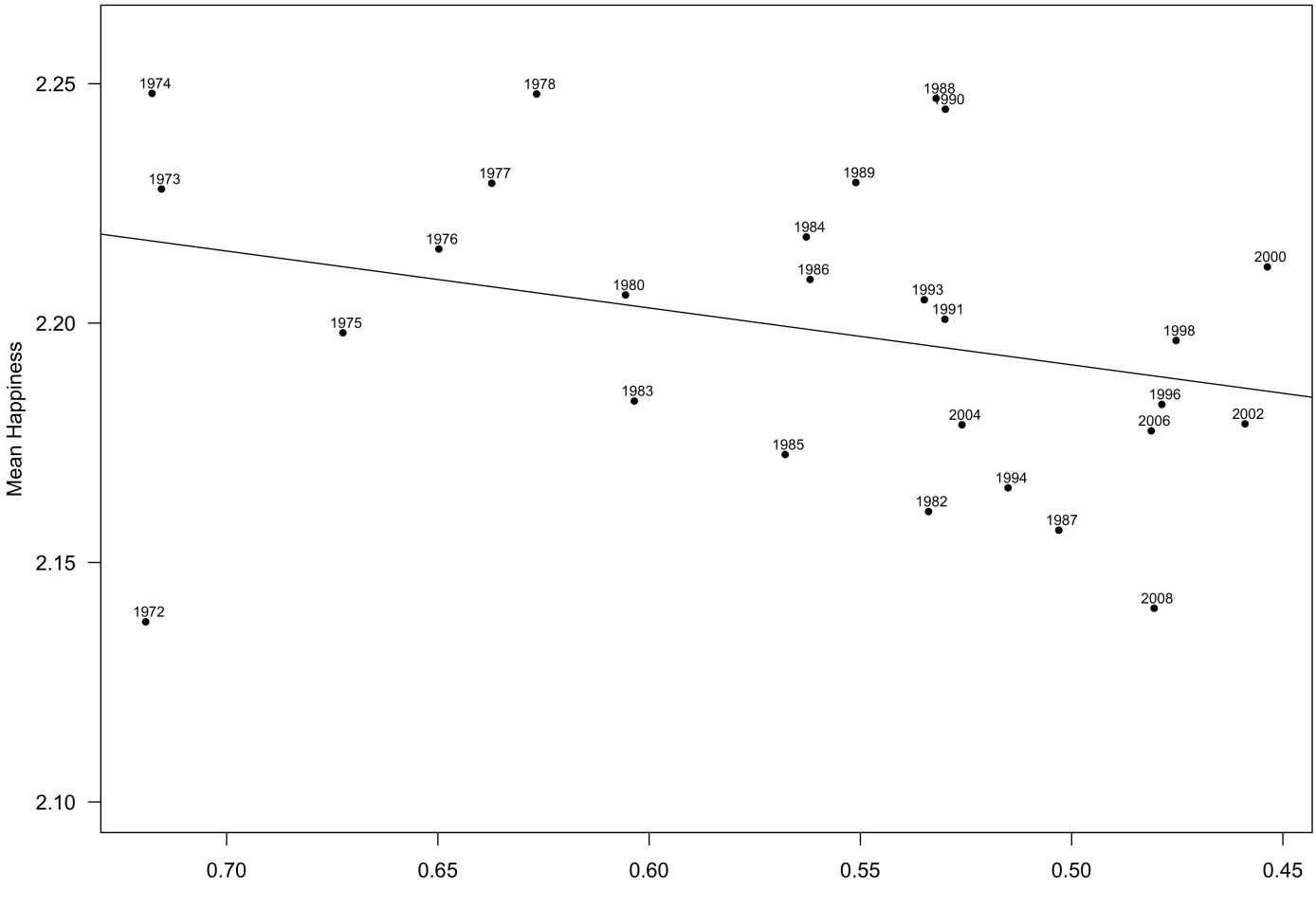

Figure 4. Scatter plot (with best-fitting regression line) showing mean American happiness scores as a function of proportion married, from 1972 to 2008

	Estimate	p value
Logged Income	0.19	0.00
Age	0.03	0.00
Sex	0.01	0.23
White	0.12	0.00
Married	0.23	0.00

Table 1: Correlations between happiness and control variables

Table 2: Multilevel Linear Models

	Dependent variable:					
	Happiness					
	(1)	(2)	(3)	(4)	(5)	(6)
Gini	−0.385**	−0.461**	−0.413**	−0.386**	−0.177	0.332
	(0.194)	(0.189)	(0.195)	(0.194)	(0.175)	(0.210)
REALINClog		0.125***				
		(0.003)				
Age			0.001***			
			(0.0002)			
factor(SEX)2				0.007		
				(0.006)		
White					0.188***	
					(0.008)	
Married						0.298***
						(0.006)
Constant	2.351***	1.140***	2.306***	2.348***	2.112***	1.899***
	(0.077)	(0.081)	(0.078)	(0.077)	(0.070)	(0.084)
Observations	48,318	43,564	48,318	48,318	48,318	48,318
Log Likelihood	−46,611.120	−41,048.910	−46,590.320	−46,614.720	−46,308.240	−45,295.860
Akaike Inf. Crit.	93,230.250	82,107.830	93,190.630	93,239.430	92,626.470	90,601.730
Bayesian Inf. Crit.	93,265.390	82,151.240	93,234.560	93,283.360	92,670.400	90,645.650

Note: *p<0.1; **p<0.05; ***p<0.01

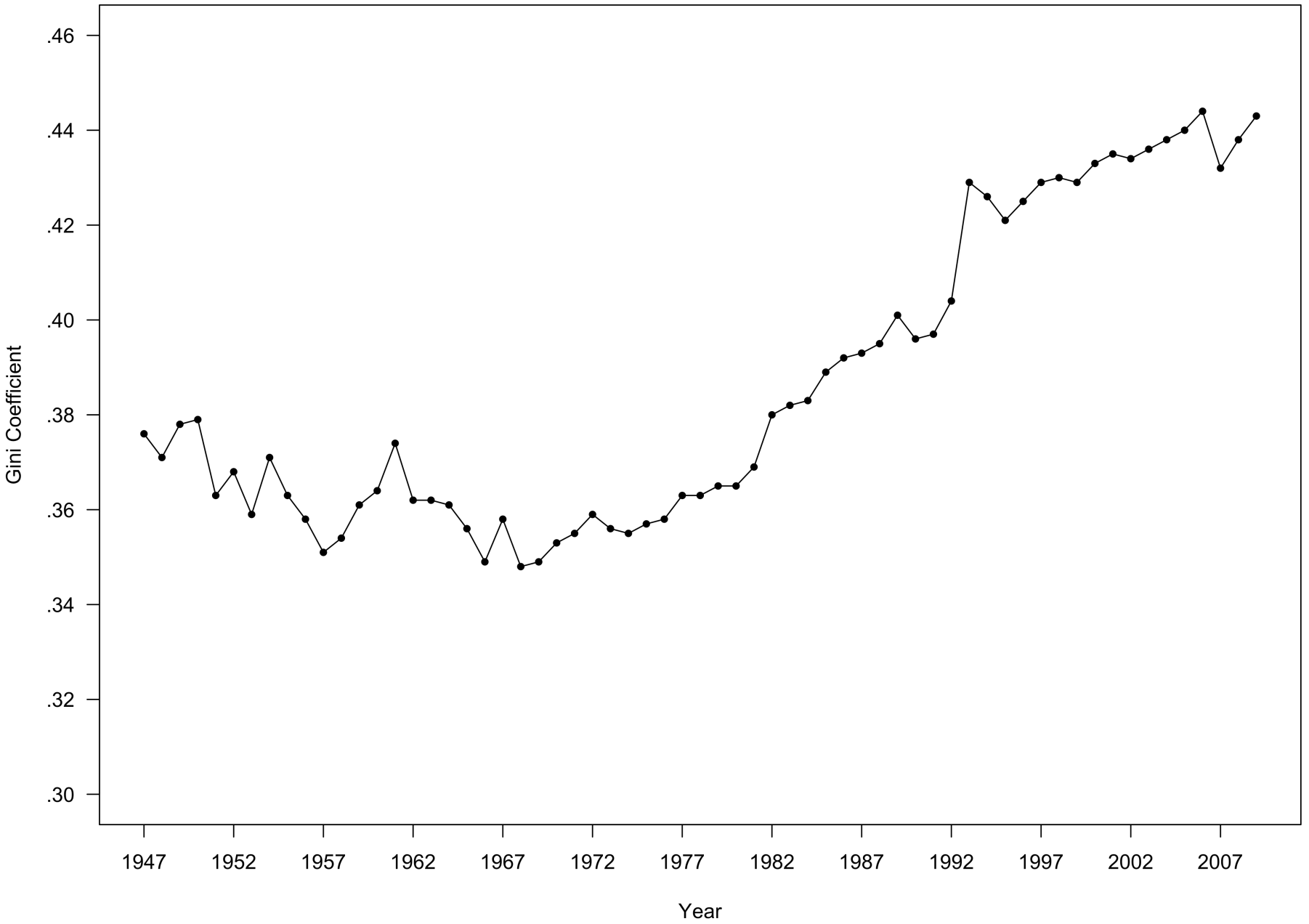

Fig. 1. Income inequality in the United States from 1947 to 2009, as indexed by the Gini coefficient.

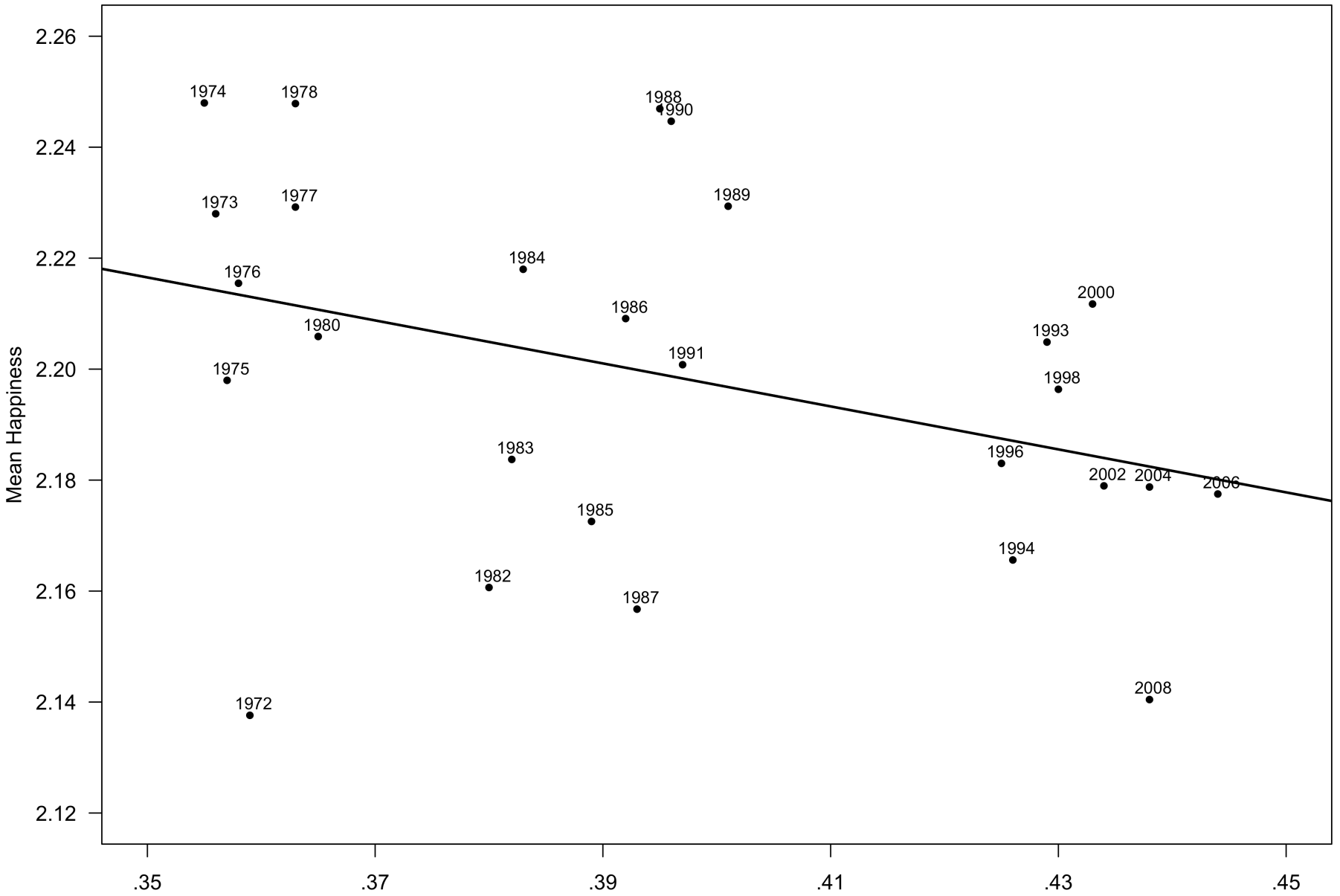

Fig. 2. Scatter plot (with best-fitting regression line) showing mean American happiness scores as a function of income inequality, as indexed by the Gini coefficient, from 1972 to 2008

Table Appendix 1:

	Dependent variable:					
	Happiness	TRUSTrecode	FAIRrecode		Happiness	
	(1)	(2)	(3)	(4)	(5)	(6)
Gini	−0.385**	−2.173***	−2.054***			−0.217
	(0.194)	(0.362)	(0.333)			(0.263)
TRUSTrecode				0.093***		0.060***
				(0.004)		(0.004)
FAIRrecode					0.104***	0.079***
					(0.004)	(0.004)
Constant	2.351***	2.688***	3.019***	2.029***	1.969***	2.001***
	(0.077)	(0.145)	(0.134)	(0.010)	(0.011)	(0.106)
Observations	48,318	34,790	33,022	33,107	32,762	31,873
Log Likelihood	−46,611.120	−47,793.700	−44,976.970	−31,742.890	−31,383.500	−30,410.020
Akaike Inf. Crit.	93,230.250	95,595.400	89,961.940	63,493.780	62,774.990	60,832.040
Bayesian Inf. Crit.	93,265.390	95,629.230	89,995.560	63,527.410	62,808.580	60,882.250
Note:						*p<0.1; **p<0.05; ***p<0.01